Project Manual
Project Number: 19-068.1

Village of Hoffman Estates
Village Green Improvements – Phase 1
5510 Prairie Stone Parkway, Hoffman Estates, Illinois 60192

For

Village of Hoffman Estates
1900 Hassell Road
Hoffman Estates, Illinois 60169

Issued for Bid: August 11, 2020

ARCHITECTURE

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NOTICE TO BID

Notice is hereby given by the Village of Hoffman Estates that sealed bids will be received for the following improvement project: Village Green Improvements – Phase I.

The proposed work will take place at the Village of Hoffman Estates Village Green located at 5510 Prairie Stone Parkway, Hoffman Estates, Illinois, 60192.

Sealed proposals for the improvement described herein will be received at the Office of the Village Clerk of the Village of Hoffman Estates, Village Hall, 1900 Hassell Road, Illinois, 60169, until 10:00 a.m., August 26, 2020. Sealed bids will be publicly opened at that time.

There will be a mandatory pre-submittal meeting at the Village Green Site at 9:00 a.m., August 18, 2020, to discuss project scope, view site and conditions, and address questions.

Plans and proposal forms are available for download from the Village of Hoffman Estates website at www.hoffmanestates.org/rfp beginning August 11, 2020. Plans are also available at the Village of Hoffman Estates, 1900 Hassell Road, Hoffman Estates, IL 60169.

Bid security in the form of a bid bond or certified check in an amount equal to five percent (5%) of the base bid amount shall be submitted with the bid. Should a bid bond be submitted, the bid bond shall be payable to the Village of Hoffman Estates.

All bidders must comply with applicable Illinois Law requiring the payment of prevailing wages by all Contractors working on public works. Bidder must comply with the Illinois Statutory requirements regarding labor, including Equal Employment Opportunity Laws.

Questions can be directed to Ryan Johnson, Village of Hoffman Estates, (847) 781-2669.

By order of the President and Board of Trustees of the Village of Hoffman Estates.

Bev Romanoff
Village Clerk

Date of Publication in the Daily Herald: August 11, 2020

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SECTION 00100

INSTRUCTIONS TO BIDDERS

PART 1 – GENERAL

1.1 PROPOSAL

A. The Village of Hoffman Estates will receive sealed bids for the Village Green Improvements - Phase 1.

B. To receive full consideration bids must contain the following documents properly completed and signed:
   1. Bid Form.
   2. Bid Bond.
   3. Certificate of Compliance with Illinois Drug-Free Workplace Act.
   4. Substance Abuse Prevention Policy
   5. Certificate of Compliance with Illinois Human Rights Act.
   6. Bidder Eligibility Certification and Non-Collusion Affidavit.
   7. Fair Employment Practices Affidavit of Compliance.
   8. Indemnity Hold Harmless Agreement.
   9. Fully completed AIA document A305 providing the Contractor's qualifications and references.

1.2 PREPARATION FOR BIDS

A. Proposals to be entitled for consideration must be made in accordance with the following instructions.
   1. Submit one copy of bid on forms provided by the Architect with all blank spaces for bid prices filled in, in ink, or typewritten.
   2. Submit one reproduction of bid forms and associated documents.
   3. Submit bid in an opaque, sealed envelope, addressed to: Ms. Bev Romanoff, Village Clerk.
      a. Mark the envelope SEALED BID FOR:
         1) Project Name.
         2) Bidder.
   4. Bids will be received until 10:00 a.m. prevailing time, on August 26, 2020 for all specified work at the Village of Hoffman Estates Village Hall, 1900 Hassell Road, Hoffman Estates, Illinois 60169.
   5. Bids received after this time will not be accepted.
   6. Erasures or written memorandum on the Bid Form are prohibited. Include additional explanations, statements, or qualifications in a separate sheet attached to the Bid Form.
   7. The Base Bid shall appear only where called for in the Bid Form and shall not appear elsewhere in the proposal. Any Alternate prices (other than those set forth in the Bid Form) shall be listed on the Substitution Sheet.
   8. Fill in all blank spaces for the bid items with prices, or if not applicable, the words "No Bid."

B. The Owner reserves the right to reject any or all bids or parts thereof at its sole discretion.

C. The Owner reserves the right to waive any or all irregularities or informalities.

D. The Owner reserves the right to terminate this request for bids at any time in the bidding process.

E. All costs associated with developing or submitting a bid in response to this request, or to obtain oral or written clarification of its content shall be borne by the respondent. The Owner and Architect, and their agents, assume no responsibility for these costs. This request for bids does not commit the Owner or Architect, or any of their agents, to pay any costs incurred in the preparation or submission of a bid.

F. Do not detach Bid Forms from the Project Manual for use in submission of bids; use separate forms furnished by the Architect.

G. Telegraphic bids will not be accepted, but modifications by telegram of bids already submitted will be considered if received prior to the scheduled closing time for receiving bids.

SECTION 00100

INSTRUCTIONS TO BIDDERS

1.3 DEFINITIONS

A. All definitions set forth in the General Conditions of the Contract for Construction as printed in AIA Document A201 as modified and included herewith are applicable to these Instructions to Bidders.

B. Bidding Documents include the Advertisement to Bid, Instructions to Bidders, the Bid Proposal Form and required attachments, AIA Document A101 Standard Form of Agreement Between Owner and Contractor where the Basis of Payment is a Stipulated Sum, 2017 edition, including General Conditions as modified for this project, AIA Document A305, and the proposed Contract Documents including any addendum issued prior to receipt of bids.

C. Addenda are written or graphic instruments issued prior to the execution of the Contract which modify or interpret the bidding documents, including Drawings and Specifications, by additions, clarifications, or corrections. Addenda will become part of the Contract Documents when the Construction Contract is executed.

1. Addenda will be issued by Email, FAX transmittal, direct mail or United Parcel delivery. Bidders are to consider all addenda, regardless of method of transmittal, as a binding modification to the contract documents.
2. It is the bidder's responsibility to ascertain from the Architect that they have received all addenda issued to the bidding documents prior to submitting their bids.

1.4 DOCUMENTS

A. The Bidding Documents are on file and may be obtained at the Village of Hoffman Estates web site at www.hoffmanestates.org/rfp and at Village Hall.

1.5 EXAMINATION OF DOCUMENTS AND SITE

A. Bidders are responsible for examining all documents on file at the web site of the Owner and must make a mandatory site visit to examine the site to become familiar with and make allowance for any conditions which may affect the work. Contractors will not be given adjustments to the contract sum for conditions which can be determined by examining the site and documents.

B. A mandatory Pre-Bid Conference will be held on August 18, 2020, 9:00 a.m. at Village Green Site, 5510 Prairie Stone Parkway, Hoffman Estates, Illinois 60192. It is required that all Bidders attend and participate in the conference which will also be attended by the Owner, the Architect, and the Engineer. The Architect will transmit to prospective bidders of record any Addenda the Architect considers necessary in response to questions arising at the conference.

1.6 POST-BID QUALIFICATION

A. Any bidder may be required to submit supporting data to substantiate that such bidder is properly qualified to carry out the obligations of the Contract and to complete the Work contemplated therein.

1.7 BID WITHDRAWAL

A. Any bidder may withdraw their bid prior to the scheduled closing time for receiving bids. All bidders shall hold their Bids open for a period of sixty calendar days from the date of Bid Opening. The Owner and Bidders may agree to extend the period of irrevocability beyond the sixty-day period.

1.8 INTERPRETATION OF BIDDING DOCUMENTS

A. Submit all questions regarding the Bidding Documents to Ryan Johnson, Village of Hoffman Estates, (847) 781-2669. Replies will be issued to all bidders of record in the form of an Addendum. Questions received less than three days before the bid opening date cannot be answered.

1.9 NON-SPECIFIED ITEMS

A. Approved Equal Items:
   1. To obtain approval to use non-specified items, submit written request at least five days prior to the opening date; requests received after this time will NOT be considered.
   2. Requests shall clearly describe the items for which approval is asked including all data necessary to demonstrate acceptability.
   3. If an item is acceptable, the Architect will approve same in an Addendum issued to all bidders of record.

B. Substitutions:
   1. Substitutions for the items specified may be made by the Contractor only by submitting proposed substitutions on the Substitution Sheet provided.
   2. Requests received after bid opening will not be considered except for the following conditions:
      a. Product discontinued.
      b. Insufficient quantity. Except the following will not establish cause for substitution:
         1) Failure to award subcontract in sufficient time, or failure to place orders for products to ensure delivery without delaying work.
      c. Delays beyond control, such as strikes, lockouts, storms, fires, or acts of God, which may preclude the procurement and delivery of products for purposes of the Project.

C. No consideration will be given to substitutions after the Contractor submits the Schedule of Values.

1.10 METHOD OF AWARD

A. If the Owner should award a Contract, the Owner will award it to the lowest responsible bonafide Bidder with full consideration given to Contractor's Completion Schedule.

B. In determining the lowest responsible bona fide Bidder and in awarding a contract, the Owner may take into consideration skill, facilities, capacity, experience, ability, responsibility, previous work, financial standing of bidder, amount of work being carried on by bidder, quality and efficiency of construction equipment proposed to be furnished, period of time within which proposed equipment is furnished and delivered, and necessity of prompt and efficient completion of work herein described.

1.11 BID REQUIREMENTS

A. Bids shall be expressly based on the following items:
   1. Instructions to Bidders.
   2. Bid Proposal Form.
   3. General Conditions.
   4. Plans and Specifications.
   5. Addenda

B. Any Contract resulting from the Bidding Documents will incorporate the terms and provisions of said documents. It is intended that these Bidding Documents shall prevail over conflicting terms and conditions of Contractor's proposal. Bidder's printed terms and conditions are NOT considered as exceptions to the Contract.

1.12 BID SECURITY

A. Accompany bids with a Bid Bond, Certified Check or Bank Draft for an amount of Five Percent of the Base Bid as a guarantee that, if award is made, the bidder will sign the agreement and furnish the required bonds within five days or forfeit his bid security as liquidated damages, but not as a penalty. Execute Bid Bond on A.I.A. Form A-310, current edition or on form furnished by the Architect.
   1. Make Bid Security payable to: Village of Hoffman Estates.

B. Where a bid bond is given as the bid security, the bid bond must comply with the rating level required for the performance and payment bond as stated in the AIA document A201 included in specification section 00700.

C. The bid security of all except the three lowest bidders will be returned within five days after the award of the Contract.
D. The bid security of the successful bidder and the two other bidders will be returned promptly after the Owner and the accepted bidder have executed the agreement, and the appropriate bonds and certificates of insurance have been provided by the successful bidder. Bid security of the other Contractor's will be returned promptly after agreement is finalized.

1.13 PERFORMANCE ASSURANCE

A. Accepted Bidder: Provide a Performance and Labor and Material/Payment bond.
   1. Provide a 100 percent Performance Bond on AIA A312.
   2. Provide a 100 percent Payment Bond on AIA 312.
   3. Deliver bonds within 3 days after execution of the Contract.

1.14 OTHER CERTIFICATIONS AND SUBMITTALS

A. All bidders must complete and sign the following certifications and submit them with their bid proposals. FAILURE TO DO SO MAY RESULT IN DISQUALIFICATION OF BIDDER.
   1. Certificate of Compliance with Illinois Drug-Free Workplace Act.
   2. Substance Abuse Prevention Policy
   3. Certificate of Compliance with Illinois Human Rights Act.
   4. Bidder Eligibility Certification and Non-Collusion Affidavit.
   5. Fair Employment Practices Affidavit of Compliance.
   6. Indemnity Hold Harmless Agreement.
   7. Fully completed AIA Document A305.

1.15 POWER OF ATTORNEY

A. Attorneys-in-Fact who sign bonds, Agreements or bids must file with each such document a certified and effectively-dated copy of their Power of Attorney.

1.16 EMPLOYMENT AND LABOR PROVISIONS

A. In the employment and use of labor, the Contractor and his subcontractors shall conform to the Illinois Statutory requirements regarding labor and wages. See Document 00820 - Prevailing Wage Requirements.
B. Vendors/Contractors must conform to all federal, state, local and OSHA Regulations now in effect.
C. The Contractor shall not discriminate against any employee or applicant for employment because of race, color, religion, sex or national origin.

END OF SECTION

SECTION 00300

BID FORM

THE PROJECT AND THE PARTIES

1.1 NAME OF BIDDER: _____

1.2 TO: MS. BEV ROMANOFF, VILLAGE CLERK
VILLAGE OF HOFFMAN ESTATES
1900 HASSELL ROAD
HOFFMAN ESTATES, ILLINOIS 60169

A. We as contractor having familiarized ourselves with local conditions affecting the work and with the proposed Contract Documents on file at the office of the Owner, hereby propose to perform everything required to be performed and to provide all of the labor, materials, necessary equipment and all utilities and transportation and services necessary to perform and complete in a workmanlike manner all work required to complete the proposed work indicated in the bidding documents for the construction of the Village Green Improvements-Phase 1, all in accordance with the Drawings and Specifications prepared by the office of Tria Architecture, Inc. including Addenda No. _____, _____ and _____ issued thereto for the sum of:

1. Base Bid for all Work:

   _____

   _____

   ($ ___ ___ ___ , ___ ___ ___ , ___ ___ ___ . ___ ___)

2. The base bid consists of all Work specified and required by the proposed Contract Documents and must equal the total price listed on the attached Schedule of Prices.
3. Payment to the Contractor will be made only for the actual quantities of work performed and accepted or materials furnished according to the contract. The scheduled quantities of work to be done and materials to be furnished may be increased, decreased or omitted as hereinafter provided.

B. Alternate Bids: The undersigned hereby states the net amount of increase or decrease to the Base Bid amount for the following Alternates as described in Section 01230.

ALTERNATE NO. 1: **To change the Date of Substantial Completion**

DEDUCTED from the Lump Sum $_____.

ALTERNATE NO. 2: **Eliminate the one for one bollard replacement**

DEDUCTED from the Lump Sum $_____.

C. Accompanying this proposal is a Bid Security payable to the Village of Hoffman Estates, which is agreed will be forfeited to the aforementioned as liquidated damages if the undersigned fails to execute the standard form of Owner/Contractor Agreement (AIA Document A201, 2017 Edition, as modified), which is included herein, and furnish evidence of their ability to become bonded and to provide insurance coverage as specified, within five days after notification of the Intent to Award Contract to the undersigned.

D. In signing and submitting this Bid, the undersigned certifies that all materials and construction to be provided are as indicated in the proposed Contract Documents.

E. Time of Completion: If awarded the Contract, the bidder agrees to complete all Construction Work and achieve Substantial Completion by November 27, 2020, 5:00 p.m. NOTE: Substantial Completion for this project refers to all work being a minimum of 99% complete. Final Completion for this project refers to all scheduled work, punch-list and closeout items being 100% complete.

F. The space below of the desired Substantial Completion Date has been left blank for insertion of Contractor's own desired Substantial Completion Date, if he feels that the desired date as stated in the specifications cannot be met. Insertion of a date by the bidder does not change the specified Substantial Completion Date unless the Owner chooses to accept the bidder's date when awarding the contract.
   1. Specified Substantial Completion Date: November 27, 2020, 5:00 p.m.
   2. Contractor's Desired Substantial Completion Date: _____.

G. Schedule of Prices: All bidders must complete the Schedule of Prices.
   1. The quantities appearing in the Schedule of Prices are approximate and are prepared for the comparison of bids. Payment to the Contractor will be made only for the actual quantities of work performed and accepted or materials furnished according to the contract. The scheduled quantities of work to be done and materials to be furnished may be increased, decreased or omitted as hereinafter provided.
   2. Each pay item should have a unit price and a total price. If no total price is shown or if there is a discrepancy between the product of the unit price multiplied by the quantity, the unit price shall govern. If a unit price is omitted, the total price will be divided by the quantity in order to establish a unit price.
   3. A bid will be declared unacceptable if neither a unit price nor a total price is shown.
   4. The undersigned submits herewith the schedule of prices covering the work to be performed under this contract.

RETURN WITH BID

Village of Hoffman Estates
Village Green Improvements - Phase I

SCHEDULE OF PRICES

Schedule for Single Bid
(For complete information covering these items, see plans and specifications)

Bidder's Proposal for making Entire Improvements	

Item No.	Items	Unit	Quantity	Unit Price	Total
A. GENERAL CONDITIONS:					
1	General Conditions	Lump Sum	1		
2	Insurance and Bonds	Lump Sum	1		
2	Testing Allowance	Lump Sum	1	**$7,500.00**	**$7,500.00**
3	Contingency Allowance	Lump Sum	1	**$100,000.00**	**$100,000.00**
B. SITE					
4	Traffic Control and Protection: Furnish, install, and maintain temporary signs and barricades on site and adjacent roadways.	Lump Sum	1		
C. SITE PROTECTION					
5	Furnish and install tree protection fencing.	Linear Feet	720		
6	Furnish, install, and maintain temporary 6' chain link construction fencing to secure site during construction.	Linear Feet	2,635		
7	Furnish and install erosion control fencing as shown on plan.	Linear Feet	2,170		
8	Furnish, install and remove stabilized construction entrance.	Lump Sum	1		
9	Furnish and install inlet filters at drainage structures as shown on the plans.	Each	5		
10	Furnish and install ditch checks as shown on the plans and as directed by the Engineer.	Linear Feet	205		
11	Furnish and plant temporary erosion control seeding.	Pounds	450		
D. SITE GRADING AND EXCAVATION:					
12	Strip and stockpile all topsoil within grading limits.	Cubic yard	2882		
13	Grading and excavation on-site - Perform all grading and excavation to obtain the proposed elevations as shown or noted on plans and in accordance with the specifications.	Cubic yard	4100		

Village of Hoffman Estates
Village Green Improvements - Phase I

SCHEDULE OF PRICES

14	Spread stockpiled topsoil 6" thick over all prepared subgrades within disturbed areas.	Cubic yard	2715		
15	Earthwork excavation and export - excavate, remove and dispose of excess material from site.	Cubic yard	2465		
E. DEMOLITION:					
16	Remove trees as noted on the plans including rootball and haul off site.	Each	49		
17	Sawcut, remove and dispose of portland cement concrete sidewalk full depth	Square Feet	3760		
18	Sawcut, remove and dispose of portland cement concrete curb and gutter	Linear Feet	36		
F. SITE DRAINAGE/UTILITIES :					
19	Furnish and install 12" Pipe Culvert - Advance Drainage System N12	Linear Feet	40		
20	Furnish and install 12" Flared End Section - Advance Drainage System N12	Each	2		
21	Remove existing 6" watermain and install new 6" DIP Watermain.	Linear Feet	101		
22	Remove existing 1.5" water service and install new 1.5" copper water service.	Linear Feet	65		
23	Adjust Water Valve and Box to new finished grade.	Each	1		
24	Trench Backfill for pipe culvert, watermain and water service under sidewalk areas.	Cubic yard	80		
25	Exploration Trench - Contractor to expose existing watermain and water service to verify depth. Work includes excavation and backfilling.	Linear Feet	175		
G. IRRIGATION					
26	Contractor shall provide all demolition, removals, design, labor, materials and equipment for the proper installation of an irrigation system to service Phase I Construction per the irrigation design specification. The Contractor shall design all zones for water supply, electrical service, and controllers.	Lump Sum	1		

Village of Hoffman Estates
Village Green Improvements - Phase I

SCHEDULE OF PRICES

H. SITE CONCRETE					
27	5" thick fiber reinforced concrete, including aggregate base. See detail.	Square Feet	7585		
28	12" x 12" integrally colored concrete band, including aggregate base. Color U37 as supplied by Butterfield Color or approved equal. See detail.	Linear Feet	162		
29	8" wide integrally colored concrete band, including aggregate base. Color U14 as supplied by Butterfield Color or approved equal. See detail.	Linear Feet	63		
30	8" thick fiber reinforced concrete, including aggregate base. See detail.	Square Feet	5496		
31	5" thick fiber reinforced integrally colored stamped concrete, including aggregate base. Pattern: Majestic Ashlar, color U28 as supplied by Butterfield Color or approved equal. See detail.	Square Feet	195		
32	B6.12 Curb	Linear Feet	25		
33	ADA ramp with detectable warning strip. See detail.	Each	2		
I. SITE FURNISHINGS:					
34	Furnish and install 48" Olivia Table Set with four chairs (#0OL06-CG91144-0000) or approved equal.	Each	4		
35	Furnish and install 48" Courtyard Table (#0CY13-4LF1000-0000) or approved equal.	Each	1		
36	Furnish and install Olivia Chairs (#0OL02-2000000-0000) or approved equal.	Each	3		
37	Furnish and install Umbrella (#RUMBA-6000000-0000) or approved equal with Umbrella Base (RBASE-8000000-0000).	Each	5		
38	Furnish and install Sentry II Flagpole Model #IRC30D62-ABL or approved equal.	Each	1		
39	Furnish and install detectable warning strip.	Each	2		
40	Furnish and install Bench #2806-6 by Columbia Cascade or approved equal.	Each	1		

Village of Hoffman Estates
Village Green Improvements - Phase I

SCHEDULE OF PRICES

J. TURF RESTORATION					
41	Fine grade, fertilize and seed all areas using a blended bluegrass seed as shown on the plans. Install with erosion control blanket. Apply at rate per manufacturer's instructions. See specifications.	Acre	4		
K. SITE LANDSCAPE PLANTINGS: (Furnish and install the following plant material as shown and noted on the plans)					
OVERSTORY TREES					
42	Acer freemanii 'Jeffersred'	4" bb	3		
43	Acer miyabei 'Morton'	3" bb	2		
44	Acer platanoides 'Crimson King'	3" bb	3		
45	Celtis occidentalis	3" bb	2		
46	Gleditsia tricanthos 'Skycole'	2.25" bb	2		
47	Platanus x acerfolia 'Morton Circle'	3" bb	4		
48	Tilia tormentosa 'Sterling'	2.5" bb	3		
49	Ulmus x 'Morton Glossy'	4" bb	2		
ORNAMENTAL TREES					
50	Crataegus crus-galli var. inermis	7' bb	3		
51	Magnolia x lilliflora 'Betty'	5' bb	3		
52	Malus x 'Profusion'	3" bb	1		
53	Pyrus calleryana 'Jackzam'	2.5" bb	3		
DECIDUOUS SHRUBS					
54	Spiraea x bumalda 'Denistar'	#05 (gal)	13		
55	Syringa pubescens subsp. patula 'Miss Kim'	30"bb	5		
56	Taxus x media 'Tauntonii	24" bb	11		
PERENNIALS/ORNAMENTAL GRASSES					
57	Alchemilla mollis	#01 (gal)	17		
58	Calamintha nepeta ssp.nepeta	#01 (gal)	43		
59	Coreopsis 'Moonbeam'	#01 (gal)	46		

Village of Hoffman Estates
Village Green Improvements - Phase I

SCHEDULE OF PRICES

60	Euonymus fortunei 'Coloratus'	3"	144		
61	Hemerocallis 'Happy Returns'	#01 (gal)	112		
62	Panicum virgatum 'Apache Rose'	#01 (gal)	25		
63	Pennisetum alopecuroides	#01 (gal)	46		
64	Salvia nemorosa 'East Friesland'	#01 (gal)	27		
65	Sesleria autumnalis	#01 (gal)	17		
NATIVE PLANTS					
66	Dalea purpurea	#01 (gal)	100		
67	Eyrngium yuccifolium	#01 (gal)	50		
68	Monarda fistulosa	#01 (gal)	100		
69	Panicum virgatum	#01 (gal)	80		
70	Rudbeckia hirta	#01 (gal)	50		
71	Schizachyrium scoparium	#01 (gal)	100		
72	Symphyotrichum nova-angliae	#01 (gal)	100		
73	Verbena stricta	3"	114		
74	Zizia aurea	#01 (gal)	50		
SUPPLIES					
75	Supply and install shredded hardwood cedar mulch at 3" deep within all planting beds.	Cubic yard	18		
76	Supply and install compost within all planting beds.	Cubic yard	4		
L. SITE ELECTRICAL					
77	All electrical work indicated on the electrical drawings.	Lump Sum	1		
M. MISCELLANEOUS					
78	Any work indicated in the drawings and specifications not specifically indicated in the schedule above.	Lump Sum	1		

SECTION 00300

BID FORM

FIRM NAME: _____

OFFICIAL ADDRESS: _____

Telephone Number: _____ Fax Number: _____

Email Address: _____

By: _____ Date: _____
(Signature)

_____
(Printed/Typed Name and Title)

Where the Bidder is a corporation, add Attest

_____ (SEAL)
Secretary (signature) Date

CERTIFIED OR CASHIERS CHECK, BID BOND, OR BANK DRAFT ENCLOSED IN THE FOLLOWING AMOUNT: $_____.

END OF BID FORM

SECTION 00410

BID BOND

1.1 BID BOND INFORMATION

A. KNOW ALL MEN BY THESE PRESENTS, THAT WE _____ as Principal, hereinafter called the Principal, and _____ a corporation duly organized under the laws of the State of Illinois as Surety, are held and firmly bound unto _____ as Obligee, hereinafter called Obligee, in the sum of _____ Dollars ($_____), for the payment of which sum well and truly to be made, the said Principal and the said Surety, bind ourselves, our heirs, executors, administrators, successors and assigns, jointly and severally, firmly by these presents.

B. WHEREAS, the Principal has submitted a bid for: Village Green Improvements-Phase 1.

C. NOW, THEREFORE, if the Obligee shall accept the bid of the Principal and the Principal shall enter into a Contract with the Obligee in accordance with the terms of such bid, and give such bond or bonds as may be specified in the bidding or Contract Documents with good and sufficient surety for the faithful performance of such Contract and for the prompt payment of labor and material furnished in the prosecution thereof; or in the event of the failure of the Principal to enter such Contract and give such bond or bonds, if the Principal shall pay to the Obligee the difference not to exceed the penalty hereof between the amount specified in said bid and such larger amount for which the Obligee may in good faith contract with another party to perform the Work covered by said bid, then this obligation shall be null and void, otherwise to remain in full force and effect.

D. The bid bond must comply with the rating level required for the performance and payment bond as stated in the AIA document A201.

Signed and sealed this _____ day of _____.

_____
(Principal) (SEAL)

_____ _____
(Witness) (Title)

_____
(Surety) (SEAL)

_____ _____
(Witness) (Title)

SECTION 00440

SUBSTITUTION SHEET

1.1 SUBSTITUTION INFORMATION

A. All bids shall be based upon the provisions of the proposed Contract Documents.

B. Bidders desiring to make substitutions for "proprietary brands" specified shall list such proposed substitutions below, together with the amount to be added or deducted from the amounts of their base bids.

C. The Owner reserves the right to reject all such substitutions, and such substitutions will not be used to determine the low bid.

D. Complete descriptions and technical data shall accompany all proposed substitutions.

E. NOTE: Manufacturer's names and material approved by the Architect during the bidding time, but not shown in Addenda, must be listed below if said material is to be considered.

F. BRAND/MAKE SPECIFED PROPOSED ADD DEDUCT

1. _____
2. _____
3. _____
4. _____
5. _____
6. _____
7. _____
8. _____
9. _____
10. _____
11. _____

NAME OF BIDDER: _____

DATE: _____.

END OF SECTION

SECTION 00485

CERTIFICATE OF COMPLIANCE WITH
ILLINOIS DRUG-FREE WORKPLACE ACT

1.1 CERTIFICATE OF COMPLIANCE WITH ILLINOIS DRUG-FREE WORKPLACE ACT INFORMATION

A. _____, Contractor, having 25 employees, does hereby certify pursuant to Section 3 of the Illinois Drug-Free Workplace Act (Ill. Rev. Stat. ch. 127 par. 132.313) 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 certified, 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.

B. Firm Name: _____

C. By: _____
(Authorized Agent of Contractor)

SECTION 00486

SUBSTANCE ABUSE PREVENTION POLICY

1.1 SUBSTANCE ABUSE PREVENTION POLICY

A. Pursuant to P.A. 95-0635 (the "Substance Abuse Prevention on Public Works Act"), employees of the Contractor and employees of any Subcontractor are prohibited from the use of drugs or alcohol, as defined in the Act, while performing work on any public works project.

Before the Contractor or Subcontractor commences work, the Contractor and any Subcontractor shall have in place a written Substance Abuse Prevention Program for the prevention of substance abuse among its employees which meets or exceeds the requirements in P.A. 95-0635 or shall have a collective bargaining agreement in effect dealing with the subject matter of P.A. 05-0635.

The Contractor and any Subcontractor shall file with the public body engaged in the construction of the public works: a copy of the substance abuse prevention program along with a cover letter certifying that their program meets the requirements of the Act or a letter certifying that the Contractor or Subcontractor has a collective bargaining agreement in effect dealing with the subject matter of this Act. A certification form is attached and must be completed by the Contractor and each Subcontractor to this Contract.

SECTION 00486

SUBSTANCE ABUSE PREVENTION POLICY

_____
(Date)

Village of Hoffman Estates
1900 Hassell Road
Hoffman Estates, Illinois 60169

Re: Substance Abuse Prevention Program

Pursuant to Public Act 95-0635, the undersigned hereby certifies that it is in compliance with the terms and provisions of the Substance Abuse Prevention on Public Works Act. In particular, the undersigned hereby represents and warrants to the Owner as follows:

[complete either A or B below]

A. The undersigned representative of the Contractor/Subcontractor certifies that the contracting entity has signed collective bargaining agreements that are in effect for all of its employees, and that deal with the subject matter of Public Act 95-0635.

_____
Contractor/Subcontractor (type or print)

_____
Name of Authorized Representative (type or print)

_____
Title of Authorized Representative (type or print)

Date: _____ _____
Signature of Authorized Representative

B. The undersigned representative of the Contractor/Subcontractor certifies that the contracting entity has in place for all of its employees not covered by a collective bargaining agreement that deals with the subject of the Act, the attached substance abuse prevention program that meets or exceeds the requirements of Public Act 95-0635 **[attach a copy of the program].**

_____
Contractor/Subcontractor (type or print)

_____
Name of Authorized Representative (type or print)

_____
Title of Authorized Representative (type or print)

Date: _____ _____
Signature of Authorized Representative

SECTION 00487

CERTIFICATE OF COMPLIANCE WITH ILLINOIS HUMAN RIGHTS ACT

1.1 CERTIFICATE OF COMPLIANCE WITH ILLINOIS HUMAN RIGHTS ACT INFORMATION

A. _____, Contractor, does hereby certify pursuant to P.A. 87-1257, the Illinois Human Rights Act, that(he, she, it) has adopted a written sexual harassment policy that includes at a minimum the following information: (i) the illegality of sexual harassment; (ii) the definition of sexual harassment under Illinois law; (iii) a description of sexual harassment, utilizing examples; (iv) an employer's internal complaint process, including penalty; (v) the legal recourse, investigative and complaint process available through the Department of Human Rights Commission; (vi) directions on how to contact the Department and Commission; and (vii) protection against retaliation as provided by Section 6-101 of the Illinois Human Rights Act.

B. Firm Name: _____

C. By: _____
(Authorized Agent of Contractor)

SECTION 00495

BIDDER ELIGIBILITY CERTIFICATION AND NON-COLLUSION AFFIDAVIT

1.1 BIDDER ELIGIBILITY CERTIFICATION AND NON-COLLUSION AFFIDAVIT INFORMATION

A. Public Act 85-1295 (Illinois Revised Statutes, 1987, ch. 38, art. 33E) 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.

B. The following certification must be signed and submitted with bidder's bid proposal. FAILURE TO DO SO WILL RESULT IN DISQUALIFICATION OF THE BIDDER.

1. _____, as part of its bid on
   (Name of Contractor)
2. Contract for – Village Green-Phase 1, hereby certifies that said contractor is not barred from bidding on the aforementioned contract as a result of a violation of either Section 33E 3 or 33E-4 of Article 33E of Chapter 38 of the Illinois Revised Statutes.
3. The undersigned further certifies and affirms that this proposal was prepared independently for this project and that it contains no fees or amounts other than for legitimate execution of this work as specified and that it includes no understandings or agreements in restraint of trade.

Firm Name: _____

By: _____
(Authorized Agent of Contractor)

_____
(Title)

Subscribe and sworn to before me

this _____ day of _____.

_____
(Notary Public)

SECTION 00496

FAIR EMPLOYMENT PRACTICES AFFIDAVIT OF COMPLIANCE

1.1 FAIR EMPLOYMENT PRACTICES AFFIDAVIT OF COMPLIANCE

A. THIS AFFIDAVIT MUST BE EXECUTED AND SUBMITTED WITH THE SIGNED CONTRACT FORM. NO CONTRACTS WILL BE ACCEPTED BY THE BOARD OF TRUSTEES OF THE VILLAGE UNLESS SAID AFFADIVIT IS SUBMITTED CONCURRENTLY WITH THE CONTRACT.

_____
(Name)

being first duly sworn, deposes and says that he/she is the

_____
(Title)

of _____
(Name of Company)

and that he/she has the authority to make the following affidavit that he/she has knowledge of the Village Bid Specifications and Documents relating to Fair Employment Practices and knows and understands the contents thereof: that he/she certifies hereby that is the policy of

_____
(Name of Company)

to recruit, hire. train, upgrade, promote and discipline its employees without regard to race, color, creed, religion, age, sex, or physical mental handicap; and that the Company has and enforces policies which prohibit sexual harassment in the workplace.

_____
(Signature)

SUBSCRIBED and sworn to before me

this _____ day of _____

_____
(Notary Public)

SECTION 00497

INDEMNITY HOLD HARMLESS AGREEMENT

1.1 INDEMNITY HOLD HARMLESS AGREEMENT

A. To the fullest extent permitted by law, the Contractor hereby agrees to defend, indemnify and hold harmless the Village, its officials, agents and employees against all injuries, deaths, loss, damages, claims, patent claims, suits, liabilities, judgments, cost and expenses, which may in anywise accrue against the Village, its officials, agents and employees, arising in whole or in part of in consequence of the performance of this work by the Contractor, its employees, or subcontractors, or which may in anywise result in therefore, except that arising out of the sole legal cause of the Village, its agents or employees, the Contractor shall, at its own expense, appear, defend and pay all charges of attorneys and all cost and other expenses arising therefore or incurred in connections therewith, and, if any judgment shall be rendered against the Village, its officials, agents and employees, in any such action, the Contractor shall, at its own expense, satisfy and discharge the same.

Contractor expresses, understands and agrees that any performance bond or insurance policies required by this contract, or otherwise provided by the Contractor, shall in no way limit the responsibility to indemnify, keep and save harmless and defend the Village, its officials, agents and employees as herein provided.

The Contractor further agrees that to the extent that money is due the Contractor, by virtue of this contract as shall be considered necessary in the judgment of the Village may be retained by the Village to protect itself against said loss until such claims, suits, or judgments shall have been settled or discharged and/or evidence to that extent shall have been furnished to the satisfaction of the Village.

CONTRACTOR:

_____
(Signature)

SUBSCRIBED and sworn to before me

this _____ day of _____

_____
(Notary Public)

SECTION 00700

GENERAL CONDITIONS

FORM OF GENERAL CONDITIONS

1.1 AIA Document A201, General Conditions of the Contract for Construction, 2017 Edition, attached, is the General Conditions between the Owner and Contractor.

1.2 AIA Document A101-Exhibit A, Insurance and Bonds, 2017 Edition, attached, is the Insurance and Bonds requirements, for the Owner and Contractor, for the project.

1.3 A Letter of Intent to Award a Construction Contract will be issued to the approved contractor upon approval of the Owner. This Letter of Intent shall serve as the Notice to proceed and the Contract for Construction, with all the terms and conditions referenced in the contract documents, until the contract, referenced above, has been fully executed. The awarded contractor shall begin all construction services as specified upon receipt of this Letter of Intent.

END OF SECTION

DRAFT

AIA® Document A201™ – 2017

General Conditions of the Contract for Construction

for the following PROJECT:
(Name and location or address)

Village of Hoffman Estates - ~~General~~»Village Green Improvements – Phase I[JP1]
«~~REVISED 07142020~~ 07282020 »

THE OWNER:
(Name, legal status and address)

«Village of Hoffman Estates
1900 Hassell Road
Hoffman Estates, Illinois 60169
Telephone Number: (847) 882-9100
Fax Number: (847) 781-2679»

THE ARCHITECT:
(Name, legal status and address)

« «Tria Architecture, Inc.»« »
«901 McClintock Drive, Suite 100
Burr Ridge, Illinois 60527»

TABLE OF ARTICLES

ADDITIONS AND DELETIONS: The author of this document has added information needed for its completion. The author may also have revised the text of the original AIA standard form. An *Additions and Deletions Report* that notes added information as well as revisions to the standard form text is available from the author and should be reviewed.

This document has important legal consequences. Consultation with an attorney is encouraged with respect to its completion or modification.

For guidance in modifying this document to include supplementary conditions, see AIA Document A503™, Guide for Supplementary Conditions.

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14 TERMINATION OR SUSPENSION OF THE CONTRACT

15 CLAIMS AND DISPUTES

INDEX
(Topics and numbers in bold are Section headings.)

ARTICLE 1 GENERAL PROVISIONS

§ 1.1 Basic Definitions

§ 1.1.1 The Contract Documents

The Contract Documents consist of the Invitation to Bid, Instruction to Bidders, Bid Form, Agreement between Owner and Contractor (hereinafter the Agreement), Conditions of the Contract (General, Supplementary and other Conditions), Drawings, Schedules, Specifications, Addenda issued prior to execution of the Contract, other documents listed in the Agreement, and Modifications issued after execution of the Contract. A Modification is (1) a written amendment to the Contract signed by both parties, (2) a Change Order, (3) a Construction Change Directive, (4) an Architect's Supplemental Instruction, or (5) a written order for a minor change in the Work issued by the Architect.

§ 1.1.2 The Contract

The Contract Documents form the Contract for Construction. The Contract represents the entire and integrated agreement between the parties hereto and supersedes prior negotiations, representations, or agreements, either written or oral. The Contract may be amended or modified only by a Modification. The Contract Documents shall not be construed to create a contractual relationship of any kind (1) between the Contractor and the Architect or the Architect's consultants, (2) between the Owner and a Subcontractor or a Sub-subcontractor, (3) between the Owner and the Architect or the Architect's consultants, or (4) between any persons or entities other than the Owner and the Contractor. The Architect shall, however, be entitled to performance and enforcement of obligations under the Contract intended to facilitate performance of the Architect's duties.

§ 1.1.3 The Work

The term "Work" means the construction and services required by the Contract Documents, whether completed or partially completed, and includes all other labor, materials, equipment, and services provided or to be provided by the Contractor to fulfill the Contractor's obligations. The Work may constitute the whole or a part of the Project.

§ 1.1.4 The Project

The Project is the total construction of which the Work performed under the Contract Documents may be the whole or a part and which may include construction by the Owner and by Separate Contractors.

§ 1.1.5 The Drawings

The Drawings are the graphic and pictorial portions of the Contract Documents showing the design, location and dimensions of the Work, generally including plans, elevations, sections, details, schedules, and diagrams. Figured dimensions shall be followed in preference to measurements by scale. All dimensions shall be checked against field measurements of existing conditions to be taken by the Contractor.

§ 1.1.6 The Specifications

The Specifications are that portion of the Contract Documents consisting of the written requirements for materials, equipment, systems, standards and workmanship for the Work, and performance of related services.

§ 1.1.7 Instruments of Service

Instruments of Service are representations, in any medium of expression now known or later developed, of the tangible and intangible creative work performed by the Architect and the Architect's consultants under their respective professional services agreements. Instruments of Service may include, without limitation, studies, surveys, models, sketches, drawings, specifications, and other similar materials.

§ 1.1.8 Initial Decision Maker

The Initial Decision Maker is the person identified in the Agreement to render initial decisions on Claims in accordance with Section 15.2. The Initial Decision Maker shall not show partiality to the Owner or Contractor and shall not be liable for results of interpretations or decisions rendered in good faith.

§ 1.1.9 In the event that the Owner retains a Construction Manager at Risk for the Project, the term "Contractor" as used herein shall refer to the Contractor or Construction Manager at Risk.

§ 1.2 Correlation and Intent of the Contract Documents

§ 1.2.1 The intent of the Contract Documents is to include all items necessary for the proper execution and completion of the Work by the Contractor and items reasonably inferable therefrom. The Contract Documents are complementary, and what is required by one shall be as binding as if required by all.

§ 1.2.1.1 The invalidity of any provision of the Contract Documents shall not invalidate the Contract or its remaining provisions. If it is determined that any provision of the Contract Documents violates any law, or is otherwise invalid or unenforceable, then that provision shall be revised to the extent necessary to make that provision legal and enforceable. In such case the Contract Documents shall be construed, to the fullest extent permitted by law, to give effect to the parties' intentions and purposes in executing the Contract.

§ 1.2.1.2 Where conflicts exist within or between parts of the Contract Documents, or between the Contract Documents and applicable standards, codes and ordinances, the Contractor shall seek a clarification in writing from the Architect. In the event that the Architect does not respond within fourteen (14) days, the more stringent or higher quality or greater quantity requirements shall apply.

§ 1.2.1.3 Large-scale drawings take precedence over small-scale drawings, figured dimensions over scaled dimensions and noted materials over graphic representations. Words in singular shall include a plural whenever applicable, or the context so indicates.

§ 1.2.2 Organization of the Specifications into divisions, sections and articles, and arrangement of Drawings shall not control the Contractor in dividing the Work among Subcontractors or in establishing the extent of Work to be performed by any trade.

§ 1.2.3 Unless otherwise stated in the Contract Documents, words that have well-known technical or construction industry meanings are used in the Contract Documents in accordance with such recognized meanings.

§ 1.2.3.1 In the event of conflicts or discrepancies among the Contract Documents, interpretations will be based on the following priorities: 1) The Agreement, 2) Addenda, with those of later date having precedence over those of earlier date, 3) The General Conditions of the Contract for Construction, 4) Drawings and Specifications.

§ 1.3 Capitalization

Terms capitalized in these General Conditions include those that are (1) specifically defined, (2) the titles of numbered articles, or (3) the titles of other documents published by the American Institute of Architects.

§ 1.4 Interpretation

In the interest of brevity the Contract Documents frequently omit modifying words such as "all" and "any" and articles such as "the" and "an," but the fact that a modifier or an article is absent from one statement and appears in another is not intended to affect the interpretation of either statement. The descriptive headings of this Agreement are inserted for convenience only and shall not control or affect the meaning or construction of any provisions following them.

§ 1.5 Ownership and Use of Drawings, Specifications, and Other Instruments of Service

§ 1.5.1 The Architect and the Architect's consultants shall be deemed the authors and owners of their respective Instruments of Service, including the Drawings and Specifications, and retain all common law, statutory, and other reserved rights in their Instruments of Service, including copyrights. The Contractor, Subcontractors, Sub-subcontractors, and suppliers shall not own or claim a copyright in the Instruments of Service. Submittal or distribution to meet official regulatory requirements or for other purposes in connection with the Project is not to be construed as publication in derogation of the Architect's or Architect's consultants' reserved rights.

§ 1.5.2 The Contractor, Subcontractors, Sub-subcontractors, and suppliers are authorized to use and reproduce the Instruments of Service provided to them, subject to any protocols established pursuant to Sections 1.7 and 1.8, solely and exclusively for execution of the Work. All copies made under this authorization shall bear the copyright notice, if any, shown on the Instruments of Service. The Contractor, Subcontractors, Sub-subcontractors, and suppliers may not use the Instruments of Service on other projects or for additions to the Project outside the scope of the Work without the specific written consent of the Owner, Architect, and the Architect's consultants.

§ 1.6 Notice

§ 1.6.1 Except as otherwise provided in Section 1.6.2, where the Contract Documents require one party to notify or give notice to the other party, such notice shall be provided in writing to the designated representative of the party to whom the notice is addressed and shall be deemed to have been duly served if delivered in person, by mail, by courier, or by electronic transmission if a method for electronic transmission is set forth in the Agreement.

§ 1.6.2 Notice of Claims as provided in Section 15.1.3 shall be provided in writing and shall be deemed to have been duly served only if delivered to the designated representative of the party to whom the notice is addressed by certified or registered mail, or by courier providing proof of delivery.

§ 1.7 Digital Data Use and Transmission

The parties shall agree upon protocols governing the transmission and use of Instruments of Service or any other information or documentation in digital form. The parties will use AIA Document E203™–2013, Building Information Modeling and Digital Data Exhibit, to establish the protocols for the development, use, transmission, and exchange of digital data.

§ 1.8 Building Information Models Use and Reliance

Any use of, or reliance on, all or a portion of a building information model without agreement to protocols governing the use of, and reliance on, the information contained in the model and without having those protocols set forth in AIA Document E203™–2013, Building Information Modeling and Digital Data Exhibit, and the requisite AIA Document G202™–2013, Project Building Information Modeling Protocol Form, shall be at the using or relying party's sole risk and without liability to the other party and its contractors or consultants, the authors of, or contributors to, the building information model, and each of their agents and employees.

ARTICLE 2 OWNER

§ 2.1 General

§ 2.1.1 The Owner is the person or entity identified as such in the Agreement and is referred to throughout the Contract Documents as if singular in number. The Owner shall designate in writing a representative who shall have express authority to bind the Owner with respect to all matters requiring the Owner's approval or authorization. Except as otherwise provided in Section 4.2.1, the Architect does not have such authority. The term "Owner" means the Owner or the Owner's authorized representative.

§ 2.2 Information and Services Required of Owner

§ 2.2.1 All permits and fees shall be obtained and paid for by the Contractor under the Contract Documents. The Contractor shall also be responsible to obtain all temporary permits including, but not limited to, demolition and canopy permits required to execute the Work

§ 2.2.2 The Owner shall retain an architect lawfully licensed to practice architecture, or an entity lawfully practicing architecture, in the jurisdiction where the Project is located. That person or entity is identified as the Architect in the Agreement and is referred to throughout the Contract Documents as if singular in number.

§ 2.2.3 If the employment of the Architect terminates, the Owner shall employ a successor whose status under the Contract Documents shall be that of the Architect.

§ 2.3.1 Surveys. The Owner shall furnish surveys describing physical characteristics, legal limitations and utility locations for the site of the Project, and a legal description of the site. The Contractor shall be entitled to rely on the accuracy of information furnished by the Owner but shall exercise proper precautions relating to the safe performance of the Work.

§ 2.3.2 The Owner shall furnish information or services required of the Owner by the Contract Documents with reasonable promptness. The Owner shall also furnish any other information or services under the Owner's control and relevant to the Contractor's performance of the Work with reasonable promptness after receiving the Contractor's written request for such information or services.

§ 2.3.3 Unless otherwise provided in the Contract Documents, the Owner shall furnish to the Contractor one copy of the Contract Documents for purposes of making reproductions pursuant to Section 1.5.2.

§ 2.4 Owner's Right to Stop the Work

If the Contractor fails to correct Work that is not in accordance with the requirements of the Contract Documents as required by Section 12.2 or repeatedly fails to carry out Work in accordance with the Contract Documents, the Owner may issue a written order to the Contractor to stop the Work, or any portion thereof, until the cause for such order has been eliminated; however, the right of the Owner to stop the Work shall not give rise to a duty on the part of the Owner

to exercise this right for the benefit of the Contractor or any other person or entity, except to the extent required by Section 6.1.3.

§ 2.5 Owner's Right to Carry Out the Work

If the Contractor defaults or neglects to carry out the Work in accordance with the Contract Documents and fails within a seven-day (7) period after receipt of notice from the Owner to commence and continue correction of such default or neglect with diligence and promptness, the Owner may immediately, without prejudice to other remedies the Owner may have, correct such default or neglect. In such case, an appropriate Change Order shall be issued deducting from payments then or thereafter due the Contractor, the cost of correcting such deficiencies, including but not limited to, attorney's fees, compensation for the Architect's additional services and expenses incurred in connection with such default, neglect or failure. Said Change Order shall be deemed signed by the Contract for the purposes stated in Section 7.2.1 even if the Contractor fails to physically sign such Change Order. If payments then or thereafter due the Contractor are not sufficient to cover such amounts, at the Owner's option, the excess shall be deducted from any payment thereafter due or shall be paid by the Contractor immediately upon demand of the Owner. This right shall be in addition to and not in restriction or derogation of the Owner's rights under Article 14 hereof.

§ 2.6 ADDITIONAL RIGHTS

The rights stated in Article 2 shall be in addition and not in limitation of any other rights of the Owner granted in the Contract Documents or at law or in equity.

ARTICLE 3 CONTRACTOR

§ 3.1 General

§ 3.1.1 The Contractor is the person or entity identified as such in the Agreement and is referred to throughout the Contract Documents as if singular in number. The Contractor shall be lawfully licensed, if required in the jurisdiction where the Project is located. The Contractor shall designate in writing a representative who shall have express authority to bind the Contractor with respect to all matters under this Contract. The term "Contractor" means the Contractor or the Contractor's authorized representative.

§ 3.1.2 The Contractor shall perform the Work in accordance with the Contract Documents.

§ 3.1.3 The Contractor shall not be relieved of its obligations to perform the Work in accordance with the Contract Documents either by activities or duties of the Architect in the Architect's administration of the Contract, or by tests, inspections or approvals required or performed by persons or entities other than the Contractor.

§ 3.2 Review of Contract Documents and Field Conditions by Contractor

§ 3.2.1 Execution of the Contract by the Contractor is a representation that the Contractor has visited the site, has inspected the local conditions under which the Work is to be performed, and has reviewed the Contract Documents, and correlated personal observations and inspections, and the bid, with all of the requirements of the Contract Documents.

§ 3.2.1.1 It shall be the duty of the Contractor to verify all dimensions given on the Drawings, and to report any error or inconsistency to the Architect before commencing Work.

§ 3.2.1.2 If the Contractor finds any details, construction procedures or materials shown on the Drawings or called for in the Specifications which the Contractor believes may not be satisfactory for the use shown, the Contractor shall so notify the Architect at least five (5) days before bids are due. Signing of the Agreement and starting the Work by the Contractor shall indicate the Contractor agreement with all details, construction procedures, and materials so shown and/or specified and shall indicate the Contractor's willingness to construct the Project in strict accordance with the Contract Documents and to guarantee the Project in full compliance with the warranty provisions of the Contract Documents. By executing this Agreement, the Contractor further acknowledges that it has satisfied itself as to the nature and location of the Work, the general and local conditions under which the Work is to be performed, including those bearing upon transportation, disposal, handling and storage of materials availability of labor, water, electric power, roads and uncertainties of weather, ground water table or similar physical conditions of the ground, the character, quality and quantity of surface and subsurface materials to be encountered, the character of equipment and facilities needed prior to and during the prosecution of the Work, and all other matters which can in any way affect the Work or the cost thereof . Any failure by the Contractor to become acquainted with all the available information concerning these conditions will not relieve the Contractor from any obligations with respect to the Contract Documents.

§ 3.2.1.3 If Work is required in a manner that makes it impossible to produce the quality required by the Contract Documents, or should discrepancies appear among the Contract Documents, the Contractor shall request in writing an interpretation from the Architect before proceeding with the Work. The Contractor shall perform the work at no additional cost to the Owner in accordance with the Architect's determination.

§ 3.2.2 Because the Contract Documents are complementary, the Contractor shall, before starting each portion of the Work, carefully study and compare the various Contract Documents relative to that portion of the Work, as well as the information furnished by the Owner pursuant to Section 2.3.4, shall take field measurements of any existing conditions related to that portion of the Work, and shall observe any conditions at the site affecting it. The Contractor shall promptly report to the Owner and the Architect any errors, omissions, or inconsistencies in the Contract Documents. The Contractor shall not be liable to the Owner or Architect for damage resulting from errors, inconsistencies, or omissions in the Contract Documents unless the Contractor recognized or should have recognized such error, inconsistency, or omission, and failed to report it to the Architect, in which case the Contractor shall not be entitled to an increase in the Contract Sum or Contract Time and the Contractor shall bear all attributable costs for correction. The Contractor agrees to release and hold harmless the Owner for errors, inconsistencies or omissions in the Contract Document which should have been discovered by the Contractor.

§ 3.2.3 The Contractor shall verify the accuracy of all grades, elevations, existing conditions, dimensions and locations. In all cases of interconnection of the Contractor's Work with existing or other work, the Contractor shall verify at the site all dimensions relating to such existing or other work. Any errors due to the Contractor's failure to so verify all such grades, elevations, existing conditions, locations or dimensions shall be promptly rectified by him without extra cost to the Owner. Neither the Owner nor the Architect guarantee the exactness of grades, elevations, dimensions, existing conditions or locations given on any drawings issued by the Architect or work installed by other contractors.

§ 3.2.4 If the Contractor believes that additional cost or time is involved because of clarifications or instructions the Architect issues in response to the Contractor's notices or requests for information pursuant to Sections 3.2.2 or 3.2.3, the Contractor shall submit Claims as provided in Article 15. If the Contractor fails to perform the obligations of Sections 3.2.2 or 3.2.3, the Contractor shall pay such costs and damages to the Owner, subject to Section 15.1.7, as would have been avoided if the Contractor had performed such obligations. If the Contractor performs the obligations in Sections 3.2.2 and 3.2.3, the Contractor shall not be liable to the Owner or Architect for damages resulting from errors, inconsistencies, or omissions in the Contract Documents or for differences between field measurements or conditions and the Contract Documents, unless the Contractor recognized or should have recognized the error, inconsistency, omission, or difference and failed to report it.

§ 3.2.5 In no event shall the Architect or Owner have control over, charge of, or any responsibility for construction means, methods, techniques, sequences, or procedures or for safety precautions and programs in connection with this Work, notwithstanding any of the rights and authority granted the Owner in the Contract Documents.

§ 3.3 Supervision and Construction Procedures

§ 3.3.1 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 control over, construction means, methods, techniques, sequences, and procedures, and for coordinating all portions of the Work under the Contract. If the Contract Documents give specific instructions concerning construction means, methods, techniques, sequences, or procedures, the Contractor shall evaluate the jobsite safety thereof and shall be solely responsible for the jobsite safety of such means, methods, techniques, sequences, or procedures. If the Contractor determines that such means, methods, techniques, sequences or procedures may not be safe, the Contractor shall give timely notice to the Owner and Architect, and shall propose alternative means, methods, techniques, sequences, or procedures. The Architect shall evaluate the proposed alternative solely for conformance with the design intent for the completed construction. Unless the Architect objects to the Contractor's proposed alternative, the Contractor shall perform the Work using its alternative means, methods, techniques, sequences, or procedures. The Contractor shall review any construction or installation procedure (including those recommended by any product manufacturer). The Contractor shall provide written notice to the Architect:

(a) If a specified product deviates from good construction practices.
(b) If following the Specifications will affect any warranties.

(c) Any objections which the Contractor may have to the Specifications.

The responsibilities imposed on the Contractor by this Section shall be in addition to, and not be limited by, any and all other provisions of these Contract Documents.

§ 3.3.2 The Contractor shall engage workmen who are skilled in performing the Work and all Work shall be performed with care and skill and in a good workmanlike manner under the full time supervision of the approved superintendent described in Section 3.9.3. The Contractor shall be liable for all property damage including repairs or replacement of the Work and economic losses which proximately result from the breach of this duty. The Contractor shall be responsible to the Owner for the acts and omissions of the Contractor's employees, Subcontractors and their agents and employees, and any other persons or entities performing portions of the Work for, or on behalf of, the Contractor or any of its Subcontractors or claiming by, through or under the Contractor, and for any damages, losses, costs and expenses resulting from such acts or omissions.

§ 3.3.3 The Contractor shall be responsible for inspection of portions of Work already performed to determine that such portions are in proper condition to receive subsequent Work.

§ 3.3.4 The Contractor shall not be relieved of obligations to perform the Work in accordance with the Contract Documents either by activities or duties of the Architect in the Architect's administration of the Contract, or by tests, inspections or approvals required of or performed by persons other than the Contractor.

§ 3.3.5 The Contractor shall coordinate all portions of the work with separate Owner-employed contractors, if any.

§ 3.3.6 The Contractor shall assign a competent, technically-trained office project manager to the Project who shall perform all office functions including checking, approving and coordinating shop drawings and approving purchasing and disbursement pay-out requests and correspondence, and responding to Owner inquiries.

§ 3.4 Labor and Materials

§ 3.4.1 Unless otherwise provided in the Contract Documents, the Contractor shall provide and pay for labor, materials, equipment, tools, construction equipment and machinery, water, heat, utilities, transportation, and other facilities and services necessary for proper execution and completion of the Work, whether temporary or permanent and whether or not incorporated or to be incorporated in the Work.

§ 3.4.2 **Substitutions:** Before or after the 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 and with the Owner's approval, that a substitution would be substantially to the Owner's best interests, in terms of cost, time, or other considerations.

By making requests for substitutions hereunder, the Contractor:

.1 represents that the Contractor has personally investigated the proposed substitute product and determined that it is equal or superior in all respects to that specified;
.2 represents that the Contractor will provide the same warranty for the substitution that the Contractor would for that specified;
.3 certifies that the cost data presented is complete and includes all related costs under this Contract except the Architect's redesign costs, and waives all claims for additional costs related to the substitution which subsequently become apparent; and

.4 will coordinate the installation of the accepted substitute, making such changes as may be required for the Work to be complete in all respects.

§ 3.4.2.1 Substitution requests shall be written, timely and accompanied by adequate technical, cost data and information to satisfy one or more conditions above. Requests shall include a complete description of the proposed substitution, name of the material or equipment for which it is to be substituted, drawings, cut sheets, performance and test data and any other data or information necessary for a complete evaluation by the Architect.

§ 3.4.2.2 The Contractor may make a substitution only upon the written consent of the Owner, after evaluation by the Architect and in accordance with a Change Order or Construction Change Directive.

§ 3.4.3 The Contractor shall enforce strict discipline and good order among the Contractor's employees and other persons carrying out the Work. The Contractor shall not permit employment of unfit persons or persons not properly skilled in tasks assigned to them. The Contractor shall be responsible for any damages to property or injuries to persons, or to any other harm, caused by the Contractor's employees.

§ 3.4.4 After the Agreement has been executed, the Owner and the Architect will consider a formal request for the substitution of products in place of those specified only under the conditions set forth in Section 7.5.

§ 3.5 Warranty

§ 3.5.1 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 which 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 in the Owner's sole discretion. Inability 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.

§ 3.5.2 Unless a specific guarantee is required in a particular division of the Specifications that is longer in duration than one (1) year from the date of Final Completion, the Work shall be guaranteed by the Contractor against defects in material and workmanship for a period of one (1) year from the date of Final Completion (date of issuance of final payment to the Contractor).

§ 3.5.3 All material, equipment, or other special warranties required by the Contract Documents shall be issued in the name of the Owner, or shall be transferable to the Owner, and shall commence in accordance with Section 9.8.4.

§ 3.6 Taxes

Retail sales tax shall not be included in the bid amount. The Owner is exempted by Section 3 of the Illinois Use Tax Act (Section 3, House Bill 1610, approved July 31, 1961, Illinois Revised Statutes 1967, Chapter 120, Section 439.3) from paying any of the taxes imposed by the Act and sales to Owner are exempt by Section 2, House Bill 1609, approved July 31, 1961, Illinois Revised statutes 1967, Chapter 120, Section 441) from any of the taxes imposed by the Act. The Department of Revenue of the State of Illinois under Rule No. 15, issued August 9, 1961, has declared that sales of materials to construction contractors for conversion into real estate for schools, governmental bodies, agencies and instrumentalities are not taxable retail sales. The Contractor shall be responsible for any sales, consumer, use and similar taxes for the Work.

§ 3.7 Permits, Fees, Notices and Compliance with Laws

§ 3.7.1 The Contractor shall secure all permits, licenses and inspections necessary for proper execution and completion of the Work which are customarily secured after execution of the Contract and which are legally required when bids are received.

§ 3.7.1.1 All cash deposits, bonds, fees, inspections, licenses, or permit fees shall be paid for by the Contractor.

§ 3.7.1.2 Prior to submission of all applications for permits, licenses or inspections the Contractor shall submit a copy of the application or written notice to the Owner for approval.

§ 3.7.2 The Contractor shall comply with and give notices required by applicable laws, statutes, ordinances, codes, rules and regulations, and lawful orders of public authorities applicable to performance of the Work.

§ 3.7.3 If the Contractor observes or believes that portions of the Contract Documents are at variance with applicable laws, statutes, ordinances, building codes, and rules and regulations, the Contractor shall promptly notify the Architect and Owner in writing for clarification by the Architect. If the Contractor performs Work knowing it to be contrary to any applicable laws, statutes, ordinances, codes, rules and regulations, or lawful orders of public authorities, the Contractor shall assume appropriate responsibility for such Work and shall bear the cost, damages, losses and expenses attributable to correction.

§ 3.7.4 Concealed or Unknown Conditions

If the Contractor encounters conditions at the site that are (1) subsurface or otherwise concealed physical conditions that differ materially from those indicated in the Contract Documents or (2) unknown physical conditions of an unusual nature that differ materially from those ordinarily found to exist and generally recognized as inherent in construction activities of the character provided for in the Contract Documents, the Contractor shall promptly provide notice to the Owner and the Architect before conditions are disturbed.. The Architect will promptly investigate such conditions and, if the Architect determines that they differ materially and cause an increase or decrease in the Contractor's cost of, or time required for, performance of any part of the Work, will recommend that an equitable adjustment be made in the Contract Sum or Contract Time, or both. If the Architect determines that the conditions at the site are not materially different from those indicated in the Contract Documents and that no change in the terms of the Contract is justified, the Architect shall promptly notify the Owner and Contractor, stating the reasons. If either party disputes the Architect's determination or recommendation, that party may submit a Claim as provided in Article 15. The site conditions contemplated by this Section include, but are not limited to, materials containing asbestos, polychlorinated biphenyl (PCB), or hazardous materials as defined in the Contract Documents.

§ 3.7.5 If, in the course of the Work, the Contractor encounters human remains or recognizes the existence of burial markers, archaeological sites or wetlands not indicated in the Contract Documents, the Contractor shall immediately suspend any operations that would affect them and shall notify the Owner and Architect. Upon receipt of such notice, the Owner shall promptly take any action necessary to obtain governmental authorization required to resume the operations. The Contractor shall continue to suspend such operations until otherwise instructed by the Owner but shall continue with all other operations that do not affect those remains or features. Requests for adjustments in the Contract Sum and Contract Time arising from the existence of such remains or features may be made as provided in Article 15.

§ 3.8 Allowances

§ 3.8.1 The Contractor shall include in the Contract Sum all allowances stated in the Contract Documents. Items covered by allowances shall be supplied for such amounts and by such persons or entities as the Owner may direct, but the Contractor shall not be required to employ persons or entities to whom the Contractor has reasonable objection.

§ 3.8.2 Unless otherwise provided in the Contract Documents,

.1 allowances shall cover the cost to the Contractor of materials and equipment delivered at the site and all required taxes, less applicable trade discounts;

.2 Contractor's costs for unloading and handling at the site, labor, installation costs, overhead, profit, and other expenses contemplated for stated allowance amounts shall be included in the Contract Sum but not in the allowances; and

.3 whenever costs are more than or less than allowances, the Contract Sum shall be adjusted accordingly by Change Order. The amount of the Change Order shall reflect (1) the difference between actual costs and the allowances under Section 3.8.2.1 and (2) changes in Contractor's costs under Section 3.8.2.2.

§ 3.8.3 Materials and equipment under an allowance shall be selected by the Owner with reasonable promptness.

§ 3.9 Superintendent

§ 3.9.1 The Contractor shall employ a competent superintendent fluent in the English language and necessary assistants who shall be in attendance at the Project site during performance of the Work. The superintendent shall represent the Contractor, and communications given to the superintendent shall be as binding as if given to the Contractor. Important communications by the superintendent shall be confirmed in writing. Other communications by the superintendent shall be similarly confirmed on written request in each case. Failure of the superintendent to

supervise the job properly shall be deemed as a default by the Contractor under the Contract Documents as determined by the Owner with the advice of the Architect.

§ 3.9.2 The Contractor, as soon as practicable after award of the Contract, shall notify the Owner and Architect of the name and qualifications of a proposed superintendent. If the Owner has any objection to the proposed superintendent, the Owner shall notify the Contractor in writing within seven (7) days of its objection, and the Contractor shall propose a replacement.

§ 3.9.3 The Contractor shall not employ a proposed superintendent to whom the Owner or Architect has made reasonable and timely objection. The Contractor shall not change the superintendent without the Owner's and Architect's written consent.

§ 3.9.4 The Contractor's superintendent must be dedicated solely to the Project and must be at the Project site at all times that Work is being performed at the site, whether the Work is performed by the Contractor's own forces or by any subcontractors. The superintendent must be at the Project site from the first day of on-site activities until a minimum of thirty (30) days after the date of Substantial Completion until all punch list items have been completed. Failure by the Contractor to provide full-time on-site supervision shall constitute grounds for termination of the Contract Documents by the Owner with seven days written notice.

§ 3.10 Contractor's Construction and Submittal Schedules

§ 3.10.1 The Contractor, promptly after being awarded the Project, shall prepare and submit for the Owner's and Architect's review its Construction Schedule for the Work of the Contractor. Such Construction Schedule shall not exceed the completion dates, delivery dates or time limits required in the Contract Documents. The Construction Schedule shall be revised by the Contractor at appropriate intervals as required by the conditions of the Work and Project, and shall provide for expeditious execution of the Work and shall be submitted to the Owner and Architect for review and approval. The schedule shall contain detail appropriate for the Project, including (1) the date of commencement of the Work, interim schedule milestone dates, and the date of Substantial Completion; (2) an apportionment of the Work by construction activity; and (3) the time required for completion of each portion of the Work. The schedule shall provide for the orderly progression of the Work to completion and shall not exceed time limits current under the Contract Documents. The schedule shall be revised at appropriate intervals as required by the conditions of the Work and Project.

§ 3.10.2 The Contractor shall prepare and keep current, for the Architect's record only, a schedule of submittals (the "Submittal Schedule") which is coordinated with the approved Construction Schedule and allows the Architect reasonable time, as indicated in the Contract Documents, to review submittals. Neither the Contractor's preparation of the Submittal Schedule nor the Architect's receipt or review shall modify the Contractor's responsibility to make required submittals or to do so in a timely manner to provide for review in accordance with Section 4.2.7 as modified herein.

§ 3.10.3 The Contractor shall perform the Work in general accordance with the most recent schedules submitted to the Owner and Architect. The Owner's or Architect's failure to object to a submitted schedule that exceeds time limits current under the Contract Documents shall not relieve the Contractor of its obligations to meet 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 failure to object 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.

§ 3.10.4 At the time of each Application for Payment, the Contractor shall provide to the Owner and the Architect an update on the Project schedule and a written status report, which includes a description of the progress of the Work and if progress is behind schedule, the Contractor's plan to recover the Work to meet the approved Construction Schedule. The report shall also include a summary of the Contractor's meetings with subcontractors.

§ 3.10.5 The Contractor shall hold meetings at least weekly (or at such intervals as are otherwise acceptable to the Owner and Architect) at the site. The Contractor shall provide the subcontractors, Architect and the Owner with a meeting schedule. The Contractor shall require subcontractors currently working at the site(s) to have a representative present for such meetings.

§ 3.10.6 Within twenty-one (21) days of the award of the Project, the Contractor shall provide a written report to the Architect and the Owner that includes a list of the Contractor's suppliers, a list of materials and equipment to be purchased from suppliers and fabricators, the time required for fabrication, and the scheduled delivery dates for materials and equipment. Copies of the Contractor's purchase orders shall be delivered to the Architect and the Owner as soon as possible after receipt by the Contractor.

§ 3.11 Documents and Samples at the Site

The Contractor shall make available, at the Project site, the Contract Documents, including Change Orders, Construction Change Directives, and other Modifications, in good order and marked currently to indicate field changes and selections made during construction, and the approved Shop Drawings, Product Data, Samples, and similar required submittals. These shall be in electronic form or paper copy, available to the Architect and Owner, and along with all operating manuals for all equipment, shall be available to the Architect at all times and delivered to the Architect for submittal to the Owner after completion of the Work but before the final Application for Payment.

§ 3.11.1 The Contractor shall maintain at the site(s) one set of record drawings for the Owner and Architect of the as built plans and specifications for concealed work, particularly concealed piping and conduit. Any deviations from conditions shown on the Contract Drawings shall be shown and dimensioned on these record drawings. The Contractor shall develop layout drawings for concealed work that is schematically indicated on Contract Drawings in order to have dimensioned layouts of such concealed work. This requirement does not authorize any deviations without approval of the Architect.

§ 3.11.1.1 The field information in the record drawings to be so marked shall include at a minimum:

(1) Significant deviations of any nature made during construction;

(2) Location of underground mechanical and electrical services, utilities, and appurtenances, referenced to permanent surface improvements.

(3) Location of mechanical and electrical services, utilities, and appurtenances that are concealed in the building, referenced to accessible features of the building.

§ 3.11.2 The Contractor shall maintain and shall require its subcontractors to maintain at the site(s) an accurate record of deviations and changes in the Work from the Contract Documents; shall indicate all such deviations and changes on reproducible transparencies of the Contract Documents; and shall turn over to the Architect upon completion of the Work all such record drawings, documents and information, such as final shop drawings and sketches, marked prints and similar data indicating the as-built conditions. Plumbing, HVAC and Electrical Contractors/Subcontractors shall be required to record all changes or deviations in the work from the Contract Documents. . The cost of recording and transferring the changes or deviations to the transparencies shall be included in the Contract Sum for the respective Work. The as-built transparencies shall be delivered by the Contractor to the Architect prior to the final acceptance of the Project and issuance of final payment.

§ 3.12 Shop Drawings, Product Data and Samples

§ 3.12.1 Shop Drawings are drawings, diagrams, schedules, and other data specially prepared for the Work by the Contractor or a Subcontractor, Sub-subcontractor, manufacturer, supplier, or distributor to illustrate some portion of the Work.

§ 3.12.2 Product Data are illustrations, standard schedules, performance charts, instructions, brochures, diagrams, and other information furnished by the Contractor to illustrate materials or equipment for some portion of the Work.

§ 3.12.3 Samples are physical examples that illustrate materials, equipment, or workmanship, and establish standards by which the Work will be judged.

§ 3.12.4 Shop Drawings, Product Data, Samples, and similar submittals are not Contract Documents. Their purpose is to demonstrate how the Contractor proposes to conform to the information given and the design concept expressed in the Contract Documents for those portions of the Work for which the Contract Documents require submittals. Review by the Architect is subject to the limitations of Section 4.2.7. Informational submittals upon which the Architect is not

expected to take responsive action may be so identified in the Contract Documents. Submittals that are not required by the Contract Documents may be returned by the Architect without action.

§ 3.12.5 The Contractor shall review for compliance with the Contract Documents, approve, and submit to the Architect, Shop Drawings, Product Data, Samples, and similar submittals required by the Contract Documents, in accordance with the submittal schedule approved by the Architect or, in the absence of an approved submittal schedule, with reasonable promptness and in such sequence as to cause no delay in the Work or in the activities of the Owner or of Separate Contractors.

§ 3.12.6 By submitting Shop Drawings, Product Data, Samples, and similar submittals, the Contractor represents to the Owner and Architect that the Contractor has (1) reviewed and approved them, (2) determined and verified materials, field measurements and field construction criteria related thereto, or will do so, and (3) checked and coordinated the information contained within such submittals with the requirements of the Work and of the Contract Documents.

§ 3.12.7 The Contractor shall perform no portion of the Work for which the Contract Documents require submittal and review of Shop Drawings, Product Data, Samples, or similar submittals, until the respective submittal has been approved by the Architect.

§ 3.12.8 The Work shall be in accordance with approved submittals except that the Contractor shall not be relieved of responsibility for deviations from the requirements of the Contract Documents by the Architect's approval of Shop Drawings, Product Data, Samples, or similar submittals, unless the Contractor has specifically notified the Architect of such deviation at the time of submittal and (1) the Architect has given written approval to the specific deviation as a minor change in the Work, or (2) a Change Order or Construction Change Directive has been issued authorizing the deviation. The Contractor shall not be relieved of responsibility for errors or omissions in Shop Drawings, Product Data, Samples, or similar submittals, by the Architect's approval thereof.

§ 3.12.9 The Contractor shall direct specific attention, in writing or on resubmitted Shop Drawings, Product Data, Samples, or similar submittals, to revisions other than those requested by the Architect on previous submittals. In the absence of such notice, the Architect's approval of a resubmission shall not apply to such revisions.

§ 3.12.10 The Contractor shall not be required to provide professional services that constitute the practice of architecture or engineering unless such services are specifically required by the Contract Documents for a portion of the Work or unless the Contractor needs to provide such services in order to carry out the Contractor's responsibilities for construction means, methods, techniques, sequences, and procedures. The Contractor shall not be required to provide professional services in violation of applicable law.

§ 3.12.10.1. When professional certification or performance criteria of materials, systems or equipment is required by the Contract Documents, the Contractor shall provide the person or party providing the certification with full information of the relevant performance requirements and on the conditions under which the materials, systems, or equipment will be expected to operate at the Project site. The certification shall be based on performance under the operating conditions at the Project site. The Architect shall be entitled to rely on the accuracy and completeness of such certifications.

§ 3.12.10.2 When the Contract Documents require the Contractor's design professional to certify that the Work has been performed in accordance with the design criteria, the Contractor shall furnish such certifications to the Architect at the time and in the form specified by the Architect.

§ 3.13 Use of Site

The Contractor shall confine operations at the site to areas permitted by applicable laws, statutes, ordinances, codes, rules and regulations, lawful orders of public authorities, and the Contract Documents and shall not unreasonably encumber the site with materials or equipment.

§ 3.13.1 Only material and equipment which is to be used directly in the construction of this Project shall be brought to and stored on the job site by the Contractor. After equipment is no longer needed on this Project, it shall be promptly removed from the job site. Protection of all construction materials and equipment stored at the Job Site is the sole responsibility of the Contractor.

§ 3.13.2 The Contractor and its Subcontractors, and their respective employees, agents, and consultants, shall not enter any part or portion of the building work sites when students are present without the Owner's written authorization.

§ 3.14 Cutting and Patching

§ 3.14.1 The Contractor shall be responsible for cutting, fitting, or patching required to complete the Work or to make its parts fit together properly. All areas requiring cutting, fitting, or patching shall be restored to the condition existing prior to the cutting, fitting, or patching, unless otherwise required by the Contract Documents.

§ 3.14.2 The Contractor shall not damage or endanger a portion of the Work or fully or partially completed construction of the Owner or Separate Contractors by cutting, patching, or otherwise altering such construction, or by excavation. The Contractor shall not cut or otherwise alter construction by the Owner or a Separate Contractor except with written consent of the Owner and of the Separate Contractor which consent shall not be unreasonably withheld. The Contractor's consent is not required.

§ 3.14.3 Only tradespersons skilled and experienced in cutting and patching shall perform such work.

§ 3.15 Cleaning Up

§ 3.15.1 The Contractor shall keep the premises and surrounding area free from accumulation of waste materials and rubbish caused by operations under the Contract. At completion of the Work, the Contractor shall remove waste materials, rubbish, the Contractor's tools, construction equipment, machinery, and surplus materials from and about the Project. The Contractor shall remove and clean up hazardous materials as required by the Contract Documents and in compliance with all applicable laws, rules regulations and codes.

§ 3.15.2 If the Contractor fails to clean up as provided in the Contract Documents, the Owner may do so and the Owner shall be entitled to reimbursement from the Contractor.

§ 3.15.3 All exterior and interior Work shall be cleaned by the Contractor using specific materials as recommended for surfaces to be cleaned. Damage to any surfaces due to improper cleaning methods of materials shall be repaired to the satisfaction of the Architect and Owner, by the Contractor, at no cost to the Owner.
The Contractor shall provide the Owner and Architect with access to the Work in preparation and progress at all times and wherever located.

§ 3.17 Royalties, Patents and Copyrights

The Contractor shall pay all royalties and license fees. The Contractor shall defend suits or claims for infringement of copyrights and patent rights and shall hold the Owner and Architect harmless from loss on account thereof, but shall not be responsible for defense or loss when a particular design, process, or product of a particular manufacturer or manufacturers is required by the Contract Documents, or where the copyright violations are contained in Drawings, Specifications, or other documents prepared by the Owner or Architect, except to the extent of Contractor's fault. However, if an infringement of a copyright or patent is discovered by, or made known to, the Contractor, the Contractor shall be responsible for the loss unless the information is promptly furnished to the Architect.

§ 3.18 Indemnification

§ 3.18.1 To the fullest extent permitted by law, the Contractor waives any right of contribution against and shall defend, indemnify and hold harmless Owner, any Owner's Representative, the Architect and each of their respective officers, directors, officials, board members, 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 by or alleged to be caused by an 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 in the performance of the Agreement, 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. The obligations of the Contractor under this Section 3.18.1 shall be construed to include, but not be limited to, injury or damage consequent upon failure to use or misuse by the Contractor, his agents, Sub-Contractors, and employees of any scaffold, hoist, crane, stay, ladder, support, or other mechanical contrivance erected or constructed by any person, or any or all other kinds of equipment, whether or not owned or furnished by the Owner.

§ 3.18.2 The Contractor agrees to indemnify, defend, save and hold harmless the following indemnitees: the Architect and The Owner and each of their respective board members, directors, officers, officials, agents, consultants, and employees, individually and collectively, from all claims, demands, actions and the like, of every nature and description, made or instituted, by third parties, arising or alleged to arise out of the work under this Agreement, as a result of any act or omission of either the Contractor or any Subcontractor, or any of their employees or agents. The Contractor and its Subcontractor shall name the Owner, the Architect and their respective board members, officers, officials, directors, agents and employees, individually and collectively, as additional insureds on their commercial general liability for claims arising out of the operations of the Contractor/Subcontractor, automobile liability and excess/umbrella coverage which insurance shall be primary coverage as respects the additional insureds. The Contractor and Subcontractor/s shall furnish Owner with copies of such policies prior to beginning any Work.

§ 3.18.3 "Claims, damages, loses and expenses" as these words are used herein 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 and other similar indirect or incident damages incurred by the party being indemnified or its employees, agents or consultants.

§ 3.18.4 In the event that the Contractor or its Subcontractors are requested but refuse to honor the indemnity obligations hereunder or to provide a defense, then the party indemnifying shall, in addition to all other obligations, pay the cost of bringing any such action, including attorneys' fees, time expended by the party being indemnified and their employees in the defense of any litigation covered by this indemnity provision at their usual rates, including costs and expenses, to the party requesting indemnity.

§ 3.18.5 In claims against any person or entity indemnified under this Section 3.18 by an employee of the Contractor, a Subcontractor, anyone directly or indirectly employed by them, or anyone for whose acts they may be liable, the indemnification obligation under Section 3.18.1 shall not be limited by a limitation on amount or type of damages, compensation, or benefits payable by or for the Contractor or a Subcontractor under workers' compensation acts, disability benefit acts, or other employee benefit acts. The Contractor hereby knowingly and intentionally waives the right to assert, under the case of Kotecki v. Cyclops Welding Corp., 146 Ill.2nd 155 (1991) that Contractor's liability may be limited to the amount of its statutory liability under the Workers' Compensation Act, and agrees that Contractor's liability to indemnify and defend the Owner and Architect is not limited by the so called "Kotecki Cap". The Contractor shall include this provision in each of its Subcontract agreements and shall require its Subcontractors to be so bound.

§ 3.18.6 The Contractor shall include in each and every Subcontract with any and all subcontractors and/or material suppliers performing Work and require each and every Subcontractor and/or material supplier performing Work to agree to be bound by all of the provisions 3.18.1 through 3.18.9 under the Contract Documents.

§ 3.18.7 The Contractor's indemnity obligations hereunder shall specifically include all claims and judgments which may be made against the indemnitees under federal or state law or the law of the other governmental bodies having jurisdiction, and further, against claims and judgments arising from violation of public ordinances and requirements of governing authorities due to Contractor's or Contractor's employees method of execution of the Work.

§ 3.18.8 The indemnification provisions of this Section 3.18 are not intended to circumvent the Construction Contract Indemnification for Negligence Act, 740 ILCS 35/0.01 et seq. and shall not be construed as such, but in such a way to effect its enforcement.

§ 3.18.9 The Contractor shall indemnify and hold harmless the Owner in the event of labor or trade union conflicts or disputes between the Contractor and Subcontractors and their respective employees. The Contractor shall endeavor to adjust and resolve such conflicts and disputes which affect the timely completion of the Work. Such conflicts or disputes shall not be a basis or excuse for the violation of the Contract Documents by the Contractor or its Subcontractors, and shall not provide the Contractor with relief from complying with dates for Substantial Completion or Final Completion. Labor or trade union disputes that affect production or delivery of materials or equipment, or the installation, shall be at no cost to the Owner. The Contractor shall notify the Architect and the Owner in writing as

soon as possible as to any labor or trade disputes which may affect the Work and its timely completion. In such event, the Contractor shall provide a written proposal to the Architect and the Owner which includes any comparable substitution(s) necessary to complete the Work.

§ 3.18.10 None of the foregoing provisions shall deprive the Owner or the Architect of any action, right or remedy otherwise available to them or either of them at law.

§ 3.19 If the Work is to be performed by trade unions, the Contractor shall make all necessary arrangements to reconcile, without delay, damage, or cost 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 General

§ 4.1.1 The Architect is the person or entity retained by the Owner pursuant to Section 2.3.2 and identified as such in the Agreement.

§ 4.1.2 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 Architect. Consent shall not be unreasonably withheld.

§ 4.1.3 The Architect's and its consultants' services will terminate sixty (60) days after (1) the date of Substantial Completion of the Work or (2) the anticipated date of Substantial Completion identified in the Contract Documents, whichever is earlier. Any services required of the Architect and its consultants after this date will be back-charged to the Contractor by the Owner.

§ 4.2 Administration of the Contract

§ 4.2.1 The Architect will provide administration of the Contract as described in the Contract Documents and will be an Owner's representative during construction until the date the Architect issues the final Certificate for Payment. The Architect will have authority to act on behalf of the Owner only to the extent provided in the Contract Documents.

§ 4.2.2 The Architect will visit the site at intervals as agreed to by Owner and Architect to become generally familiar with the progress and quality of the Work to endeavor to determine that the Work, when completed, will be in accordance with the Contract Documents, and to endeavor to guard the Owner against defects and deficiencies in the Work. However, the Architect will not be required to make exhaustive or continuous on-site inspections to check the quality or quantity of the Work. The Architect will not have control over, charge of, or responsibility for the construction means, methods, techniques, sequences or procedures, or for the safety precautions and programs in connection with the Work, since these are solely the Contractor's rights and responsibilities under the Contract Documents.

§ 4.2.3 On the basis of the site visits, the Architect will keep the Owner reasonably informed about the progress and quality of the Work completed, and promptly report to the Owner (1) known deviations from the Contract Documents, (2) known deviations from the most recent construction schedule submitted by the Contractor, and (3) defects and deficiencies observed in the Work. The Architect will not be responsible for the Contractor's failure to perform the Work in accordance with the requirements of the Contract Documents. The Architect will not have control over or charge of, and will not be responsible for acts or omissions of, the Contractor, Subcontractors, or their agents or employees, or any other persons or entities performing portions of the Work.

§ 4.2.4 Communications

The Owner and Contractor shall include the Architect in all communications that relate to or affect the Architect's services or professional responsibilities. The Owner shall promptly notify the Architect of the substance of any direct

communications between the Owner and the Contractor otherwise relating to the Project. Communications by and with the Architect's consultants shall be through the Architect. Communications by and with Subcontractors and suppliers shall be through the Contractor. Communications by and with Separate Contractors shall be through the Owner. The Contract Documents may specify other communication protocols. However, this Section shall not be deemed to prohibit direct communication between the Owner and the Architect.

§ 4.2.5 Based on the Architect's evaluations of the Contractor's Applications for Payment, the Architect will review and certify the amounts due the Contractor and will issue Certificates for Payment in such amounts. The Contractor shall provide to the Architect (1) mechanics lien waivers for itself and each of its Subcontractors for any monies sought for payment, (2) certified payroll statements and documentation as per the Illinois Prevailing Wage Act and (3) sworn statements listing subcontractors and materialmen before issuing Payment Certificates, and if such sworn statement or waivers are not provided, the Architect's Certificates shall be conditioned upon and subject to the receipt of such waivers.

§ 4.2.6 The Architect has authority to reject Work that does not conform to the Contract Documents. Any Work rejected by the Architect shall be reported promptly to the Owner in writing Whenever the Architect considers it necessary or advisable, the Architect will have authority to require inspection or testing of the Work in accordance with Sections 13.4.2 and 13.4.3, whether or not the Work is fabricated, installed or completed. However, neither this authority of the Architect nor a decision made in good faith either to exercise or not to exercise such authority shall give rise to a duty or responsibility of the Architect to the Contractor, Subcontractors, suppliers, their agents or employees, or other persons or entities performing portions of the Work.

§ 4.2.7 The Architect will review and approve, or take other appropriate action upon, the Contractor's submittals such as Shop Drawings, Product Data, and Samples, but only for the limited purpose of checking for conformance with information given and the design concept expressed in the Contract Documents. The Architect's action will be taken in accordance with the submittal schedule approved by the Architect or, in the absence of an approved submittal schedule, with reasonable promptness while allowing sufficient time in the Architect's professional judgment to permit adequate review. Review of such submittals is not conducted for the purpose of determining the accuracy and completeness of other details such as dimensions and quantities, or for substantiating instructions for installation or performance of equipment or systems, all of which remain the responsibility of the Contractor as required by the Contract Documents. The Architect's review of the Contractor's submittals shall not relieve the Contractor of the obligations under Sections 3.3, 3.5, and 3.12. The Architect's review shall not constitute approval of safety precautions or of any construction means, methods, techniques, sequences, or procedures. The Architect's approval of a specific item shall not indicate approval of an assembly of which the item is a component. The Contractor shall make submittals to the Architect in a manner to allow for the Architect's reasonable prompt review and to allow for timely ordering of components of the Work to affect no delay in the Work.

§ 4.2.8 The Architect will prepare Change Orders and Construction Change Directives, and may order minor changes in the Work as provided in Section 7.4. The Architect will investigate and make determinations and recommendations regarding concealed and unknown conditions as provided in Section 3.7.4.

§ 4.2.9 The Architect will conduct inspections to determine the date or dates of Substantial Completion and the date of final completion; issue Certificates of Substantial Completion pursuant to Section 9.8; receive and forward to the Owner, for the Owner's review and records, written warranties and related documents required by the Contract and assembled by the Contractor pursuant to Section 9.10; and issue a final Certificate for Payment pursuant to Section 9.10; however, the issuance of such final Certificate of Payment shall not bind the Owner to any payment unless it accepts such final Certificate for Payment. The Owner's acceptance shall not be unreasonably withheld. Additionally, the Architect shall review all warranties and related documents and provide a recommendation to the Owner as to whether the warranties comply with the Contract Documents.

§ 4.2.10 If the Owner and Architect agree, the Architect will provide one or more Project representatives to assist in carrying out the Architect's responsibilities at the site. The Owner shall notify the Contractor of any change in the duties, responsibilities and limitations of authority of the Project representatives.

§ 4.2.11 The Architect will initially interpret and decide matters concerning performance under, and requirements of, the Contract Documents on written request of either the Owner or Contractor. The Architect's response to such

requests will be made in writing within any time limits agreed upon or otherwise with reasonable promptness. If the Contractor submits such written request to the Architect, the Contractor will simultaneously provide a copy of such request to the Owner. The Architect will consult with the Owner regarding any request by the Contractor before responding to the Contractor.

§ 4.2.12 Interpretations and decisions of the Architect will be consistent with the intent of, and reasonably inferable from, the Contract Documents and will be in writing or in the form of drawings. When making such interpretations and decisions, the Architect will endeavor to secure faithful performance by both Owner and Contractor, will not show partiality to either, and will not be liable for results of interpretations or decisions rendered in good faith.

§ 4.2.13 The Architect's decisions on matters relating to aesthetic effect will be final if consistent with the intent expressed in the Contract Documents.

§ 4.2.14 The Architect will review and respond to requests for information about the Contract Documents. The Architect's response to such requests will be made in writing within any time limits agreed upon or otherwise with reasonable promptness. If appropriate, the Architect will prepare and issue supplemental Drawings and Specifications in response to the requests for information. The Architect will provide the Owner with a copy of any response provided pursuant to this Section.

ARTICLE 5 SUBCONTRACTORS

§ 5.1 Definitions

§ 5.1.1 A Subcontractor is a person or entity who has a direct contract with the Contractor to perform a portion of the Work at the site. The term "Subcontractor" is referred to throughout the Contract Documents as if singular in number and means a Subcontractor or an authorized representative of the Subcontractor. The term "Subcontractor" does not include a Separate Contractor or the subcontractors of a Separate Contractor.

§ 5.1.2 A Sub-subcontractor is a person or entity who has a direct or indirect contract with a Subcontractor to perform a portion of the Work at the site. The term "Sub-subcontractor" is referred to throughout the Contract Documents as if singular in number and means a Sub-subcontractor or an authorized representative of the Sub-subcontractor.

§ 5.2 Award of Subcontracts and Other Contracts for Portions of the Work

§ 5.2.1 As soon as practicable after award of the Contract, the Contractor , shall notify the Owner and Architect of the persons or entities proposed for each principal portion of the Work, including those who are to furnish materials or equipment fabricated to a special design. Within 14 days of receipt of the information, the Architect may notify the Contractor whether the Owner or the Architect (1) has reasonable objection to any such proposed person or entity or (2) requires additional time for review. Failure of the Architect to provide notice within the 14-day period shall constitute notice of no reasonable objection.

§ 5.2.1.1 In addition to the information which may be required prior to the award of the Project, not later than twenty-one (21) days after Notice of Award of the Project, the Contractor shall furnish to the Owner through the Architect the names of persons or entities proposed as manufacturers for each of the products identified in the General Requirements and, where applicable, the name of the installing Subcontractor.

§ 5.2.2 The Contractor shall not contract with a proposed person or entity to whom the Owner or Architect has made an objection. The Contractor shall not be required to contract with anyone to whom the Contractor has made reasonable objection. All subcontracts between the Contractor and subcontractors shall be made in writing, shall be assignable to the Owner, and shall contain the following sentence, 'The Owner is an intended third-party beneficiary of this Subcontract.'

§ 5.2.3 If the Owner or Architect has reasonable objection to a person or entity proposed by the Contractor, the Contractor shall propose another to whom the Owner or Architect has no reasonable objection No additional costs shall be allowed for a change required due to an objection by the Owner, Contractor, or Architect

§ 5.2.4 The Contractor shall not substitute a Subcontractor, person, or entity for one previously selected without written approval of the Owner. The Contractor further acknowledges and agrees that after award of the Project to the Contractor, any savings on changes to subcontract or substitute subcontractors will be for the benefit of the Owner and

will not be used for the benefit of the Contractor or to increase the Contractor's profit on the Project. The foregoing benefit to the Owner shall include any adjustment in the amount of the price of a subcontract to less than the quoted price of the subcontractor upon which the Contractor's fixed bid price or Contract Sum was based. Further, if a manufacturer or supplier of any machinery or equipment, including, but not limited to, heating and air conditioning units or systems, changes specifications or offers incentives, discounts or lower prices after award of the Contract to the Contractor, those savings will inure to the benefit of the Owner and not the Contractor, subcontractor, manufacturer or supplier.

§ 5.3 Subcontractual Relations

By appropriate written agreement, the Contractor shall require each Subcontractor, to the extent of the Work to be performed by the Subcontractor, to be bound to the Contractor by terms of the Contract Documents, and to assume toward the Contractor all the obligations and responsibilities, including the responsibility for safety of the Subcontractor's Work that the Contractor, by these Contract Documents, assumes toward the Owner and Architect. Each subcontract agreement shall preserve and protect the rights of the Owner and Architect under the Contract Documents with respect to the Work to be performed by the Subcontractor so that subcontracting thereof will not prejudice such rights, and shall allow to the Subcontractor, unless specifically provided otherwise in the subcontract agreement, the benefit of all rights, remedies, and redress against the Contractor that the Contractor, by the Contract Documents, has against the Owner. Where appropriate, the Contractor shall require each Subcontractor to enter into similar agreements with Sub-subcontractors. The Contractor shall make available to each proposed Subcontractor, prior to the execution of the subcontract agreement, copies of the Contract Documents to which the Subcontractor will be bound, and, upon written request of the Subcontractor, identify to the Subcontractor terms and conditions of the proposed subcontract agreement that may be at variance with the Contract Documents. Subcontractors will similarly make copies of applicable portions of such documents available to their respective proposed Sub-subcontractors.

§ 5.3.1 The Contractor shall be responsible for its Subcontractors and shall carry insurance which covers the Contractor for liability arising from its Subcontractors and shall ensure that its Subcontractors are carrying insurance to protect the Subcontractors as well as the Owner, Architect and Architect's consultants.

§ 5.3.2 The Owner and Architect assume no responsibility for overlapping, gaps or omission of parts of the Work by various Contractor in awarding subcontracts.

§ 5.4 Contingent Assignment of Subcontracts

§ 5.4.1 Each subcontract agreement for a portion of the Work is assigned by the Contractor to the Owner, provided that

- **.1** assignment is effective only after termination of the Contract by the Owner for cause pursuant to Section 14.2 and only for those subcontract agreements that the Owner accepts by notifying the Subcontractor and Contractor; and
- **.2** assignment is subject to the prior rights of the surety, if any, obligated under bond relating to the Contract.

When the Owner accepts the assignment of a subcontract agreement, the Owner assumes the Contractor's rights and obligations under the subcontract.

§ 5.4.2 Intentionally Deleted.

§ 5.4.3 Upon assignment to the Owner under this Section 5.4, the Owner may further assign the subcontract to a successor contractor or other entity. If the Owner assigns the subcontract to a successor contractor or other entity, the Owner shall nevertheless remain legally responsible for all of the successor contractor's obligations under the subcontract.

ARTICLE 6 CONSTRUCTION BY OWNER OR BY SEPARATE CONTRACTORS

§ 6.1 Owner's Right to Perform Construction and to Award Separate Contracts

§ 6.1.1 The term "Separate Contractor(s)" shall mean other contractors retained by the Owner under separate agreements. The Owner reserves the right to perform construction or operations related to the Project with the Owner's own forces, and with Separate Contractors retained under Conditions of the Contract substantially similar to those of this Contract, including those provisions of the Conditions of the Contract related to insurance and waiver of subrogation without altering the Owner's Agreement with the Contractor.

§ 6.1.2 When separate contracts are awarded for different portions of the Project or other construction or operations on the site, the term "Contractor" in the Contract Documents in each case shall mean the Contractor who executes each separate Owner-Contractor Agreement.

§ 6.1.3 The Owner shall provide for coordination of the activities of the Owner's own forces and of each Separate Contractor with the Work of the Contractor, who shall cooperate with them. The Contractor shall participate with any Separate Contractors and the Owner in reviewing their construction schedules. The Contractor shall make any revisions to its construction schedule deemed necessary after a joint review and mutual agreement. The construction schedules shall then constitute the schedules to be used by the Contractor, Separate Contractors, and the Owner until subsequently revised.

§ 6.2 Mutual Responsibility

§ 6.2.1 The Contractor shall afford the Owner and Separate Contractors reasonable opportunity for introduction and storage of their materials and equipment and performance of their activities, and shall connect and coordinate the Contractor's construction and operations with theirs as required by the Contract Documents.

§ 6.2.2 If part of the Contractor's Work depends for proper execution or results upon construction or operations by the Owner or a Separate Contractor, the Contractor shall, prior to proceeding with that portion of the Work, promptly notify the Architect of apparent discrepancies or defects in the construction or operations by the Owner or Separate Contractor that would render it unsuitable for proper execution and results of the Contractor's Work. Failure of the Contractor to notify the Architect of apparent discrepancies or defects prior to proceeding with the Work shall constitute an acknowledgment that the Owner's or Separate Contractor's completed or partially completed construction is fit and proper to receive the Contractor's Work. The Contractor shall not be responsible for discrepancies or defects in the construction or operations by the Owner or Separate Contractor that are not apparent.

§ 6.2.3 The Contractor shall reimburse the Owner for costs the Owner incurs that are payable to a Separate Contractor because of the Contractor's delays, improperly timed activities or defective construction.

§ 6.2.4 The Contractor shall promptly remedy damage that the Contractor wrongfully causes to completed or partially completed construction or to property of the Owner or Separate Contractor as provided in Section 10.2.5.

§ 6.3 Owner's Right to Clean Up

If a dispute arises among the Contractor, Separate Contractors, and the Owner as to the responsibility under their respective contracts for maintaining the premises and surrounding area free from waste materials and rubbish, the Owner may clean up and the Architect will allocate the cost among those responsible.

ARTICLE 7 CHANGES IN THE WORK

§ 7.1 General

§ 7.1.1 Changes in the Work may be accomplished after execution of the Contract, and without invalidating the Contract, by Change Order, Construction Change Directive or order for a minor change in the Work, subject to the limitations stated in this Article 7 and elsewhere in the Contract Documents.

§ 7.1.2 A Change Order shall be based upon agreement among the Owner, Contractor, and Architect. A Construction Change Directive requires agreement by the Owner and Architect and may or may not be agreed to by the Contractor. An order for a minor change in the Work may be issued by the Architect alone.

§ 7.1.3 Changes in the Work shall be performed under applicable provisions of the Contract Documents. The Contractor shall proceed promptly with changes in the Work, unless otherwise provided in the Change Order, Construction Change Directive, or order for a minor change in the Work.

§ 7.1.4 For any changes in the Work requested by the Contractor involving more than a three (3) calendar day extension of time, the Contractor shall submit critical path schedule showing the original schedule and impact of the proposed change justifying the requested extension of time. The Owner may at its option refuse the extension of time and have the Contractor perform the Work within the original schedule provided all reasonable costs for completing the Work including overtime and acceleration costs are included in the Change Order.

§ 7.1.5 If a proposal for extra work is requested by the Owner from the Contractor which involves additional time, at the Owner's option, the Owner may extend the completion date for that portion of the Work included in the change, without extending the Contract Time for the remainder of the Work.

§ 7.1.6 Changes which involve credits to the Contract Sum shall include overhead, profit, general conditions, and bond and insurance costs.

§ 7.1.7 For any adjustments to the Contract Sum based on other than the unit price method, overhead, profit, and General Conditions combined shall be calculated at the following percentages of the cost attributable to the change in the Work:

.1 For the Contractor for Work performed by the Contractor's own forces, ten percent of the Cost of the Work for the change.

.2 For the Contractor, for Work performed by the Contractor's Subcontractors five percent of the amount due the Subcontractor.

.3 For each Subcontractor or Sub-subcontractor involved, for Work performed by that Subcontractor's or Sub-subcontractor's own forces, ten percent of the Cost of Work for the change.

.4 For each Subcontractor, for Work performed by the Subcontractor's Sub-subcontractors, five percent of the amount due the Sub-subcontractor.

.5 Costs to which overhead, profit, and general conditions is to be applied shall be determined in accordance with the Contract Documents.

.6 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;

§ 7.1.8 In order to facilitate checking of quotations for extras or credits, all proposals shall be accompanied by:

.1 A complete itemization of costs including labor, material.

.2 Subcontractor's, Sub-subcontractor's and material suppliers for their portions of the work itemized to include labor, material.

.3 Labor costs shall be indicated hourly wage and fringe benefits. Labor hours shall be provided for each phase of the work.

.4 Material costs shall include unit costs and units required where applicable.

§ 7.1.9 The Contractor understands that Change Orders to the Contract which increase or decrease the Cost of the Work by $10,000 or more, or the time of completion by 30 days or more, will require written documentation by the Owner that the changes:

.1 were not reasonably foreseeable at the time the Contract was signed;

.2 were not within the contemplation of the Contract as signed; and

.3 are in the best interest of the Owner and authorized by law.

§ 7.1.10 The Contractor shall provide written notice to the Architect and the Owner if overtime labor rates are included in the computation of the cost of a proposed Change Order or Construction Change Directive.

§ 7.1.11 In the event that the Contractor and the Owner do not reach agreement on a Change Order or a Construction Change Directive, the Owner may, in its discretion, delete the labor, materials and equipment that are the subject of the Change Order or the Construction Change Directive from the Work to be performed under the Contract Documents. The Owner shall receive credit from the Contractor for the labor, materials, and equipment, including Contractor overhead and profit attributable to the deleted work. The Owner may complete the deleted work through another contractor or subcontractor.

§ 7.2 Change Orders

§ 7.2.1 A Change Order is a written instrument prepared by the Architect and signed by the Owner, Contractor, and Architect stating their agreement upon all of the following:

.1 The change in the Work;

.2 The amount of the adjustment, if any, in the Contract Sum; and

.3 The extent of the adjustment, if any, in the Contract Time.

§ 7.3 Construction Change Directives

§ 7.3.1 A Construction Change Directive is a written order prepared by the Architect and signed by the Owner and Architect, directing a change in the Work prior to agreement on adjustment, if any, in the Contract Sum or Contract Time, or both. The Owner may by Construction Change Directive, without invalidating the Contract, order changes in the Work within the general scope of the Contract consisting of additions, deletions, or other revisions, the Contract Sum and Contract Time being adjusted accordingly.

§ 7.3.2 A Construction Change Directive shall be used in the absence of total agreement on the terms of a Change Order.

§ 7.3.3 If the Construction Change Directive provides for an adjustment to the Contract Sum, the adjustment shall be based on one of the following methods:

.1 Mutual acceptance of a lump sum properly itemized and supported by sufficient substantiating data to permit evaluation;

.2 Unit prices stated in the Contract Documents or subsequently agreed upon;

.3 Cost to be determined in a manner agreed upon by the parties and a mutually acceptable fixed or percentage fee; or

.4 As provided in Section 7.3.4.

§ 7.3.4 If the Contractor does not respond promptly or disagrees with the method for adjustment in the Contract Sum, the Architect shall determine the adjustment on the basis of reasonable expenditures and savings of those performing the Work attributable to the change, including, in case of an increase in the Contract Sum, an amount for overhead and profit as set forth in the Agreement, or if no such amount is set forth in the Agreement, a reasonable amount. In such case, and also under Section 7.3.3.3, the Contractor shall keep and present, in such form as the Architect may prescribe, an itemized accounting together with appropriate supporting data. Unless otherwise provided in the Contract Documents, costs for the purposes of this Section 7.3.4 shall be limited to the following:

.1 Actual costs of labor, including applicable payroll taxes, fringe benefits required by agreement or custom, workers' compensation insurance, and other employee costs approved by the Architect;

.2 Actual costs of materials, supplies, and equipment, including cost of transportation, whether incorporated or consumed;

.3 Actual rental costs of machinery and equipment, exclusive of hand tools, whether rented from the Contractor or others;

.4 Actual costs of premiums for all bonds and insurance, permit fees, and sales, use, or similar taxes, directly related to the change; and

.5 Actual costs of supervision and field office personnel directly attributable to the change. Cost of supervision, unless directly attributable to change, will not be allowable as an itemized cost for any additions (or credited for deletions) unless a change in the Contract Time is made.

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. Overhead and profit will not be paid by the Owner for overtime. Field tickets must be signed by the Owner or Architect for verification of overtime hours.

§ 7.3.5 If the Contractor disagrees with the adjustment in the Contract Time, the Contractor may make a Claim in accordance with applicable provisions of Article 15.

§ 7.3.6 Upon receipt of a Construction Change Directive, the Contractor shall promptly proceed with the change in the Work involved and advise the Architect of the Contractor's agreement or disagreement with the method, if any, provided in the Construction Change Directive for determining the proposed adjustment in the Contract Sum or Contract Time.

§ 7.3.7 A Construction Change Directive signed by the Contractor indicates the Contractor's agreement therewith, including adjustment in Contract Sum and Contract Time or the method for determining them. Upon resolution of exact scope, Contract Sum change, and Contract Time change, a Change Order shall be prepared incorporating the Construction Change Directive.

§ 7.3.8 The amount of credit to be allowed by the Contractor to the Owner for a deletion or change that results in a net decrease in the Contract Sum shall be computed in accordance with Section 7.3.4 shall be actual net cost as confirmed

by the Architect. When both additions and credits covering related Work or substitutions are involved in a change, the allowance for overhead and profit shall be figured on the basis of net- increase or decrease, if any, with respect to that change. Also, if the amount of either the credit or the addition is in dispute, the amount of the other, non-disputed 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 additive Change Orders.

§ 7.3.9 Pending final determination of the total cost of a Construction Change Directive to the Owner, the Contractor may request payment for Work completed under the Construction Change Directive in Applications for Payment. The Architect will make an interim determination for purposes of monthly certification for payment for those costs and certify for payment the amount that the Architect determines, in the Architect's professional judgment, to be reasonably justified. The Architect's interim determination of cost shall adjust the Contract Sum on the same basis as a Change Order, subject to the right of either party to disagree and assert a Claim in accordance with Article 15.

§ 7.3.10 When the Owner and Contractor agree with a determination made by the Architect concerning the adjustments in the Contract Sum and Contract Time, or otherwise reach agreement upon the adjustments, such agreement shall be effective immediately and the Architect will prepare a Change Order. Change Orders may be issued for all or any part of a Construction Change Directive.

§ 7.3.11 Change Orders that result in a net decrease in or credit to the Contract Sum must include a credit to the Owner for the Contractor's overhead and profit as described in Section 7.1.7.

§ 7.4 Minor Changes in the Work

The Architect may order minor changes in the Work that are consistent with the intent of the Contract Documents and do not involve an adjustment in the Contract Sum or an extension of the Contract Time. The Architect's order for minor changes shall be in writing. If the Contractor believes that the proposed minor change in the Work will affect the Contract Sum or Contract Time, the Contractor shall promptly notify the Architect and shall not proceed to implement the change in the Work. If the Contractor performs the Work set forth in the Architect's order for a minor change without prior notice to the Architect that such change will affect the Contract Sum or Contract Time, the Contractor waives any adjustment to the Contract Sum or extension of the Contract Time.

ARTICLE 8 TIME

§ 8.1 Definitions

§ 8.1.1 Unless otherwise provided, Contract Time is the period of time, including authorized adjustments, allotted in the Contract Documents for Substantial Completion of the Work.

§ 8.1.2 The date of commencement of the Work is the date established in the Agreement.

§ 8.1.3 The date of Substantial Completion is the date certified by the Architect in accordance with Section 9.8.

§ 8.1.4 The term "day" as used in the Contract Documents shall mean working day, excluding weekends and legal holidays.

§ 8.2 Progress and Completion

§ 8.2.1 Time limits stated in the Contract Documents are of the essence of the Contract. By executing the Agreement, the Contractor confirms that the Contract Time is a reasonable period for performing the Work.

§ 8.2.2 The Contractor shall not knowingly, except by agreement or instruction of the Owner in writing, commence the Work prior to the effective date of insurance required to be furnished by the Contractor and Owner.

§ 8.2.3 The Contractor shall proceed expeditiously with adequate forces and shall achieve Substantial Completion within the Contract Time. The Contractor shall bear all additional costs incurred to meet the Contract Time, which may require working overtime without additional compensation.

§ 8.2.4 The Contractor shall reimburse the Owner for all fees or expenses, including without limitation, the Architect, engineers and legal expenses, for additional services necessitated by Contractor's failure to obtain Substantial Completion within the time established in the agreement, for more than two (2) inspections for Substantial Completion, or for more than one (1) final inspection.

§ 8.3 Delays and Extensions of Time

§ 8.3.1 If the Contractor is delayed at any time in the commencement or progress of the Work by (1) an act or neglect of the Owner or Architect, of an employee of either, or of a Separate Contractor; (2) by changes ordered in the Work; (3) by labor disputes, fire, unusual delay in deliveries, unavoidable casualties, adverse weather conditions documented in accordance with Section 15.1.6.2, or other causes beyond the Contractor's control; (4) by delay authorized by the Owner ; or (5) by other causes that the Contractor asserts, and the Owner Architect determines, justify delay, then the Contract Time shall be extended for such reasonable time as the Architect may determine.

§ 8.3.2 The Contractor shall not be entitled to recover from the Owner, and hereby waives all rights that it or its Subcontractors or any other person may otherwise have to recovery, any costs, expenses and damages of any nature that it or its Subcontractors or any other person may suffer by reason of delay in the performance of the Work or any portion thereof, the extension of Contract Time granted herein being the Contractor's sole and exclusive remedy.

§ 8.3.3 The Contractor shall not be entitled to any 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. This Section 8.3 does not preclude recovery of damages for delay by the Owner under other provisions of the Contract Documents.

§ 8.3.4 Notwithstanding other provisions in this Contract, Contractor shall not be entitled to any recovery of damages arising out of any event or delay caused within Contractor's control and/or for "Acts of God", including, without limitation, adverse weather conditions (which shall include typical rain events that can be reasonably predicted through historical data) which prevents such early or timely completion of the Work.

§ 8.3.5 Where a delay occurs that is beyond the Contractor's control and when the delay is not reasonably unacceptable, the Contractor has an affirmative duty to mitigate the effect of that delay on the progress of the Work. An extension of the Substantial Completion date will not be granted to the extent that the Contractor breaches said duty to mitigate.

§ 8.3.6 The stated dates for Substantial Completion and Final Completion of the Work are material inducements to the Owner in entering into the Contract Documents and all time limits stated in the Contract Documents are of the essence of the Contract Documents.

ARTICLE 9 PAYMENTS AND COMPLETION

§ 9.1 Contract Sum

§ 9.1.1 The Contract Sum is stated in the Agreement and, including authorized adjustments, is the total amount payable by the Owner to the Contractor for performance of the Work under the Contract Documents.

§ 9.1.2 If unit prices are stated in the Contract Documents or subsequently agreed upon, and if quantities originally contemplated are materially changed so that application of such unit prices to the actual quantities causes substantial inequity to the Owner or Contractor, the applicable unit prices shall be equitably adjusted.

§ 9.2 Schedule of Values

At the pre-construction meeting, the Contractor shall submit to the Owner and the Architect a detailed schedule of values allocating the Contract Sum to various portions of the Work~~.~~. The schedule of values shall be prepared in the form, and supported by the data to substantiate its accuracy, required by the Architect. This schedule, unless objected to by the Architect, shall be used as a basis for reviewing the Contractor's Applications for Payment. Any changes to the schedule of values shall be submitted to the Architect and supported by such data to substantiate its accuracy as the Architect may require, and unless objected to by the Architect, shall be used as a basis for reviewing the Contractor's subsequent Applications for Payment.

§ 9.3 Applications for Payment

§ 9.3.1 At least twenty (20) days before the Owner's submission date for its Board's review and approval of such payment at the next Owner's Board meeting or, if the Owner's Board approves otherwise, before the date~~-~~ established for each progress payment, the Contractor shall submit to the Architect an itemized Application for Payment prepared in accordance with the schedule of values, if required under Section 9.2, for completed portions of the Work. The application shall be notarized, if required, and supported by all data substantiating the Contractor's right to payment that the Owner or Architect require, such as copies of requisitions, and releases and waivers of liens from

Subcontractors and suppliers, and shall reflect retainage if provided for in the Contract Documents. The form of Application for Payment shall be a notarized AIA Document G702, Application and Certification for Payment, supported by AIA Document G703, Continuation Sheet.

§ 9.3.1.1 As provided in Section 7.3.9, such applications may include requests for payment on account of changes in the Work that have been properly authorized by Construction Change Directives, or by interim determinations of the Architect, but not yet included in Change Orders.

§ 9.3.1.2 Applications for Payment shall not include requests for payment for portions of the Work for which the Contractor does not intend to pay a Subcontractor or supplier, unless such Work has been performed by others whom the Contractor intends to pay. However, this Section will not apply to routine retainage the Contractor intends to withhold from the Subcontractor pursuant to the Subcontract.

§ 9.3.1.3 No interest will be paid upon retention.

§ 9.3.1.4 The Contractor shall submit all payment requests to the Architect for all work completed during the previous time period. Requests submitted late will not be processed until the following month. The Contractor shall include the Contractor's waiver of lien for the full amount of the Application for Payment and Subcontractors' partial waivers of lien in the amounts of the previous month's payment

§ 9.3.2 Unless otherwise provided in the Contract Documents, payments shall be made on account of materials and equipment delivered and suitably stored at the site for subsequent incorporation in the Work. If approved in advance by the Owner, payment may similarly be made for materials and equipment suitably stored off the site at a location agreed upon in writing. Payment for materials and equipment stored on or off the site shall be conditioned upon compliance by the Contractor with procedures satisfactory to the Owner to establish the Owner's title to such materials and equipment or otherwise protect the Owner's interest, and shall include the costs of applicable insurance, storage, and transportation to the site, for such materials and equipment stored off the site. The 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. The Owner shall have no responsibility or liability to the Contractor for the safekeeping of materials and equipment stored at the site or off the site.

§ 9.3.3 The Contractor warrants that title to all Work covered by an Application for Payment will pass to the Owner no later than the time of payment. The Contractor further warrants that upon submittal of an Application for Payment all Work for which Certificates for Payment have been previously issued and payments received from the Owner shall, to the best of the Contractor's knowledge, information, and belief, be free and clear of liens, claims, security interests, or encumbrances, in favor of the Contractor, Subcontractors, suppliers, or other persons or entities that provided labor, materials, and equipment relating to the Work.

§ 9.3.4 The Contractor shall submit its application for payment as outlined in Section 9.3 on the first of the month, and the Owner will make payment in accordance with ~~the Local Government Prompt Payment Act~~this Agreement upon Applications properly certified by the Architect. Each partial payment request shall be made monthly and Contractor shall request payment of ninety percent (90%) of the portion of the Contract Sum properly allocable to labor, materials and equipment incorporated in the work less the aggregate of previous payments in each case. When the Project is 50% complete, the Owner shall reduce retainage- to 5% until the Contract has been fully and satisfactorily performed.

§ 9.3.5 Before each certificate for payment is issued, the Contractor shall furnish to the Architect a complete statement of the amounts due to Subcontractors, parties supplying material, and for his own materials and labor, on AIA Document G702 and G702A "Application and Certificate for Payment."

§ 9.3.6 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. The Contractor shall submit waivers on a current basis with each Application for Payment, and the Subcontractors and suppliers shall submit partial waivers of lien for the amount paid to them from the prior month's pay application.

§ 9.3.7 All material necessary for the construction of this Project, delivered upon the premises, shall not be removed from the premises without written consent of the Architect.

§ 9.3.8 The Contractor's request for final payment shall include: (1) the Contractor's Final Lien Waiver in the full amount of the contract; and (2) final lien waivers in the full amount of their contracts from all subcontractors and suppliers for which final lien waivers have not previously been submitted.

§ 9.4 Certificates for Payment

§ 9.4.1 The Architect will, within seven days after receipt of the Contractor's Application for Payment, either (1) issue to the Owner a Certificate for Payment in the full amount of the Application for Payment, with a copy to the Contractor; or (2) issue to the Owner a Certificate for Payment for such amount as the Architect determines is properly due, and notify the Contractor and Owner of the Architect's reasons for withholding certification in part as provided in Section 9.5.1; or (3) withhold certification of the entire Application for Payment, and notify the Contractor and Owner of the Architect's reason for withholding certification in whole as provided in Section 9.5.1.

§ 9.4.2 The issuance of a Certificate for Payment will constitute a representation by the Architect to the Owner, based on the Architect's evaluation of the Work and the data in the Application for Payment, that, to the best of the Architect's knowledge, information, and belief, the Work has progressed to the point indicated, the quality of the Work is in accordance with the Contract Documents, and that the Contractor is entitled to payment in the amount certified. The foregoing representations are subject to an evaluation of the Work for conformance with the Contract Documents upon Substantial Completion, to results of subsequent tests and inspections, to correction of minor deviations from the Contract Documents prior to completion, and to specific qualifications expressed by the Architect. However, the issuance of a Certificate for Payment will not be a representation that the Architect has (1) made exhaustive or continuous on-site inspections to check the quality or quantity of the Work; (2) reviewed construction means, methods, techniques, sequences, or procedures; (3) reviewed copies of requisitions received from Subcontractors and suppliers and other data requested by the Owner to substantiate the Contractor's right to payment; or (4) made examination to ascertain how or for what purpose the Contractor has used money previously paid on account of the Contract Sum.

§ 9.5 Decisions to Withhold Certification

§ 9.5.1 The Architect may withhold a Certificate for Payment in whole or in part, to the extent reasonably necessary to protect the Owner, if in the Architect's opinion the representations to the Owner required by Section 9.4.2 cannot be made. If the Architect is unable to certify payment in the amount of the Application, the Architect will notify the Contractor and Owner as provided in Section 9.4.1. If the Contractor and Architect cannot agree on a revised amount, the Architect will promptly issue a Certificate for Payment for the amount for which the Architect is able to make such representations to the Owner. The Architect may also withhold a Certificate for Payment or, because of subsequently discovered evidence, may nullify the whole or a part of a Certificate for Payment previously issued, to such extent as may be necessary in the Architect's opinion to protect the Owner from loss for which the Contractor is responsible, including loss resulting from acts and omissions described in Section 3.3.2, because of

- **.1** defective Work not remedied;
- **.2** third party claims filed or reasonable evidence indicating probable filing of such claims, unless security acceptable to the Owner is provided by the Contractor;
- **.3** failure of the Contractor to make payments properly to Subcontractors or suppliers for labor, materials or equipment;
- **.4** reasonable evidence that the Work cannot be completed for the unpaid balance of the Contract Sum;
- **.5** damage to the Owner or a Separate Contractor;
- **.6** reasonable evidence that the Work will not be completed within the Contract Time, and that the unpaid balance would not be adequate to cover actual or liquidated damages for the anticipated delay; or
- **.7** repeated failure to carry out the Work in accordance with the Contract Documents.

§ 9.5.2 When either party disputes the Architect's decision regarding a Certificate for Payment under Section 9.5.1, in whole or in part, that party may submit a Claim in accordance with Article 15.

§ 9.5.3 When the reasons for withholding certification are removed, certification will be made for amounts previously withheld.

§ 9.5.4 If the Architect withholds certification for payment under Section 9.5.1.3, the Owner may, at its sole option, issue joint checks to the Contractor and to any Subcontractor or supplier to whom the Contractor failed to make payment for Work properly performed or material or equipment suitably delivered. If the Owner makes payments by joint check, the Owner shall notify the Architect and the Contractor shall reflect such payment on its next Application for Payment.

§ 9.5.5 The Owner shall not be required to make payment unless in its own independent judgment it accepts the Architect's Certificate.

§ 9.6 Progress Payments

§ 9.6.1 After the Architect has issued a Certificate for Payment, the Owner shall make payment in the manner and within the time provided in the Contract Documents, and shall so notify the Architect.

§ 9.6.2 The Contractor shall pay each Subcontractor, no later than seven days after receipt of payment from the Owner, the amount to which the Subcontractor is entitled, reflecting percentages actually retained from payments to the Contractor on account of the Subcontractor's portion of the Work. The Contractor shall, by appropriate agreement with each Subcontractor, require each Subcontractor to make payments to Sub-subcontractors in a similar manner. In the event that the Owner elects to utilize an escrow agent, the Owner and the escrow agent may elect to make payments due the Contractor to the Contractor and its subcontractors.

§ 9.6.3 The Architect will, on request, furnish to a Subcontractor, if practicable, information regarding percentages of completion or amounts applied for by the Contractor and action taken thereon by the Architect on account of portions of the Work done by such Subcontractor.

§ 9.6.4 The Owner has the right to request written evidence from the Contractor that the Contractor has properly paid Subcontractors and suppliers amounts paid by the Owner to the Contractor for subcontracted Work. If the Contractor fails to furnish such evidence within seven days, the Owner shall have the right to contact Subcontractors and suppliers to ascertain whether they have been properly paid. Neither the Owner nor Architect shall have an obligation to pay, or to see to the payment of money to, a Subcontractor or supplier, except as may otherwise be required by law.

§ 9.6.5 Intentionally Deleted.

§ 9.6.6 A Certificate for Payment, a progress payment, or partial or entire use or occupancy of the Project by the Owner shall not constitute acceptance of Work not in accordance with the Contract Documents.

§ 9.6.7 Unless the Contractor provides the Owner with a payment bond in the full penal sum of the Contract Sum, payments received by the Contractor for Work properly performed by Subcontractors or provided by suppliers shall be held by the Contractor for those Subcontractors or suppliers who performed Work or furnished materials, or both, under contract with the Contractor for which payment was made by the Owner. Nothing contained herein shall require money to be placed in a separate account and not commingled with money of the Contractor, create any fiduciary liability or tort liability on the part of the Contractor for breach of trust, or entitle any person or entity to an award of punitive damages against the Contractor for breach of the requirements of this provision.

§ 9.6.8 Provided the Owner has fulfilled its payment obligations under the Contract Documents, the Contractor shall defend and indemnify the Owner from all loss, liability, damage or expense, including reasonable attorney's fees and litigation expenses, arising out of any lien claim or other claim for payment by any Subcontractor or supplier of any tier. Upon receipt of notice of a lien claim or other claim for payment, the Owner shall notify the Contractor. If approved by the applicable court, when required, the Contractor may substitute a surety bond for the property against which the lien or other claim for payment has been asserted.

§ 9.7 Failure of Payment

Intentionally Deleted.

§ 9.8 Substantial Completion

§ 9.8.1 Substantial Completion is the stage in the progress of the Work when the Work or designated portion thereof is sufficiently complete in accordance with the Contract Documents so that the Owner can occupy or utilize the Work for its intended use. The Work will not be considered suitable for Substantial Completion review until all Project systems included in the Work are operational as designed and scheduled, all designated or required governmental inspections and certifications have been made and posted (other than for the failure of Contractor), designated instruction of the Owner's personnel in the operation of systems has been completed and documents, and all final finishes within the Project are in place. In general, the only remaining Work shall be minor in nature, so that the Owner could occupy the Project on that date and the completion of the Work by the Contractor would not materially interfere or hamper the Owner's normal business operations and/or use and enjoyment of the Project. As a further condition of Substantial Completion acceptance, the Contractor shall certify that all remaining Work will be completed within thirty calendar days or within the time stated elsewhere in the Contract Documents following the Date of Substantial Completion. Upon the Owner's written consent, the Date of Substantial Completion of landscaping portions of the Work or other designated portions of the Work may be as mutually acceptable to the Owner and the Contractor. The Contractor shall secure and deliver to the Owner written warranties and guarantees from its Subcontractors, Sub-Subcontractors and suppliers bearing the date of Substantial Completion or some other date as may be agreed to by the Owner and stating the period of warranty as required by the Contract Documents.

§ 9.8.2 When the Contractor considers that the Work, or a portion thereof which the Owner agrees to accept separately, is substantially complete, the Contractor shall prepare and submit to the Architect a comprehensive list of items to be completed or corrected prior to final payment. Failure to include an item on such list does not alter the responsibility of the Contractor to complete all Work in accordance with the Contract Documents. 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.

§ 9.8.3 Upon receipt of the Contractor's list, the Architect will make an inspection to determine whether the Work or designated portion thereof is substantially complete. If the Architect's inspection discloses any item, whether or not included on the Contractor's list, which is not sufficiently complete in accordance with the Contract Documents so that the Owner can occupy or utilize the Work or designated portion thereof for its intended use, the Contractor shall, before issuance of the Certificate of Substantial Completion, complete or correct such item upon notification by the Architect. In such case, the Contractor shall then submit a request for another inspection by the Architect to determine Substantial Completion.

§ 9.8.4 When the Work or designated portion thereof is substantially complete, the Architect will prepare a Certificate of Substantial Completion that shall establish the date of Substantial Completion; establish responsibilities of the Owner and Contractor for security, maintenance, heat, utilities, damage to the Work and insurance; and fix the time within which the Contractor shall finish all items on the list accompanying the Certificate. Warranties required by the Contract Documents shall commence on the date of Substantial Completion of the Work or designated portion thereof unless otherwise provided in the Certificate of Substantial Completion.

§ 9.8.5 The Certificate of Substantial Completion shall be submitted to the Owner and Contractor for their written acceptance of responsibilities assigned to them in the Certificate. Upon such acceptance, and consent of surety if any, the Owner shall make payment of retainage applying to the Work or designated portion thereof. Such payment shall be adjusted for Work that is incomplete or not in accordance with the requirements of the Contract Documents.

§ 9.9 Partial Occupancy or Use

§ 9.9.1 The Owner may occupy or use any completed or partially completed portion of the Work at any stage when such portion is designated by separate agreement with the Contractor, provided such occupancy or use is consented to by the insurer and authorized by public authorities having jurisdiction over the Project. Such partial occupancy or use may commence whether or not the portion is substantially complete, provided the Owner and Contractor have accepted in writing the responsibilities assigned to each of them for payments, retainage, if any, security, maintenance, heat, utilities, damage to the Work and insurance, and have agreed in writing concerning the period for correction of the Work and commencement of warranties required by the Contract Documents. When the Contractor considers a portion substantially complete, the Contractor shall prepare and submit a list to the Architect as provided under Section 9.8.2. Consent of the Contractor to partial occupancy or use shall not be unreasonably withheld. The stage of the progress of the Work shall be determined by written agreement between the Owner and Contractor or, if no agreement is reached, by decision of the Architect.

§ 9.9.2 Immediately prior to such partial occupancy or use, the Owner, Contractor, and Architect shall jointly inspect the area to be occupied or portion of the Work to be used in order to determine and record the condition of the Work.
§ 9.9.3 Unless otherwise agreed upon, partial occupancy or use of a portion or portions of the Work shall not constitute acceptance of Work not complying with the requirements of the Contract Documents.

§ 9.10 Final Completion and Final Payment

§ 9.10.1 All Work identified on Contractor's Punch List and thereafter identified in Architect's inspection shall be completed within thirty (30) days of issuance of the Certificate of Substantial Completion. Upon receipt of the Contractor's notice that the Work is ready for final inspection and acceptance and upon receipt of a final Application for Payment, the Architect will promptly make such inspection. When the Architect finds the Work acceptable under the Contract Documents and the Contract fully performed, the Architect will promptly issue a final Certificate for Payment stating that to the best of the Architect's knowledge, information and belief, and on the basis of the Architect's on-site visits and inspections, the Work has been completed in accordance with the Contract Documents and that the entire balance found to be due the Contractor and noted in the final Certificate is due and payable.
§ 9.10.2 Neither final payment nor any remaining retained percentage shall become due until the Contractor submits to the Architect (1) an affidavit that payrolls, bills for materials and equipment, and other indebtedness connected with the Work for which the Owner or the Owner's property might be responsible or encumbered (less amounts withheld by Owner) have been paid or otherwise satisfied, (2) a certificate evidencing that insurance required by the Contract Documents to remain in force after final payment is currently in effect, (3) a written statement that the Contractor knows of no reason that the insurance will not be renewable to cover the period required by the Contract Documents, (4) consent of surety, if any, to final payment, (5) documentation of any special warranties, such as manufacturers' warranties or specific Subcontractor warranties, and (6) if required by the Owner, other data establishing payment or satisfaction of obligations, such as receipts and releases and waivers of liens, claims, security interests, or encumbrances arising out of the Contract, to the extent and in such form as may be designated by the Owner. If a Subcontractor refuses to furnish a release or waiver required by the Owner, the Contractor may furnish a bond satisfactory to the Owner to indemnify the Owner against such lien, claim, security interest, or encumbrance. If a lien, claim, security interest, or encumbrance remains unsatisfied after payments are made, the Contractor shall refund to the Owner all money that the Owner may be compelled to pay in discharging the lien, claim, security interest, or encumbrance, including all costs and reasonable attorneys' fees.

§ 9.10.3 Acceptance of final payment by the Contractor, a Subcontractor, or a supplier, shall constitute a waiver of claims by that payee except those previously made in writing and identified by that payee as unsettled at the time of final Application for Payment.

§ 9.11 LIQUIDATED DAMAGES

§ 9.11.1 The Contractor is solely responsible for substantially completing the Work by the scheduled Substantial Completion Date for each Phase of the Work. This responsibility includes all work of the Contractor and that of its Subcontractors and suppliers. The Contractor acknowledges that the Owner will suffer significant financial loss, and there will be disruption to the Owner if the Project is not complete on or before the Substantial Completion Date for the Work set forth in the Contract Documents. The Contractor further acknowledges that the measure of such loss and the disruption to the Owner would not be susceptible to precise calculation. To protect the Owner against said loss and disruption to the Owner and not as a penalty, the Owner and the Contractor hereby agree that the Contractor and the Contractor's Surety, if any, shall be liable for and shall pay to the Owner, Liquidated Damages as per the Liquidated Damages Sliding Scale below for each calendar day of delay, per each School Campus, per Phase in Substantial Completion. Substantial Completion for the Project refers to all scheduled work being a minimum 99% complete.

LIQUIDATED DAMAGES SLIDING SCALE

Original Awarded Bid Cost	Liquidated Damages per Calendar Day
$0 - $499,999.99	$500
$500,000.00 - $999,999.99	$600
$1,000,000.00 - $3,999,999.99	$700
$4,000,000.00 - $7,999,999.99	$800
$8,000,000.00 - $11,999,999.99	$900
$12,000,000.00 - $19,999,999.99	$1,000
$20,000,000.00 - Above	$1,500

§ 9.11.2 Payments of Liquidated Damages are in addition to other direct damages that may be incurred by the Owner and not a penalty. All such Liquidated Damages may be set-off against any monies that may be due the Contractor. The Owner's approval or making of progress payments or final payment, with or without knowledge that the Work was untimely, shall not constitute or be deemed a waiver of the Owner's rights or claims, or of the Owner's ability to receive Liquidated Damages under the Contract or common law.

§ 9.11.3 In the event that Article 9.11.1 is found to be unenforceable, the Owner shall be entitled to recover its actual damages, including consequential, incident or indirect damages, for a failure to complete the Work by the scheduled Substantial Completion Date for each Phase of the Work.

ARTICLE 10 PROTECTION OF PERSONS AND PROPERTY

§ 10.1 Safety Precautions and Programs

The Contractor shall be responsible for initiating, maintaining, and supervising all safety precautions and programs in connection with the performance of the Contract. Neither the Owner nor the Architect shall be responsible for any safety precautions or programs in connection with the Work.

§ 10.2 Safety of Persons and Property

§ 10.2.1 The Contractor shall take reasonable precautions for safety of, and shall provide reasonable protection to prevent damage, injury, or loss to

.1 employees on the Work and other persons who may be affected thereby;

.2 the Work and materials and equipment to be incorporated therein, whether in storage on or off the site, under care, custody, or control of the Contractor, a Subcontractor, or a Sub-subcontractor; and

.3 other property at the site or adjacent thereto, such as trees, shrubs, lawns, walks, pavements, roadways, structures, and utilities not designated for removal, relocation, or replacement in the course of construction.

§ 10.2.2 The Contractor shall comply with, and give notices required by applicable laws, statutes, ordinances, codes, rules and regulations, and lawful orders of public authorities, bearing on safety of persons or property or their protection from damage, injury, or loss.

§ 10.2.3 The Contractor shall implement, erect, and maintain, as required by existing conditions and performance of the Contract, reasonable safeguards for safety and protection, including posting danger signs and other warnings against hazards; promulgating safety regulations; and notifying the owners and users of adjacent sites and utilities of the safeguards.

§ 10.2.4 When use or storage of explosives or other hazardous materials or equipment, or unusual methods are necessary for execution of the Work, the Contractor shall exercise utmost care and carry on such activities under supervision of properly qualified personnel.

§ 10.2.5 The Contractor shall. at its sole cost and expense, promptly remedy damage and loss (other than damage or loss insured under property insurance required by the Contract Documents) to property referred to in Sections 10.2.1.2 and 10.2.1.3 caused in whole or in part by the Contractor, a Subcontractor, a Sub-subcontractor, or anyone directly or indirectly employed by any of them, or by anyone for whose acts they may be liable and for which the Contractor is responsible under Sections 10.2.1.2 and 10.2.1.3. The Contractor may make a Claim for the cost to remedy the damage or loss to the extent such damage or loss is attributable to acts or omissions of the Owner or Architect or anyone directly or indirectly employed by either of them, or by anyone for whose acts either of them may be liable, and not attributable to the fault or negligence of the Contractor. The foregoing obligations of the Contractor are in addition to the Contractor's obligations under Section 3.18.

§ 10.2.6 The Contractor shall designate a responsible member of the Contractor's organization at the site whose duty shall be the prevention of accidents. This person shall be the Contractor's superintendent unless otherwise designated by the Contractor in writing to the Owner and Architect.

§ 10.2.7 The Contractor shall not permit any part of the construction or site to be loaded so as to cause damage or create an unsafe condition.

§ 10.2.8 Injury or Damage to Person or Property
If either party suffers injury or damage to person or property because of an act or omission of the other party, or of others for whose acts such party is legally responsible, notice of the injury or damage, whether or not insured, shall be given to the other party within a reasonable time not exceeding twenty-one (21) days after discovery. The notice shall provide sufficient detail to enable the other party to investigate the matter.

§ 10.3 Hazardous Materials and Substances
§ 10.3.1 The Contractor is responsible for compliance with any requirements included in the Contract Documents regarding hazardous materials or substances. If the Contractor encounters a hazardous material or substance not addressed in the Contract Documents and if reasonable precautions will be inadequate to prevent foreseeable bodily injury or death to persons resulting from a material or substance, including but not limited to asbestos or polychlorinated biphenyl (PCB), encountered on the site by the Contractor, the Contractor shall, upon recognizing the condition, immediately stop Work in the affected area and notify the Owner and Architect of the condition.

§ 10.3.1.1 The Contractor shall not cause or permit any "Hazardous Materials" (as defined herein) to be brought upon, kept or used in or about the Projects site(s) except to the extent such Hazardous Materials: (1) are necessary for the prosecution of the Work; and (2) have been approved in writing by the Owner. Any Hazardous Materials allowed to be used on the Project site(s) shall be used, stored, and disposed of in writing as directed in writing by the Owner. Any Hazardous Materials allowed to be used in the Project site(s) shall be used, stored, and disposed of in compliance with all applicable laws relating to such Hazardous Materials. Any unused or surplus hazardous Materials, as well as, any other Hazardous Materials that have been placed, released, or discharged on the Project site(s) by the Contractor or any of its employees, agents, suppliers, or subcontractors, shall be removed from the Project site(s) at the earlier of (1) completion of the Work requiring the use of such Hazardous Materials; (2) the completion of the Work as a whole; or (3) within twenty-four (24) hours following the Owner's demand for such removal. Such removal shall be undertaken by the Contractor at its sole cost and expense and shall be performed in accordance with all applicable laws. The Contractor shall immediately notify the Owner of any release or discharge of any Hazardous Materials on the Project site(s). The Contractor shall provide the Owner with copies of all warning labels on products that the Contractor or any of its subcontractors will be using in connection with the Work, and the Contractor shall be responsible for making any and all disclosures required under applicable "Community Right to Know" or similar laws. The Contractor shall not clean or service any tools, equipment, vehicles, materials, or other items in such a manner as to cause a violation of any laws or regulations relating to Hazardous Materials. All residue and waste materials resulting from any such cleaning or servicing shall be collected and removed from the Project site(s) in accordance with all applicable laws and regulations. The Contractor shall immediately notify the Owner of any citations, orders, or warnings issued to or received by the Contractor, or of which the Contractor otherwise becomes aware, that relate to any Hazardous Materials on the Project site(s). Without limiting any other indemnification provisions pursuant to law or specified in this Agreement, the Contractor shall indemnify, defend (at the Contractor's sole cost, and with legal counsel approved by the Owner), and hold the Owner and Architect harmless from any and all claims, demands, losses, damages, disbursements, liabilities, obligations, fines, penalties, costs, and expenses for removing and remedying the effect of any Hazardous Materials on, under, from, or about the Project site(s), arising out of or relating to, directly or indirectly, the Contractor's or its subcontractor's failures to comply with any of the requirements herein. As used herein, the term "Hazardous Materials" means any hazardous or toxic substances, materials, and wastes listed in the United States Department of transportation Materials Table, or listed by the Environmental Protection Agency as hazardous substances, and all substances, materials, or wastes that are or become regulated under federal, state, or local law.

§ 10.3.2 Upon receipt of the Contractor's notice, the Owner shall obtain the services of a licensed laboratory to verify the 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 cause it to be 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 or absence of the material or substance or who are to perform the task of removal or safe containment of the 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. When the material or substance has been rendered harmless, Work in the affected area shall resume upon written agreement of the Owner and Contractor. By Change Order, the Contract Time shall be extended appropriately and the

Contract Sum shall be increased by the amount of the Contractor's reasonable additional costs of shutdown, delay, and start-up.

§ 10.3.3 Intentionally Deleted.

§ 10.3.4 The Owner shall not be responsible under this Section 10.3 for hazardous materials or substances the Contractor brings to the site. The Owner shall be responsible for hazardous materials or substances required by the Contract Documents, except to the extent of the Contractor's fault or negligence in the use and handling of such materials or substances.

§ 10.3.5 The Contractor shall reimburse the Owner for the cost and expense the Owner incurs (1) for remediation of hazardous materials or substances the Contractor brings to the site and negligently handles, or (2) where the Contractor fails to perform its obligations under Section 10.3.1, except to the extent that the cost and expense are due to the Owner's fault or negligence.

§ 10.4 Emergencies

In an emergency affecting safety of persons or property, the Contractor shall act, at the Contractor's discretion, to prevent threatened damage, injury, or loss. Additional compensation or extension of time claimed by the Contractor on account of an emergency shall be determined as provided in Article 15 and Article 7.

ARTICLE 11 INSURANCE AND BONDS

§ 11.1 Contractor's Insurance and Bonds

§ 11.1.1 The Contractor shall purchase and maintain insurance of the types and limits of liability, containing the endorsements, and subject to the terms and conditions, as described in the Agreement or elsewhere in the Contract Documents. The Contractor shall purchase and maintain the required insurance from an insurance company or insurance companies lawfully authorized to issue insurance in the jurisdiction where the Project is located. The Owner, Architect, and Architect's consultants shall be named as additional insureds under the Contractor's liability policies as required in the Contract Documents.

§ 11.1.2. The Contractor shall provide surety bonds of the types, for such penal sums, and subject to such terms and conditions as required by the Contract Documents. The Contractor shall purchase and maintain the required bonds from a company or companies lawfully authorized to issue surety bonds in the jurisdiction where the Project is located.

§ 11.1.3 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.

§ 11.1.4 Liability of Contractor and Subcontractor is not limited by purchase of insurance. Nothing contained in the insurance requirements of the Contract Documents is to be construed as limiting the liability of the Contractor, the liability of any Subcontractor of any tier, or either of their respective insurance carriers. Owner does not, in any way, represent that the coverages or limits of insurance specified is sufficient or adequate to protect the Owner, Contractor, Architect, or any Subcontractor's interest or liability, but are merely minimums. The obligation of the Contractor and every Subcontractor of any tier to purchase insurance shall not, in any way, limit their obligations to the Owner in the event that the Owner should suffer an injury or loss in excess of the amount recoverable through insurance, or any loss or portion of the loss which is not covered by either Contractor's or any Subcontractor's insurance.

§ 11.1.5 Notice of Cancellation or Expiration of Contractor's Required Insurance. Within three (3) business days of the date the Contractor becomes aware of an impending or actual cancellation or expiration of any insurance required by the Contract Documents, the Contractor shall provide notice to the Owner of such impending or actual cancellation or expiration. Upon receipt of notice from the Contractor, the Owner shall, unless the lapse in coverage arises from an act or omission of the Owner, have the right to stop the Work until the lapse in coverage has been cured by the procurement of replacement coverage by the Contractor. The furnishing of notice by the Contractor shall not relieve the Contractor of any contractual obligation to provide any required coverage.

§ 11.2 Owner's Insurance

§ 11.2.1 The Owner shall purchase and maintain insurance of the types and limits of liability, containing the endorsements, and subject to the terms and conditions, as described in the Agreement or elsewhere in the Contract

Documents. The Owner shall purchase and maintain the required insurance from an insurance company or insurance companies lawfully authorized to issue insurance in the jurisdiction where the Project is located.

§ 11.3 Waivers of Subrogation – Intentionally Deleted.

§ 11.4 Loss of Use, Business Interruption, and Delay in Completion Insurance

The Owner, at the Owner's option, may purchase and maintain insurance that will protect the Owner against loss of use of the Owner's property, or the inability to conduct normal operations, due to fire or other causes of loss. The Owner waives all rights of action against the Contractor and Architect for loss of use of the Owner's property, due to fire or other hazards however caused.

§11.5 Adjustment and Settlement of Insured Loss

§ 11.5.1 A loss insured under the Owner's property insurance required by the Agreement 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 11.5.2. The Contractor shall pay the Subcontractors, and by appropriate agreements, written where legally required for validity, shall require Subcontractors to make payments to their Sub-subcontractors in similar manner.

§ 11.5.2 The Owner as fiduciary shall have the power to adjust and settle a loss with insurers.

ARTICLE 12 UNCOVERING AND CORRECTION OF WORK

§ 12.1 Uncovering of Work

§ 12.1.1 If a portion of the Work is covered contrary to the Architect's request or to requirements specifically expressed in the Contract Documents, it must, if requested in writing by the Architect, be uncovered for the Architect's examination and be replaced at the Contractor's expense without change in the Contract Time.

§ 12.1.2 If a portion of the Work has been covered that the Architect has not specifically requested to examine prior to its being covered, the Architect may request to see such Work and it shall be uncovered by the Contractor. If such Work is in accordance with the Contract Documents, the Contractor shall be entitled to an equitable adjustment to the Contract Sum and Contract Time as may be appropriate. If such Work is not in accordance with the Contract Documents, the costs of uncovering the Work, and the cost of correction, shall be at the Contractor's expense.

§ 12.2 Correction of Work

§ 12.2.1 Before Substantial Completion

The Contractor shall promptly correct Work rejected by the Architect or failing to conform to the requirements of the Contract Documents, discovered before Substantial Completion and whether or not fabricated, installed or completed. Costs of correcting such rejected Work, including additional testing and inspections, the cost of uncovering and replacement, and compensation for the Architect's services and expenses made necessary thereby, shall be at the Contractor's expense.

§ 12.2.2 After Final Completion

§ 12.2.2.1 In addition to the Contractor's obligations under Section 3.5, if, within one year after the date of Final Completion of the Work or designated portion thereof or after the date for commencement of warranties established under Section 9.9.1, or by terms of any applicable special warranty required by the Contract Documents, any of the Work is found to be not in accordance with the requirements of the Contract Documents, the Contractor shall, at Contractor's sole cost and expense, correct it promptly after receipt of notice from the Owner to do so, unless the Owner has previously given the Contractor a written acceptance of such condition. The Owner shall give such notice promptly after discovery of the condition. During the one-year period for correction of Work, if the Owner fails to notify the Contractor and give the Contractor an opportunity to make the correction, the Owner waives the rights to require correction by the Contractor and to make a claim for breach of warranty. If the Contractor fails to correct nonconforming Work within a reasonable time during that period after receipt of notice from the Owner or Architect, the Owner may correct it in accordance with Section 2.5.

§ 12.2.2.2 Intentionally Deleted.

§ 12.2.2.3 In the case of any Work performed in correcting defects pursuant to guarantees or warranties provided or referred to by this Article 12, the warranty or guarantee period shall begin anew from the date of the completion or correction of such Work.

§ 12.2.3 The Contractor shall remove from the site portions of the Work that are not in accordance with the requirements of the Contract Documents and are neither corrected by the Contractor nor accepted by the Owner.

§ 12.2.4 The Contractor shall bear the cost of correcting destroyed or damaged construction of the Owner or Separate Contractors, whether completed or partially completed, caused by the Contractor's correction or removal of Work that is not in accordance with the requirements of the Contract Documents and pay all attorney's fees and expenses related thereto immediately upon demand.

§ 12.2.5 Nothing contained in this Section 12.2 shall be construed to establish a period of limitation with respect to other obligations the Contractor has under the Contract Documents. Establishment of the one-year period for correction of Work as described in Section 12.2.2 relates only to the specific obligation of the Contractor to correct the Work, and has no relationship to the time within which the obligation to comply with the Contract Documents may be sought to be enforced, nor to the time within which proceedings may be commenced to establish the Contractor's liability with respect to the Contractor's obligations other than specifically to correct the Work.

§ 12.3 Acceptance of Nonconforming Work

If the Owner prefers to accept Work that is not in accordance with the requirements of the Contract Documents, the Owner may do so instead of requiring its removal and correction, in which case the Contract Sum will be reduced as appropriate and equitable. Such adjustment shall be effected whether or not final payment has been made.

ARTICLE 13 MISCELLANEOUS PROVISIONS

§ 13.1 Governing Law

The Contract shall be governed by the law of the State of Illinois.

§ 13.2 Successors and Assigns

§ 13.2.1 The Owner and Contractor respectively bind themselves, their partners, successors, assigns, and legal representatives to covenants, agreements, and obligations contained in the Contract Documents. Except as provided in Section 13.2.2, neither party to the Contract shall assign the Contract as a whole without written consent of the other. If either party attempts to make an assignment without such consent, that party shall nevertheless remain legally responsible for all obligations under the Contract.

§ 13.2.2 The Owner may, without consent of the Contractor, assign the Contract to a lender providing construction financing for the Project, if the lender assumes the Owner's rights and obligations under the Contract Documents. The Contractor shall execute all consents reasonably required to facilitate the assignment.

§ 13.3 Rights and Remedies

§ 13.3.1 Duties and obligations imposed by the Contract Documents and rights and remedies available thereunder shall be in addition to and not a limitation of duties, obligations, rights, and remedies otherwise imposed or available by law.

§ 13.3.2 No action or failure to act by the Owner, Architect, or Contractor shall constitute a waiver of a right or duty afforded them under the Contract, nor shall such action or failure to act constitute approval of or acquiescence in a breach thereunder, except as may be specifically agreed upon in writing.

§ 13.4.3 The Owner and the Architect reserve the right to accept or reject any substitutions bid upon. If substitutions are not specifically accepted in writing, materials specified as "standard" shall be used in construction of this project.

§ 13.4.4 Any material specified by reference to the number, symbol or title of specific standards, such as commercial standards, federal specifications, trade association standards, or similar standards, shall comply with requirements in the latest revision thereof and any amendment of supplement thereto in effect on the date of the Instruments of Service, except as limited to type, class or grade, or modified in such reference by a given date. The standards related to, except as modified in the Specifications, shall have full force and effect as though printed in the Specifications.

§ 13.4 Tests and Inspections

§ 13.4.1 Tests, inspections, and approvals of portions of the Work shall be made as required by the Contract Documents and by applicable laws, statutes, ordinances, codes, rules, and regulations or lawful orders of public authorities. Unless otherwise provided, the Contractor shall make arrangements for such tests, inspections, and approvals with an independent testing laboratory or entity acceptable to the Owner, or with the appropriate public authority, and shall bear all related costs of tests, inspections, and approvals. The Contractor shall give the Architect timely notice of when and where tests and inspections are to be made so that the Architect may be present for such procedures. The Owner shall bear costs of tests, inspections, or approvals that do not become requirements until after bids are received or negotiations concluded. The Owner shall directly arrange and pay for tests, inspections, or approvals where building codes or applicable laws or regulations so require.

§ 13.4.2 If the Architect, Owner, or public authorities having jurisdiction determine that portions of the Work require additional testing, inspection, or approval not included under Section 13.4.1, the Architect will, upon written authorization from the Owner, instruct the Contractor to make arrangements for such additional testing, inspection, or approval, by an entity acceptable to the Owner, and the Contractor shall give timely notice to the Architect of when and where tests and inspections are to be made so that the Architect may be present for such procedures. Such costs, shall be at the Contractor's expense.

§ 13.4.3 If procedures for testing, inspection, or approval under Sections 13.4.1 and 13.4.2 reveal failure of the portions of the Work to comply with requirements established by the Contract Documents, all costs made necessary by such failure, including those of repeated procedures and compensation for the Architect's services and expenses, shall be at the Contractor's expense. Notwithstanding any other term or provision in this Article 13 to the contrary, in the event that any testing or inspection of the Work or any part thereof reveals defects in materials or workmanship, then the Contractor shall remedy such defects and shall bear all costs and expenses associated with such testing which is related to determining whether such defects have been properly remedied.

§ 13.4.4 Required certificates of testing, inspection, or approval shall, unless otherwise required by the Contract Documents, be secured by the Contractor and promptly delivered to the Architect.

§ 13.4.5 If the Architect is to observe tests, inspections, or approvals required by the Contract Documents, the Architect will do so promptly and, where practicable, at the normal place of testing.

§ 13.4.6 Tests or inspections conducted pursuant to the Contract Documents shall be made promptly to avoid unreasonable delay in the Work.

§ 13.5 Interest

Any references in this Agreement to interest being assessed against the Owner are hereby deleted.

§ 13.6 The Contractor shall provide credit for the Owner and Architect in the Contractor's promotional materials for the Project.

§ 13.7 REGULATIONS

§ 13.7.1 The Contractor and/or Subcontractor warrant/s that it is familiar with and it shall comply with Federal, State and local laws, statutes, ordinances, rules and regulations, Owner's Board Rules and Policies, and the orders and decrees of any courts or administrative bodies or tribunals in any manner affecting the performance of the contract including without limitation Workmen's Compensation Laws, minimum salary and wage statutes and regulations, laws with respect to permits and licenses and fees in connection therewith, laws regarding maximum working hours, and, without limitation, such other laws and regulations as are specifically described below. Additionally, the Contractor and subcontractor warrant that they shall comply with any amendments to such federal, state and local laws, statutes, ordinances, rules and regulations that are enacted thereafter during the performance of the Work and under this Agreement. To the extent that there are any violations of any of the applicable laws, rules, regulations and/or court orders/decrees mentioned herein, the Contractor and Subcontractor shall be responsible for indemnifying and holding both the Owner and Architect free and harmless from all costs, fees and expenses incurred, directly or indirectly and including without limitation attorneys' fees, by the Owner or the Architect in responding to and complying with demands made by any of the governmental departments/agencies and/or the courts, or an aggrieved employee or person and such amounts may be withheld from the payments to be made on the project. It is the intention that the Owner and Architect shall suffer no time loss or other additional expenses in complying with any

inquiry made with regard to any compliance with the applicable laws, rules and regulations referenced herein. No plea of misunderstanding or ignorance thereof will be considered.

§ 13.7.1.1 Whenever required or upon the request of the Architect or Owner, the Contractor or Subcontractor shall furnish the Architect and the Owner with satisfactory proof of compliance with said federal, state and local laws, statutes, ordinances, rules, regulations, orders, and decrees.

§ 13.7.2 The Contractor shall comply with the non-discrimination federal, state and local laws, including without limitation:

§ 13.7.2.1 Equal Employment Opportunities Act, American with Disabilities Act and Human Rights Act. The Contractor acknowledges that this Contract is subject to and governed by the rules and regulations of the Illinois Human Rights Act (the "Human Rights Act"), including the mandatory provisions that each contractor have in place written sexual harassment policies that shall include, at minimum, the following information: (i) the illegality of sexual harassment; (ii) the definition of sexual harassment under state law; (iii) a description of sexual harassment, utilizing examples; (iv) the vendor's internal complaint process including penalties; (v) the legal recourse, investigation and complaint process available through the Department and the Commission; and (vii) protection against retaliation as provided by Section 6-101 of said Act and that it has a written sexual harassment policy in place in full compliance with Section 105(A)(4) of the Human Rights Act, 775 LICS 5/2-105(A)(4). The Contractor agrees to fully comply with the requirements of the Illinois Human Rights Act, 775 LICS 5/1-101 et seq., including but not limited to, the provision of sexual harassment policies and procedures pursuant to Section 2-105 of the Act. The Contractor further agrees to comply with all federal Equal Employment Opportunity Laws, including, but not limited to, the Americans with Disabilities Act, 42 U.S.C. Section 12101 et seq., and rules and regulations promulgated thereunder. The provisions of Section 14.2 are included in this Amendment pursuant to the requirements of the regulations of the Illinois Department of Human Rights, Title 44, Part 750, of the Illinois Administrative Code, and Contractor shall be required to comply with these provisions only if and to the extent they are applicable under the law.

§ 13.7.2.2 As required by Illinois law, in the event of the Contractor's non-compliance with the provisions of this Equal Employment Opportunity Clause, the Illinois Human Rights Act or the Rules and Regulations of the Illinois Department of Human Rights ("Department"), the Contractor may be declared ineligible for future contracts or subcontracts with the State of Illinois or any of its political subdivisions or municipal corporations, and the Contract may be canceled or voided in whole or in part, and such other sanctions or penalties may be imposed or remedies invoked as provided by statute or regulation. During the performance of this Contract, the Contractor agrees as follows:

§ 13.7.2.2.1 That it will not discriminate against any employee or applicant for employment because of race, color, religion, creed, sex, marital status, national origin or ancestry, age, citizenship, physical or mental handicap or disability, military status, unfavorable discharge from military service or arrest record status: and further that it will examine all job classifications to determine if minority persons or women are underutilized and will take appropriate affirmative action to rectify any such underutilization.

§ 13.7.2.2.2 That, in all solicitations or advertisements for employees placed by it or on its behalf, it will state that all applicants will be afforded equal opportunity without discrimination because of race, color, religion, sex, marital status, national origin or ancestry, age, physical or mental handicap unrelated to ability, or an unfavorable discharge from military service.

§ 13.7.2.2.3 That it will submit reports as required by the Department's Rules, furnish all relevant information as may from time to time be requested by the Department or the contracting agency, and in all respect comply with the Illinois Human Rights Act and the Department's Rules.

§ 13.7.2.2.4 That it will permit access to all relevant books, records, accounts and work sites by personnel of the contracting agency and the Department for purposes of investigation to ascertain compliance with the Illinois Human Rights Act and the Department's Rules.

§ 13.7.2.2.5 That it will include verbatim or by reference the provisions of this clause in every subcontract it awards under which any portion of the Contract obligations are undertaken or assumed, so that such provisions will be binding upon such subcontractor. In the same manner as with other provisions of this Contract, the Contractor will be liable

for compliance with applicable provisions of this clause by such subcontractors; and further it will promptly notify the contracting agency and the Department in the event any subcontractor fails or refuses to comply therewith. In addition, the Contractor will not utilize any subcontractor declared by the Illinois Human Rights Commission to be ineligible for Contractors or subcontracts with the State of Illinois or any of its political subdivisions or municipal corporation.

§ 13.7.3 Illinois Department of Labor Requirements and Prevailing Wage Act.

§ 13.7.3.1 The Contractor agrees to comply with and that this Agreement is subject to and governed by the Illinois Prevailing Wage Act (820 ILCS 130/0.01 et seq.). The Contractor shall ensure that any Subcontractors shall comply with the Illinois Prevailing Wage Act. Contractor and Subcontractors shall include in Bids the cost for the current prevailing wage. As changes are made in these prevailing wages, the Contractor and Subcontractors performing work on the project will be responsible for conforming to the changes and shall have the responsibility for determining when changes are made. No additional costs are to be incurred by the Owner as a result of changes in the prevailing wage. All record keeping requirements are the obligation of the Contractor and Subcontractors.

§ 13.7.3.2 To the extent that there are any violations of the Prevailing Wage Act and any demands are made upon the Owner, Contractor or Architect by the Illinois Department of Labor or by any employee of the Contractor or a Subcontractor performing work on the project, the Contractor or the particular Subcontractor and Contractor shall be responsible for indemnifying and holding the Owner, Contractor and Architect free and harmless from all costs incurred, directly or indirectly, by the Owner, Contractor or Architect in responding to and complying with demands made by the Department of Labor, or an aggrieved employee and such amounts may be withheld from the payments to be made on the project. It is the intention that the Owner, Contractor and Architect shall suffer no time loss or other additional expenses in complying with any inquiry made with regard to this Act.

§ 13.7.3.3 It shall be mandatory upon the Contractor and upon any Subcontractors thereof to pay all laborers, workman, and mechanics employed by them not less than the prevailing wages in the locality for each craft or type of workman or mechanic needed to perform such work and the general prevailing rate for legal holidays and overtime work as ascertained by the Illinois Department of Labor and pursuant to Illinois law and statutes in such case made and provided.

§ 13.7.3.4 The Contractor and each Subcontractor shall (1) make and keep, for a period not less than 3 years, 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) submit monthly, in person, by mail, or electronically a certified payroll to the Owner in charge of the project. The certified payroll shall consist of a complete copy of the records identified in the Prevailing Wage Act. The certified payroll shall be accompanied by a statement signed by the Contractor and/or Subcontractor which avers that: (i) 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 Prevailing Wage Act; and (iii) the Contractor and/or Subcontractor is aware that filing a certified payroll that he or she knows to be false is a Class B misdemeanor. The Contractor is not prohibited from relying on the certification of a lower tier Subcontractor, provided the Contractor does not knowingly rely upon a Subcontractor's false certification. Any Contractor and/or Subcontractor subject to the Prevailing Wage Act who fails to submit a certified payroll or knowingly files a false certified payroll is in violation of the Prevailing Wage Act and guilty of a Class B misdemeanor. The records submitted in accordance with the Prevailing Wage Act herein 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.

§ 13.7.3.5 Upon 2 business days' notice, the Contractor and each Subcontractor shall make available for inspection the records identified in the Prevailing Wage Act to the Owner in charge of the project, its officers and agents, and to the Director of Labor and his deputies and agents. Upon 2 business days' notice, the Contractor and each Subcontractor shall make such records available at all reasonable hours at a location within this State.

§ 13.7.4 Public Contract Fraud Act. The Contractor agrees to comply with and that this Agreement is subject to and governed by the Illinois Public Contract Fraud Act (30 ILCS 545/0.01).

§ 13.7.5 Public Construction Contract Act. The Contractor agrees to comply with and that this Agreement is subject to and governed by the Illinois Construction Contract Act (30 ILCS 557/1).

§ 13.7.6 Public Construction Bond Act. The Contractor agrees to comply with and that this agreement is subject to and governed by the Illinois Public Construction Bond Act (30 ILCS 550/0.01). If the Contractor furnishes material or labor on the project, or assume any Contracts for material or labor awarded or entered into by the Owner, Contractor first shall supply and deliver to Owner a bond conditioned upon the completion of the Contract, and the payment of such material and labor, as required by the Illinois Public Construction Bond Act. 30 ILCS 550/1 et seq.

§ 13.7.7 Public Works Preference Act. The Contractor agrees to comply with and that this agreement is subject to and governed by the Illinois Public Works Preference Act (30 ILCS 560/0.01).

§ 13.7.8 Employment of Illinois Workers on Public Works Act.
The Contractor agrees to comply with and that that his Agreement is subject to and governed by the Illinois Employment of Illinois Workers on Public Works Act (30 ILCS 570/0.01).

§ 13.7.9 Public Works Contract Change Order Act. The Contractor agrees to comply with and that this Agreement is subject to and governed by the Illinois Public Works Contract Change Order Act (50 ILCS 525/1).

§ 13.7.10 Local Government Professional Services Selection Act. The Contractor agrees to comply with and that this Agreement is subject to and governed by the Illinois Local Government Professional Services Selection Act (50 ILCS 510/0.01).

§ 13.7.11 Veterans Preference Act. The Contractor agrees to comply with and that this Agreement is subject to and governed by the Illinois Veterans Preference Act (330 ILCS 55/0.01) that, in the employment and appointment to fill positions in the construction, addition to, or alteration of all public works undertaken or contracted for by the State, or by any political subdivision thereof, preference shall be given to persons who have been members of the armed forces of the United States or who, while citizens of the United States, were members of the armed forces of allies of the United States in time of hostilities with a foreign country, and have served under one or more of the following conditions: (1) the veteran served a total of at least 6 months, or (2) the veteran served for the duration of hostilities regardless of the length of engagement, or 3) the veteran served in the theater of operations but was discharged on the basis of a hardship, (4) the veteran was released from active duty basis of a hardship, or because of a service connected disability and was honorably discharged. But such preference shall be given only to those persons who are found to possess the business capacity necessary for the proper discharge of the duties of such employment. No political subdivision or person contracting for such public works is required to give preference to veterans, not residents of such district, over residents thereof, who are not veterans.

§ 13.7.12 As used in this Section: "Time of hostilities with a foreign country" means any period of time in the past, present, or future during which a declaration of war by the United States Congress has been or is in effect or during which an emergency condition has been or is in effect that is recognized by the issuance of a Presidential proclamation or a Presidential executive order and in which the armed forces expeditionary medal or other campaign service medals are awarded according to Presidential executive order.

§ 13.7.12.1 "Armed forces of the United States" means the United States Army, Navy, Air Force, Marine Corps, Coast Guard. Service in the Merchant Marine that constitutes active duty under Section 401 of federal Public Law 95 202 shall also be considered service in the Armed Forces of the United States for purposes of this Section.

§ 13.7.13 Drug Free Workplace. The Contractor certifies by the execution of this Contract that the Contractor will provide a drug free workplace in compliance with the Illinois Drug Free Workplace Act (30 ILCS 580/1 et seq.), including provision of providing notifications, imposing sanctions, providing assistance with counseling, and complying with all other requirements of said Act.

§ 13.7.14 Bid Rigging and Rotating. The Contractor certifies that the Contractor is in compliance with Illinois law and not barred from bidding on the Contract as a result of a conviction for either bid-rigging or bid rotating under Article 33E of the Criminal Code of 1961(720 ILCS 5/33E).

§ 13.7.15 Concurrent with the execution of this Contract, the Contractor shall execute the Certificate of Eligibility.

§ 13.7.16 The Substance Abuse Prevention on Public Works Projects Act, 820 ILCS 265/1 *et seq*., ("Act") prohibits any employee of the Contractor or any Subcontractor on a public works project to use, possess or be under the influence of a drug or alcohol, as those terms are defined in the Act, while performing work on the project. The Contractor/Subcontractor will comply with certification and other requirements regarding same.

§ 13.7.17 The Contractor must not barred from entering into this contract because of any delinquency in the payment of any tax administrated by the Illinois Department of Revenue, unless it is being contested. Contractor understands that making a false statement regarding delinquency in taxes is a Class A misdemeanor and, in addition, voids the contract and allows the Owner to recover in a civil action all amounts paid to the Contractor.

ARTICLE 14 TERMINATION OR SUSPENSION OF THE CONTRACT

§ 14.1 Termination by the Contractor

Intentionally Deleted.

§ 14.2 Termination by the Owner for Cause

§ 14.2.1 If the Contractor shall institute proceedings or consent to proceedings requesting relief or arrangement under the Federal Bankruptcy Act or any similar or applicable federal or state law, or if a petition under any federal or state bankruptcy or insolvency law is filed against the Contractor and such petition is not dismissed within sixty (60) days after the date of said filing, or if the Contractor admits in writing his inability to pay his debts generally as they become due, or if he makes a general assignment for the benefit of his creditors, or if a receiver, liquidator, trustee or assignee is appointed on account of his bankruptcy or insolvency; or if a receiver of all or any substantial portion of the Contractor's properties is appointed; or if the Contractor abandons the Work; or if he fails, except in cases for which extension of time is provided, to prosecute promptly and diligently the Work or to supply enough properly skilled workmen or proper materials for the Work; or if he submits an Application for Payment, sworn statement, waiver of lien, affidavit or document of any nature whatsoever which is intentionally falsified; or if he fails to make prompt payment to Subcontractors or for materials or labor or otherwise breaches his obligations under any subcontract with a Subcontractor; or if a mechanic's or material man's lien or notice of lien is filed against any part of the Work or the site of the Project and not promptly bonded or insured over by the Contractor in a manner satisfactory to the Owner; or if the Contractor disregards any laws, statutes, ordinances, rules, regulations or orders of any governmental body or public or quasi-public authority having jurisdiction of the Work or the site of the Project; or if he otherwise violates any provision of the Contract Documents; then the Owner, without prejudice to any right or remedy available to the Owner under the Contract Documents or at law or in equity, the Owner may, after giving the Contractor and the surety under the Performance Bond and under the Labor and Material Payment Bond described in Section 11.5, seven (7) days' written notice, terminate the employment of the Contractor. If requested by the Owner, the Contractor shall remove any part or all of his equipment, machinery and supplies from the site of the Project within seven (7) days after the date of such request, and in the event of the Contractor's failure to do so, the Owner shall have the right to remove or store such equipment, machinery and supplies at the Contractor's expense. In case of such termination, the Contractor shall not be entitled to receive any further payment for Work performed by the Contractor through the date of termination. The Owner's right to terminate the Owner-Contractor Agreement pursuant to this Section 14.2.1 shall be in addition to and not in limitation of any rights or remedies existing hereunder or pursuant hereto or at law or in equity.

§ 14.2.2 When any of the reasons described in Section 14.2.1 exist, and upon certification by the Architect that sufficient cause exists to justify such action, the Owner may, without prejudice to any other rights or remedies of the Owner and after giving the Contractor and the Contractor's surety, if any, seven days' notice, terminate employment of the Contractor and may, subject to any prior rights of the surety:

.1 Exclude the Contractor from the site and take possession of all materials, equipment, tools, and construction equipment and machinery thereon owned by the Contractor;

.2 Accept assignment of subcontracts pursuant to Section 5.4; and

.3 Finish the Work by whatever reasonable method the Owner may deem expedient. Upon written request of the Contractor, the Owner shall furnish to the Contractor a detailed accounting of the costs incurred by the Owner in finishing the Work.

§ 14.2.3 When the Owner terminates the Contract for one of the reasons stated in Section 14.2.1, the Contractor shall not be entitled to receive further payment until the Work is finished.

§ 14.2.4 If the unpaid balance of the Contract Sum exceeds all costs to the Owner of completing the Work, then the Contractor shall be paid for all Work performed by the Contractor to the date of termination. If such costs to the Owner of completing the Work exceed such unpaid balance, the Contractor shall pay the difference to the Owner immediately upon the Owner's demand. The costs to the Owner of completing the Work shall include, but not be limited to, the cost of any additional architectural, managerial and administrative services required thereby, any costs incurred in retaining another contractor or other subcontracts, any additional interest or fees which the Owner must pay by reason of a delay in the completion of the Work, attorneys' fees and expenses, and any other damages, costs, and expenses the Owner may incur by reason of completing the Work or any delay thereof. . The amount, if any, to be paid to the Contractor shall be certified by the Architect, upon application, in the manner provided in Section 9.4, and this obligation for payment shall survive termination of the Contract.

§ 14.2.5 The Owner may, upon seven (7) days written notice to the Contractor, terminate the Agreement between the Owner and Contractor without cause. Upon written request and submittal of the appropriate documentation as required by the Owner, the Owner shall pay the Contractor for all work performed by the Contractor to the date of termination that has been approved by the Owner. The Owner may, upon the Contractor executing such a confirmatory assignments as the Owner shall request, accept and assume all of the Contractor's obligations under all subcontracts executed in accordance with the terms of the Contract Documents that may accrue after the date of such termination and that the Contractor has incurred in good faith in connection with the Work. Upon receipt of notice of termination, the Contractor shall cease all operations on the date specified by the Owner, terminate subcontracts not assumed by the Owner, make no further orders of materials or equipment, complete work not terminated (if any), and provide such reports as may be requested by the Owner and the Architect as to the status of the Work and the Work remaining to be completed. The Owner's right to terminate the Contract under this Section shall be in addition to, and not in limitation of, its rights to stop the Work without terminating the Contract.

§ 14.3 Suspension by the Owner for Convenience

§ 14.3.1 The Owner may, without cause, order the Contractor in writing to suspend, delay or interrupt the Work, in whole or in part for such period of time as the Owner may determine.

§ 14.3.2 The Contract Sum and Contract Time shall be adjusted for increases in the cost and time caused by suspension, delay, or interruption under Section 14.3.1. Adjustment of the Contract Sum shall include profit. No adjustment shall be made to the extent

- **.1** that performance is, was, or would have been, so suspended, delayed, or interrupted, by another cause for which the Contractor is responsible; or
- **.2** that an equitable adjustment is made or denied under another provision of the Contract.

§ 14.4 Termination by the Owner for Convenience

§ 14.4.1 The Owner may, at any time, terminate the Contract for the Owner's convenience and without cause.

§ 14.4.2 Upon receipt of notice from the Owner of such termination for the Owner's convenience, the Contractor shall

- **.1** cease operations as directed by the Owner in the notice;
- **.2** take actions necessary, or that the Owner may direct, for the protection and preservation of the Work; and
- **.3** except for Work directed to be performed prior to the effective date of termination stated in the notice, terminate all existing subcontracts and purchase orders and enter into no further subcontracts and purchase orders.

§ 14.4.3 In case of such termination for the Owner's convenience, the Owner shall pay the Contractor for Work properly executed; costs incurred by reason of the termination, including costs attributable to termination of Subcontracts; and the termination fee, if any, set forth in the Agreement.

ARTICLE 15 CLAIMS AND DISPUTES

§ 15.1 Claims

§ 15.1.1 Definition

A Claim is a demand or assertion by one of the parties to the Contract seeking, as a matter of right, payment of money, a change in the Contract Time, or other relief with respect to the terms of the Contract. The term "Claim" also includes

other disputes and matters in question between the Owner and Contractor arising out of or relating to the Contract. The responsibility to substantiate Claims shall rest with the party making the Claim. This Section 15.1.1 does not require the Owner to file a Claim in order to impose liquidated damages in accordance with the Contract Documents.

§ 15.1.2 Time Limits on Claims

The Owner and Contractor shall commence all Claims and causes of action against the other and arising out of or related to the Contract, whether in contract, tort, breach of warranty or otherwise, in accordance with the requirements of the binding dispute resolution method selected in the Agreement and within the period specified by applicable law, but in any case not more than 10 years after the date of Substantial Completion of the Work. The Owner and Contractor waive all Claims and causes of action not commenced in accordance with this Section 15.1.2.

§ 15.1.3 Notice of Claims

§ 15.1.3.1 Claims by either the Owner or Contractor, where the condition giving rise to the Claim is first discovered prior to expiration of the period for correction of the Work set forth in Section 12.2.2, shall be initiated by notice to the other party and to the Initial Decision Maker with a copy sent to the Architect, if the Architect is not serving as the Initial Decision Maker. Claims by either party under this Section 15.1.3.1 shall be initiated within 21 days after occurrence of the event giving rise to such Claim or within 21 days after the claimant first recognizes the condition giving rise to the Claim, whichever is later.

§ 15.1.3.2 Claims by either the Owner or Contractor, where the condition giving rise to the Claim is first discovered after expiration of the period for correction of the Work set forth in Section 12.2.2, shall be initiated by notice to the other party. In such event, no decision by the Initial Decision Maker is required.

§ 15.1.4 Continuing Contract Performance

§ 15.1.4.1 Pending final resolution of a Claim, except as otherwise agreed in writing or as provided in Section 9.7 and Article 14, the Contractor shall proceed diligently with performance of the Contract and the Owner shall continue to make payments in accordance with the Contract Documents.

§ 15.1.4.2 The Contract Sum and Contract Time shall be adjusted in accordance with the Initial Decision Maker's decision, subject to the right of either party to proceed in accordance with this Article 15. The Architect will issue Certificates for Payment in accordance with the decision of the Initial Decision Maker.

§ 15.1.5 Claims for Additional Cost

If the Contractor wishes to make a Claim for an increase in the Contract Sum, notice as provided in Section 15.1.3 shall be given before proceeding to execute the portion of the Work that is the subject of the Claim. Prior notice is not required for Claims relating to an emergency endangering life or property arising under Section 10.4.

§ 15.1.6 Claims for Additional Time

§ 15.1.6.1 If the Contractor wishes to make a Claim for an increase in the Contract Time, notice as provided in Section 15.1.3 shall be given within seven (7) calendar days after the event giving rise to the Claim for additional time. The Contractor's Claim shall include an estimate of cost and of probable effect of delay on progress of the Work. In the case of a continuing delay, only one Claim is necessary.

§ 15.1.6.2 If adverse weather conditions are the basis for a Claim for additional time, such Claim shall be documented by data substantiating that weather conditions were abnormal for the period of time, could not have been reasonably anticipated, and had an adverse effect on the scheduled construction.

§ 15.1.6.3 The criteria on which the term "weather delays" shall be based on the normal average amount of precipitation received in the project areas, as recorded over a period of the last five (5) years by NOAA, National Climatic Data Center. Any extension of time due to unusually severe weather must be requested by the Contractor on the basis of documented records of the actual precipitation for a minimum period of three (3) months' time, compared with the normal average for the area. Also, the criteria shall include the number of excessive precipitation days over the same period and whether or not the Contractor's force worked on said days or any stage of construction was affected.

§ 15.1.6.4 Delay caused by any Subcontractor shall be the responsibility of the Contractor. The Contractor shall, therefore, ensure that all Subcontractors at all time provide sufficient personnel, equipment and materials to substantially complete the Work in the time specified herein.

§ 15.1.6.5 Where a delay occurs which is beyond the Contractor's control, the Contractor has an affirmative duty to mitigate the effect of that delay on the progress of the Work but without any obligation to bear any cost. An extension of the Substantial Completion date will not be granted to the extent that the Contractor breaches said duty to mitigate.

§ 15.1.7 Waiver of Claims for Consequential Damages

The Contractor waives claims against the Owner and Architect for consequential damages arising out of or relating to this Contract. This waiver includes

1. damages incurred by the Contractor for principal office expenses including the compensation of personnel stationed there, for losses of financing, business and reputation, and for loss of profit, except anticipated profit arising directly from the Work.

This waiver is applicable, without limitation, to all consequential damages due to either party's termination in accordance with Article 14. Nothing contained in this Section 15.1.7 shall be deemed to preclude assessment of liquidated damages, when applicable, in accordance with the requirements of the Contract Documents.

§ 15.2 Initial Decision

§ 15.2.1 Claims, excluding those where the condition giving rise to the Claim is first discovered after expiration of the period for correction of the Work set forth in Section 12.2.2 or arising under Sections 10.3, 10.4, and 11.5, shall be referred to the Initial Decision Maker for initial decision. The Architect will serve as the Initial Decision Maker, unless otherwise indicated in the Agreement. Unless the Initial Decision Maker and all affected parties agree, the Initial Decision Maker will not decide disputes between the Contractor and persons or entities other than the Owner.

§ 15.2.2 The Initial Decision Maker will review Claims and within ten days of the receipt of a Claim take one or more of the following actions: (1) request additional supporting data from the claimant or a response with supporting data from the other party, (2) reject the Claim in whole or in part, (3) approve the Claim, (4) suggest a compromise, or (5) advise the parties that the Initial Decision Maker is unable to resolve the Claim if the Initial Decision Maker lacks sufficient information to evaluate the merits of the Claim or if the Initial Decision Maker concludes that, in the Initial Decision Maker's sole discretion, it would be inappropriate for the Initial Decision Maker to resolve the Claim.

§ 15.2.3 In evaluating Claims, the Initial Decision Maker may, but shall not be obligated to, consult with or seek information from either party or from persons with special knowledge or expertise who may assist the Initial Decision Maker in rendering a decision.

§ 15.2.4 If the Initial Decision Maker requests a party to provide a response to a Claim or to furnish additional supporting data, such party shall respond, within ten days after receipt of the request, and shall either (1) provide a response on the requested supporting data, (2) advise the Initial Decision Maker when the response or supporting data will be furnished, or (3) advise the Initial Decision Maker that no supporting data will be furnished. Upon receipt of the response or supporting data, if any, the Initial Decision Maker will either reject or approve the Claim in whole or in part.

§ 15.2.5 The Initial Decision Maker will render an initial decision approving or rejecting the Claim, or indicating that the Initial Decision Maker is unable to resolve the Claim. This initial decision shall (1) be in writing; (2) state the reasons therefor; and (3) notify the parties and the Architect, if the Architect is not serving as the Initial Decision Maker, of any change in the Contract Sum or Contract Time or both. The initial decision shall be final and binding on the parties subject to litigation.

§ 15.2.6 -Intentionally Deleted.

§ 15.2.7 In the event of a Claim against the Contractor, the Owner may, but is not obligated to, notify the surety, if any, of the nature and amount of the Claim. If the Claim relates to a possibility of a Contractor's default, the Owner may, but is not obligated to, notify the surety and request the surety's assistance in resolving the controversy.

§ 15.2.8 If a Claim relates to or is the subject of a mechanic's lien, the party asserting such Claim may proceed in accordance with applicable law to comply with the lien notice or filing deadlines.

ARTICLE 16 LIMIT TO AVOID INCORPORATION OF RESPONSIBILITY BY REFERENCE

§ 16.1 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 Instruments of Service other than in said specifications.

ARTICLE 17 INCORPORATION OF CONTRACT TERMS WITH SUBCONTRACTORS

§ 17.1 Contractor agrees that s/he will be responsible to incorporate all of the terms and conditions herein, including all amendments to this Contract, with any and all of the Subcontractors as well as any Subcontractors retained by Subcontractors. Contractor acknowledges that it is the Owner's intent that all of the terms and conditions herein, including all amendments to this Contract, will be adhered to by the Contractor and all Subcontractors performing any Work on the Project.

DRAFT

AIA® Document A101™ – 2017 Exhibit A

Insurance and Bonds

This Insurance and Bonds Exhibit is part of the Agreement, between the Owner and the Contractor, dated the « » day of « » in the year « »
(In words, indicate day, month and year.)

for the following **PROJECT**:
(Name and location or address)

«Village of Hoffman Estates - Village Green Improvements – Phase I »
« »

THE OWNER:
(Name, legal status and address)

Village of Hoffman Estates
1900 Hassell Road
Hoffman Estates, Illinois 60169
Telephone Number: (847) 882-9100
Fax Number: (847) 781-2679»

THE CONTRACTOR:
(Name, legal status and address)

« »« »
« »

TABLE OF ARTICLES

ARTICLE A.1 GENERAL

Contractor shall purchase and maintain insurance, and provide bonds, as set forth in this Exhibit from companies lawfully authorized to do business in the jurisdiction in which the Project is located. As used in this Exhibit, the term General Conditions refers to AIA Document A201™–2017, General Conditions of the Contract for Construction.

ARTICLE A.2 OWNER'S INSURANCE

§ A.2.1 General

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§ A.2.2 Liability Insurance

The Owner shall be responsible for purchasing and maintaining the Owner's usual general liability insurance.

ADDITIONS AND DELETIONS: The author of this document has added information needed for its completion. The author may also have revised the text of the original AIA standard form. An *Additions and Deletions Report* that notes added information as well as revisions to the standard form text is available from the author and should be reviewed.

This document has important legal consequences. Consultation with an attorney is encouraged with respect to its completion or modification.

This document is intended to be used in conjunction with AIA Document A201™–2017, General Conditions of the Contract for Construction. Article 11 of A201™–2017 contains additional insurance provisions.

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§ A.2.3 Required Property Insurance
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ARTICLE A.3 CONTRACTOR'S INSURANCE AND BONDS

§ A.3.1 General

§ A.3.1.1 Certificates of Insurance. The Contractor shall provide certificates of insurance acceptable to the Owner evidencing compliance with the requirements in this Article A.3 at the following times: (1) prior to commencement of the Work; (2) upon renewal or replacement of each required policy of insurance; and (3) upon the Owner's written request. An additional certificate evidencing continuation of commercial liability coverage, including coverage for completed operations, shall be submitted with the final Application for Payment and thereafter upon renewal or replacement of such coverage until the expiration of the periods required by Section A.3.2.1 and Section A.3.3.1. The certificates will show the Owner as an additional insured on the Contractor's Commercial General Liability and excess or umbrella liability policy or policies.

§ A.3.1.2 Deductibles and Self-Insured Retentions. The Contractor shall disclose to the Owner any deductible or self-insured retentions applicable to any insurance required to be provided by the Contractor.

§ A.3.1.3 Additional Insured Obligations. To the fullest extent permitted by law, the Contractor shall cause the commercial general liability coverage 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 for which loss occurs during completed operations. The additional insured coverage shall be primary and non-contributory to any of the Owner's general liability insurance policies and shall apply to both ongoing and completed operations. To the extent commercially available, the additional insured coverage shall be no less than that provided by Insurance Services Office, Inc. (ISO) forms CG 20 10 07 04, CG 20 37 07 04, and, with respect to the Architect and the Architect's consultants, CG 20 32 07 04. The Contractor shall also cause the automobile liability policy to include the Owner, the Architect and the Architect's consultants as additional insureds.

§ A.3.2 Contractor's Required Insurance Coverage

§ A.3.2.1 The Contractor shall purchase and maintain the following types and limits of insurance from an insurance company or insurance companies lawfully authorized to issue insurance in the jurisdiction where the Project is located. The Contractor shall maintain the required insurance until the expiration of the period for correction of Work as set forth in Section 12.2.2 of the General Conditions, unless a different duration is stated below:
(If the Contractor is required to maintain insurance for a duration other than the expiration of the period for correction of Work, state the duration.)

«Coverages shall be maintained without interruption from date of commencement of the Work until 60 days after the date of Final Completion or for such other period for maintenance of completed operations coverage as specified in the Contract Documents. With respect to the Contractor's completed operations coverage, until 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. »

§ A.3.2.2 Commercial General Liability

§ A.3.2.2.1 Commercial General Liability insurance for the Project written on an occurrence form with policy limits of not less than «One Million Dollars » ($ «1,000,000 ») each occurrence, «Two Million Dollars » ($ «2,000,000 ») general aggregate, and «One Million Dollars » ($ «1,000,000 ») aggregate for products-completed operations hazard, providing coverage for claims including

- **.1** damages because of bodily injury, sickness or disease, including occupational sickness or disease, and death of any person;
- **.2** personal injury and advertising injury;
- **.3** damages because of physical damage to or destruction of tangible property, including the loss of use of such property;
- **.4** bodily injury or property damage arising out of completed operations; and
- **.5** the Contractor's indemnity obligations under Section 3.18 of the General Conditions.

.6 Liability insurance should be written on the comprehensive general liability basis, and shall include, but not be limited to the following sub-lines:

A. Premises and Operations including X, C, U coverages (explosion, collapse, underground).
B. Products and Completed Operations to be maintained for two (2) years after Final Completion.
C. Independent Contractor's Protective.
D. Broad Form Comprehensive General Liability Endorsement:
   1. Contractual Liability, including contractors' obligation under Section 3.18.
   2. Personal Injury & Advertising Injury Liability
   3. Premises Medical Payments
   4. Fire Legal Liability - Real Property
   5. Broad Form Property Damage Liability (including Completed Operations)
   6. Incidental Medical Malpractice Liability
   7. Additional Persons Insured, including employees for personal and advertising injury.
   8. Extended Bodily Injury Liability

.10 If liability insurance is written under the new simplified form - Commercial General Liability, the above listed coverages should be included.

.11 If the General Liability coverages are provided by a Commercial General Liability Policy on a claims-made basis, the policy date or retroactive date shall predate the contract; the termination date of the policy shall be no earlier than the termination date of coverages required to be maintained after final payment, certified in accordance with Section 9.10.2, and an extended period endorsement "Supplemental Tail," must be purchased.

.12 In any and all claims against the Owner or the Architect, or any of their officers, directors, board members, officials, agents or employees, by any employee or Contractor, any subcontractor, anyone directly or indirectly employed by any of them, or anyone for whose acts any of them may be liable, the insurance obligation under this Section shall not be limited in any way by any limitation on the amount or type of damages, compensation, or benefits payable by or for the Contractor or subcontractor under the Worker's Compensation Act, disability benefit acts or other employees benefits acts.

§ A.3.2.2.2 The Contractor's Commercial General Liability policy under this Section A.3.2.2 shall not contain an exclusion or restriction of coverage for the following:

.1 Claims by one insured against another insured, if the exclusion or restriction is based solely on the fact that the claimant is an insured, and there would otherwise be coverage for the claim.

.2 Claims for property damage to the Contractor's Work arising out of the products-completed operations hazard where the damaged Work or the Work out of which the damage arises was performed by a Subcontractor.

.3 Claims for bodily injury other than to employees of the insured.

.4 Claims for indemnity under Section 3.18 of the General Conditions arising out of injury to employees of the insured.

.5 Claims or loss excluded under a prior work endorsement or other similar exclusionary language.

.6 Claims or loss due to physical damage under a prior injury endorsement or similar exclusionary language.

.7 Claims related to residential, multi-family, or other habitational projects, if the Work is to be performed on such a project.

.8 Claims related to roofing, if the Work involves roofing.

.9 Claims related to exterior insulation finish systems (EIFS), synthetic stucco or similar exterior coatings or surfaces, if the Work involves such coatings or surfaces.

.10 Claims related to earth subsidence or movement, where the Work involves such hazards.

.11 Claims related to explosion, collapse and underground hazards, where the Work involves such hazards.

§ A.3.2.3 Automobile Liability covering vehicles owned, and non-owned vehicles used, by the Contractor, with policy limits of not less than «One Million Dollars » ($ «1,000,000 ») per accident, for bodily injury, death of any

person, and property damage arising out of the ownership, maintenance and use of those motor vehicles along with any other statutorily required automobile coverage.

§ A.3.2.4 Umbrella Excess Liability insurance in the amount of Two Million Dollars ($2,000,000) over commercial general liability insurance, automobile liability insurance and Employer's Liability insurance.

§ A.3.2.5 Workers' Compensation at statutory limits.

§ A.3.2.6 Employers' Liability with policy limits not less than «One Million Dollars » ($ «1,000,000 ») each accident, «One Million Dollars » ($ «1,000,000 ») each employee, and «One Million Dollars » ($ «1,000,000 ») policy limit.

§ A.3.2.7 Jones Act, and the Longshore & Harbor Workers' Compensation Act, as required, if the Work involves hazards arising from work on or near navigable waterways, including vessels and docks

§ A.3.2.8 If the Contractor is required to furnish professional services as part of the Work, the Contractor shall procure Professional Liability insurance covering performance of the professional services, with policy limits of not less than «One Million Dollars » ($ «1,000,000 ») per claim and «One Million Dollars » ($ «1,000,000 ») in the aggregate.

§ A.3.2.9 If the Work involves the transport, dissemination, use, or release of pollutants, the Contractor shall procure Pollution Liability insurance, with policy limits of not less than «One Million Dollars » ($ «1,000,000 ») per claim and «One Million Dollars » ($ «1,000,000 ») in the aggregate.

§ A.3.3 Contractor's Other Insurance Coverage

§ A.3.3.1 Insurance selected and described in this Section A.3.3 shall be purchased from an insurance company or insurance companies lawfully authorized to issue insurance in the jurisdiction where the Project is located. The Contractor shall maintain the required insurance until the expiration of the period for correction of Work as set forth in Section 12.2.2 of the General Conditions, unless a different duration is stated below:
(If the Contractor is required to maintain any of the types of insurance selected below for a duration other than the expiration of the period for correction of Work, state the duration.)

« The Contractor shall purchase and maintain insurance covering the Owner's contingent liability for claims which may arise from operations under the Agreement and that will protect the Owner and the Architect and their respective officers, directors, board members, its agents and employees from and against all claims, damages, losses and expenses including attorney's fees and all other defense costs whether in legal or administrative actions arising (a) out of or resulting from the performance of the work provided that any such claim, damage, loss or expense is attributable to bodily injury, sickness, disease or death, or to injury or to destruction of tangible property (other than the work itself) including the loss of use resulting therefrom and (b) out of any claim made by any employee of the contractor or any subcontractor or by the Illinois Department of Labor for the amount of any wages or salaries which should have been paid to such employees and interest thereon, fines or other assessments relating to such violation, pursuant to provisions of the Prevailing Wage Act, 820 ILCS 130/0.01 et seq., regardless of whether or not it is caused in part by a party to whom insurance is afforded pursuant to this department. »

§ A.3.3.2 The Contractor shall purchase and maintain the following types and limits of insurance.
(Select the types of insurance the Contractor is required to purchase and maintain by placing an X in the box(es) next to the description(s) of selected insurance. Where policy limits are provided, include the policy limit in the appropriate fill point.)

[«X»] **§ A.3.3.2.1** General liability insurance. The policy shall be based on a $5,000 deductible, applicable to all losses for each occurrence. The Contractor shall be solely response for any and all losses up to $5,000 per loss. .The Contractor shall disclose to the Owner the amount of any deductible, and the Owner shall be responsible for losses within the deductible. Upon request, the Contractor shall provide the Owner with a copy of the property insurance policy or policies required. The Owner shall adjust and settle the loss with the insurer and be the trustee of the proceeds of the property insurance

in accordance with Article 11 of the General Conditions.

[« »] **§ A.3.3.2.2 Railroad Protective Liability Insurance**, with policy limits of not less than « » ($ « ») per claim and « » ($ « ») in the aggregate, for Work within fifty (50) feet of railroad property.

[« »] **§ A.3.3.2.3 Asbestos Abatement Liability Insurance**, with policy limits of not less than « » ($ « ») per claim and « » ($ « ») in the aggregate, for liability arising from the encapsulation, removal, handling, storage, transportation, and disposal of asbestos-containing materials.

[« »] **§ A.3.3.2.4** Insurance for physical damage to property while it is in storage and in transit to the construction site on an "all-risks" completed value form.

[« »] **§ A.3.3.2.5** Property insurance on an "all-risks" completed value form, covering property owned by the Contractor and used on the Project, including scaffolding and other equipment.

[« »] **§ A.3.3.2.6 Other Insurance**
(List below any other insurance coverage to be provided by the Contractor and any applicable limits.)

Coverage	Limits

§ A.3.3.3 Other Insurance Requirements

§ A3.3.3.1 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 of the Contractor by this Exhibit A 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 this Exhibit A. 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. On the Certificate of Insurance, delete in the cancellation provision the following words, 'Endeavor to' and 'but failure to mail such notice shall impose no obligation or liability of any kind upon the company, its agents or representatives.

§ A3.3.3.2 The insurance company issuing the comprehensive general liability insurance coverage required for the performance of this contract shall be licensed to do business in Illinois with Best's Insurance Guide (current edition) rating of "A" or better and satisfactory to the Owner.

§ A3.3.3.3 The Contractor shall name the Owner and the Architect and each of their respective officers, directors, officials, board members, agents and employees as additional insureds on the Contractor's general liability policy for claims arising from the Contractor's operations, the automobile liability policy and the excess/ umbrella liability policy. The foregoing policies shall be endorsed to be primary over any other insurance which the additional insureds may have and shall contain a severability of interests clause. The Contractor shall require each of its subcontractors to comply with the requirements of this Section A3.3.3.3.

§ A3.3.3.4 Under no circumstances shall the Contractor be relieved of providing insurance as required by this Contract. If inspection of Certificates by Owner would reasonably reveal any deficiencies in coverage as required by this Contract, Contractor shall not be relieved of its obligation to prove insurance coverages as required herein and may not assert any defense of waiver, acquiescence, estoppels, or otherwise by the failure of Owner or its agents to object to the form of the Certificate, Policies or other documents provided by the Contractor to certify that the Contractor complied with the provisions of this Contract regarding insurance coverage.

§ A3.3.3.5 Liability of Contractor and Subcontractor is not limited by purchase of insurance. Nothing contained in the insurance requirements of the Contract Documents is to be construed as limiting the liability of the Contractor, the liability of any Subcontractor of any tier, or either of their respective insurance carriers. Owner does not, in any way, represent that the coverages or limits of insurance specified is sufficient or adequate to protect the Owner, Contractor, Architect, or any Subcontractor's interest or liability, but are merely minimums. The obligation of the Contractor and every Subcontractor of any tier to purchase insurance shall not, in any way, limit their obligations to the Owner in the event that the Owner should suffer an injury or loss in excess of the amount recoverable through insurance, or any loss or portion of the loss which is not covered by either Contractor's or any Subcontractor's insurance.

§ A.3.4 Performance Bond and Payment Bond

The Contractor shall provide surety bonds, from a company or companies lawfully authorized to issue surety bonds in the jurisdiction where the Project is located with a A.M. Best rating of "A" and with a surety company to which the Owner has no objection. The Contractor's Performance Bond and labor and materials Payment Bond shall be in the amount of one hundred percent (100%) of the Contract Sum, as follows:
(Specify type and penal sum of bonds.)

Type	Penal Sum ($0.00)
Payment Bond	See above.
Performance Bond	See above.

Payment and Performance Bonds shall be AIA Document A312™, Payment Bond and Performance Bond, or contain provisions identical to AIA Document A312™, current as of the date of this Agreement.

§ A3.4.1 The Contractor shall deliver the required bonds to the Owner not later than ten days following the date of notification of the Award of Contract or if the Work is to be commenced prior thereto in response to a letter of intent, the Contractor shall, prior to the commencement of the Work, submit evidence satisfactory to the Owner that such bonds will be furnished.

§ A3.4.2 The Contractor shall require the attorney in fact who executes the required bonds on behalf of the surety to affix thereto a certified and current copy of the power of attorney. Such bonds shall be in the form of American Institute of Architect's Document A-311 or a similar form worded exactly the same as Doc. A-311 and shall bear the same date as, or a date subsequent to, the date of the Contract. The bonds shall be issued by a bonding company licensed to operate in the State of Illinois and approved by the Owner.

§ A3.4.3 The failure of the Contractor to supply the required bonds within 10 days after the prescribed Agreement forms are presented for signature, or if the bonding company finds that the Contractor is NOT bondable, shall constitute a default, and the Owner may award the Contract to the next responsible low bidder.

§ 3.4.5 If at any time the Owner becomes dissatisfied with any Surety or Sureties then upon the Bonds, or for any other reason such Bonds shall cease to be adequate security for the Owner, the Contractor shall, within five (5) days after notice to do so, substitute acceptable Bonds in such forms and sum and signed by such other Sureties as may be satisfactory to the Owner. No further payments shall be deemed due nor shall be made until the new Sureties shall have qualified.

§ A3.4.6 Whenever the Contractor shall be and is declared by the Owner to be in default under the Contract, the Surety and Contractor are each responsible to make full payment to the Owner for any and all additional services of the Architect as which are required as a result of the Contractor's default and in protecting the Owner's right under the Agreement with the Contractor.

§ A3.4.7 The Contractor must within ten (10) days after the execution of this Agreement furnish a Performance Bond agreeing to pay not less than the prevailing wage for work to be performed in accordance with the Contract and the laws of the State of Illinois, and agreeing to pay all sums of money due for labor, materials, apparatus, fixtures or machinery and transportation with respect thereto, as in said Payment Bond provided, each dated the

same day as the Agreement, in the forms prescribed by the Owner and each in an amount equal to the Contract Sum with a corporate Surety or Sureties acceptable to the Owner authorized to do business in the State of Illinois. These Bonds shall be maintained by the Contractor and shall remain in full force and effect until final acceptance of the work by the Owner or sixty (60) days following the date of Final Payment, whichever occurs later. The Contractor shall agree and shall cause the Surety to agree to be bound by each and every provision of the Contract Documents.

§ A3.4.8 In the event the Surety will make any assignment for the benefit of creditors or commit any act of bankruptcy, or if it shall be declared bankrupt or if it shall file a voluntary petition in bankruptcy or shall in the opinion of the Owner be insolvent, the Contractor shall agree forthwith upon request of the Owner to furnish and maintain other corporate Surety with respect to such bonds satisfactory to the Owner.

ARTICLE A.4 SPECIAL TERMS AND CONDITIONS

Special terms and conditions that modify this Insurance and Bonds Exhibit, if any, are as follows:

§ A.4.1 The Contractor is responsible for determining that subcontractors are adequately insured against claims arising out of or relating to the Work. The premium cost and charges for such insurance shall be paid by each Subcontractor.

»

SECTION 00820

PREVAILING WAGE REQUIREMENTS

PART 1 – GENERAL

1.1 REQUIREMENTS

A. Each Contractor shall comply with the requirements of the Illinois Prevailing Wage Act 820 ILCS 130/.01 et seq. which regulates the wages of laborers, workers, and mechanics employed in any Public Works project by the State, County, City or by any public body or any political subdivision or by anyone under contract for Public Works, including but not limited to: wages, medical and hospitalization insurance and retirement for those trades covered by the Act.

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

1.2 ACT AND ORDINANCES

A. The Illinois Prevailing Wage Act requires all contractors and subcontractors to pay laborers, workers, and mechanics performing services on a Public Works project no less then the “prevailing rate of wages” (hourly cash wages plus fringe benefits) in the county where the work is performed.

1. A copy of Illinois Department of Labor Prevailing Wages for Cook County effective – July 2020 is included herein.
2. Refer to the Illinois Department of Labor’s web site for changes in the “prevailing rate of wage” throughout the duration of the project. All Contractors and Subcontractors rendering services under this contract must comply with all the requirements of the Illinois Prevailing Wage Act, including, but not limited to, all wage notice and recordkeeping duties.

END OF SECTION

Cook County Prevailing Wage Rates posted on 7/15/2020

						Overtime								
Trade Title	**Rg**	**Type**	**C**	**Base**	**Foreman**	**M-F**	**Sa**	**Su**	**Hol**	**H/W**	**Pension**	**Vac**	**Trng**	**Other Ins**
ASBESTOS ABT-GEN	All	ALL		44.40	45.40	1.5	1.5	2.0	2.0	16.10	14.21	0.00	0.90	
ASBESTOS ABT-MEC	All	BLD		38.44	41.51	1.5	1.5	2.0	2.0	14.07	12.51	0.00	0.77	
BOILERMAKER	All	BLD		51.56	56.20	2.0	2.0	2.0	2.0	6.97	21.58	0.00	1.20	
BRICK MASON	All	BLD		47.56	52.32	1.5	1.5	2.0	2.0	11.20	20.51	0.00	0.97	
CARPENTER	All	ALL		49.76	51.76	1.5	1.5	2.0	2.0	11.79	23.34	0.00	0.73	
CEMENT MASON	All	ALL		47.00	49.00	2.0	1.5	2.0	2.0	15.75	19.73	0.00	1.00	
CERAMIC TILE FINISHER	All	BLD		41.80	41.80	1.5	1.5	2.0	2.0	11.25	13.41	0.00	0.88	
COMMUNICATION ELECTRICIAN	All	BLD		45.41	48.21	1.5	1.5	2.0	2.0	10.99	13.65	1.25	1.40	0.47
ELECTRIC PWR EQMT OP	All	ALL		54.90	59.90	1.5	1.5	2.0	2.0	12.72	18.42	0.00	3.40	
ELECTRIC PWR GRNDMAN	All	ALL		42.82	59.90	1.5	1.5	2.0	2.0	9.93	14.37	0.00	2.66	
ELECTRIC PWR LINEMAN	All	ALL		54.90	59.90	1.5	1.5	2.0	2.0	12.72	18.42	0.00	3.40	
ELECTRICIAN	All	ALL		50.00	53.00	1.5	1.5	2.0	2.0	15.95	17.49	1.25	1.76	1.30
ELEVATOR CONSTRUCTOR	All	BLD		58.47	65.78	2.0	2.0	2.0	2.0	15.73	18.41	4.68	0.63	
FENCE ERECTOR	All	ALL		44.42	46.42	1.5	1.5	2.0	2.0	13.68	15.40	0.00	0.65	
GLAZIER	All	BLD		46.35	47.85	1.5	2.0	2.0	2.0	14.79	22.67	0.00	1.26	
HEAT/FROST INSULATOR	All	BLD		51.25	54.33	1.5	1.5	2.0	2.0	14.07	14.26	0.00	0.77	
IRON WORKER	All	ALL		52.51	54.51	2.0	2.0	2.0	2.0	15.15	24.34	0.00	0.44	
LABORER	All	ALL		44.40	45.15	1.5	1.5	2.0	2.0	16.10	14.21	0.00	0.90	
LATHER	All	ALL		49.76	51.76	1.5	1.5	2.0	2.0	11.79	23.34	0.00	0.73	
MACHINIST	All	BLD		49.68	52.18	1.5	1.5	2.0	2.0	7.93	8.95	1.85	1.47	
MARBLE FINISHER	All	ALL		35.73	49.05	1.5	1.5	2.0	2.0	11.20	18.71	0.00	0.87	
MARBLE MASON	All	BLD		46.71	51.38	1.5	1.5	2.0	2.0	11.20	19.98	0.00	0.95	
MATERIAL TESTER I	All	ALL		34.40		1.5	1.5	2.0	2.0	16.10	14.21	0.00	0.90	
MATERIALS TESTER II	All	ALL		39.40		1.5	1.5	2.0	2.0	16.10	14.21	0.00	0.90	
MILLWRIGHT	All	ALL		49.76	51.76	1.5	1.5	2.0	2.0	11.79	23.34	0.00	0.73	
OPERATING ENGINEER	All	BLD	1	52.10	56.10	2.0	2.0	2.0	2.0	20.90	17.85	2.00	2.15	
OPERATING ENGINEER	All	BLD	2	50.80	56.10	2.0	2.0	2.0	2.0	20.90	17.85	2.00	2.15	
OPERATING ENGINEER	All	BLD	3	48.25	56.10	2.0	2.0	2.0	2.0	20.90	17.85	2.00	2.15	
OPERATING ENGINEER	All	BLD	4	46.50	56.10	2.0	2.0	2.0	2.0	20.90	17.85	2.00	2.15	
OPERATING ENGINEER	All	BLD	5	55.85	56.10	2.0	2.0	2.0	2.0	20.90	17.85	2.00	2.15	
OPERATING ENGINEER	All	BLD	6	53.10	56.10	2.0	2.0	2.0	2.0	20.90	17.85	2.00	2.15	
OPERATING ENGINEER	All	BLD	7	55.10	56.10	2.0	2.0	2.0	2.0	20.90	17.85	2.00	2.15	
OPERATING ENGINEER	All	FLT	1	58.20	58.20	1.5	1.5	2.0	2.0	20.50	16.85	2.00	1.65	
OPERATING ENGINEER	All	FLT	2	56.70	58.20	1.5	1.5	2.0	2.0	20.50	16.85	2.00	1.65	
OPERATING ENGINEER	All	FLT	3	50.45	58.20	1.5	1.5	2.0	2.0	20.50	16.85	2.00	1.65	

OPERATING ENGINEER	All	FLT	4	41.95	58.20	1.5	1.5	2.0	2.0	20.50	16.85	2.00	1.65	
OPERATING ENGINEER	All	FLT	5	59.70	58.20	1.5	1.5	2.0	2.0	20.50	16.85	2.00	1.65	
OPERATING ENGINEER	All	FLT	6	40.00	58.20	1.5	1.5	2.0	2.0	20.50	16.85	2.00	1.65	
OPERATING ENGINEER	All	HWY	1	50.30	54.30	1.5	1.5	2.0	2.0	20.90	17.85	2.00	2.15	
OPERATING ENGINEER	All	HWY	2	49.75	54.30	1.5	1.5	2.0	2.0	20.90	17.85	2.00	2.15	
OPERATING ENGINEER	All	HWY	3	47.70	54.30	1.5	1.5	2.0	2.0	20.90	17.85	2.00	2.15	
OPERATING ENGINEER	All	HWY	4	46.30	54.30	1.5	1.5	2.0	2.0	20.90	17.85	2.00	2.15	
OPERATING ENGINEER	All	HWY	5	45.10	54.30	1.5	1.5	2.0	2.0	20.90	17.85	2.00	2.15	
OPERATING ENGINEER	All	HWY	6	53.30	54.30	1.5	1.5	2.0	2.0	20.90	17.85	2.00	2.15	
OPERATING ENGINEER	All	HWY	7	51.30	54.30	1.5	1.5	2.0	2.0	20.90	17.85	2.00	2.15	
ORNAMENTAL IRON WORKER	All	ALL		51.63	54.13	2.0	2.0	2.0	2.0	14.23	22.25	0.00	1.25	
PAINTER	All	ALL		48.30	54.34	1.5	1.5	1.5	2.0	12.51	14.24	0.00	1.87	
PAINTER - SIGNS	All	BLD		39.84	44.74	1.5	1.5	2.0	2.0	2.73	3.39	0.00	0.00	
PILEDRIVER	All	ALL		49.76	51.76	1.5	1.5	2.0	2.0	11.79	23.34	0.00	0.73	
PIPEFITTER	All	BLD		50.75	53.75	1.5	1.5	2.0	2.0	10.85	20.85	0.00	2.92	
PLASTERER	All	BLD		45.00	47.70	1.5	1.5	2.0	2.0	15.75	18.14	0.00	1.25	
PLUMBER	All	BLD		52.00	55.10	1.5	1.5	2.0	2.0	15.37	14.75	0.00	1.35	
ROOFER	All	BLD		45.45	49.45	1.5	1.5	2.0	2.0	10.88	13.31	0.00	0.91	
SHEETMETAL WORKER	All	BLD		46.50	50.22	1.5	1.5	2.0	2.0	12.35	26.53	0.00	0.90	
SIGN HANGER	All	BLD		32.68	35.29	1.5	1.5	2.0	2.0	5.65	4.00	0.00	0.00	
SPRINKLER FITTER	All	BLD		49.95	52.45	1.5	1.5	2.0	2.0	13.50	16.80	0.00	0.55	
STEEL ERECTOR	All	ALL		52.51	54.51	2.0	2.0	2.0	2.0	15.15	24.34	0.00	0.44	
STONE MASON	All	BLD		47.56	52.32	1.5	1.5	2.0	2.0	11.20	20.51	0.00	0.97	
TERRAZZO FINISHER	All	BLD		43.54	43.54	1.5	1.5	2.0	2.0	11.25	15.61	0.00	0.90	
TERRAZZO MASON	All	BLD		47.38	50.88	1.5	1.5	2.0	2.0	11.25	17.07	0.00	0.94	
TILE MASON	All	BLD		48.75	52.75	1.5	1.5	2.0	2.0	11.25	16.90	0.00	0.95	
TRAFFIC SAFETY WORKER	All	HWY		36.75	38.35	1.5	1.5	2.0	2.0	7.95	8.20	0.00	0.75	
TRUCK DRIVER	E	ALL	1	38.35	39.00	1.5	1.5	2.0	2.0	11.28	13.70	0.00	0.15	
TRUCK DRIVER	E	ALL	2	38.60	39.00	1.5	1.5	2.0	2.0	11.28	13.70	0.00	0.15	
TRUCK DRIVER	E	ALL	3	38.80	39.00	1.5	1.5	2.0	2.0	11.28	13.70	0.00	0.15	
TRUCK DRIVER	E	ALL	4	39.00	39.00	1.5	1.5	2.0	2.0	11.28	13.70	0.00	0.15	
TRUCK DRIVER	W	ALL	1	39.08	39.63	1.5	1.5	2.0	2.0	9.75	13.08	0.00	0.15	
TRUCK DRIVER	W	ALL	2	39.23	39.63	1.5	1.5	2.0	2.0	9.75	13.08	0.00	0.15	
TRUCK DRIVER	W	ALL	3	39.43	39.63	1.5	1.5	2.0	2.0	9.75	13.08	0.00	0.15	
TRUCK DRIVER	W	ALL	4	39.63	39.63	1.5	1.5	2.0	2.0	9.75	13.08	0.00	0.15	
TUCKPOINTER	All	BLD		47.25	48.25	1.5	1.5	2.0	2.0	8.59	19.48	0.00	0.94	

Legend
Rg Region
Type Trade Type - All,Highway,Building,Floating,Oil & Chip,Rivers
C Class
Base Base Wage Rate
OT M-F Unless otherwise noted, OT pay is required for any hour greater than 8 worked each day, Mon through Fri. The number listed is the multiple of the base wage.
OT Sa Overtime pay required for every hour worked on Saturdays **OT Su** Overtime pay required for every hour worked on Sundays **OT Hol** Overtime pay required for every hour worked on Holidays **H/W** Health/Welfare benefit
Vac Vacation
Trng Training
Other Ins Employer hourly cost for any other type(s) of insurance provided for benefit of worker.

Explanations COOK COUNTY

The following list is considered as those days for which holiday rates of wages for work performed apply: New Years Day, Memorial Day, Fourth of July, Labor Day, Thanksgiving Day, Christmas Day and Veterans Day in some classifications/counties. Generally, any of these holidays which fall on a Sunday is celebrated on the following Monday. This then makes work performed on that Monday payable at the appropriate overtime rate for holiday pay. Common practice in a given local may alter certain days of celebration. If in doubt, please check with IDOL.

TRUCK DRIVERS (WEST) - That part of the county West of Barrington Road.

EXPLANATION OF CLASSES

ASBESTOS - GENERAL - removal of asbestos material/mold and hazardous materials from any place in a building, including mechanical systems where those mechanical systems are to be removed. This includes the removal of asbestos materials/mold and hazardous materials from ductwork or pipes in a building when the building is to be demolished at the time or at some close future date.

ASBESTOS - MECHANICAL - removal of asbestos material from mechanical systems, such as pipes, ducts, and boilers, where the mechanical systems are to remain.

CERAMIC TILE FINISHER
The grouting, cleaning, and polishing of all classes of tile, whether for interior or exterior purposes, all burned, glazed or unglazed products; all composition materials, granite tiles, warning detectable tiles, cement tiles, epoxy composite materials, pavers, glass, mosaics, fiberglass, and all substitute materials, for tile made in tile-like units; all mixtures in tile like form of cement, metals, and other materials that are for and intended for use as a finished floor surface, stair treads, promenade roofs, walks, walls, ceilings, swimming pools, and all other places where tile is to form a finished interior or exterior. The mixing of all setting mortars including but not limited to thin-set mortars, epoxies, wall mud, and any other sand and cement mixtures or adhesives when used in the preparation, installation, repair, or maintenance of tile and/or similar materials. The handling and unloading of all
sand, cement, lime, tile, fixtures, equipment, adhesives, or any other materials to be used in the preparation, installation, repair, or maintenance of tile and/or similar materials. Ceramic Tile Finishers shall fill all joints and voids regardless of method on all tile work, particularly and especially after installation of said tile work. Application of any and all protective coverings to all types of tile installations including, but not be limited to, all soap compounds, paper products, tapes, and all polyethylene coverings, plywood, masonite, cardboard, and any new type of products that may be used to protect tile installations, Blastrac equipment, and all floor scarifying equipment used in preparing floors to receive tile. The clean up and removal of all waste and materials. All demolition of existing tile floors and walls to be re-tiled.

COMMUNICATIONS ELECTRICIAN
Installation, operation, inspection, maintenance, repair and service of radio, television, recording, voice sound vision production and reproduction, telephone and telephone interconnect, facsimile, data apparatus, coaxial, fibre optic and wireless equipment, appliances and systems used for the transmission and reception of signals of any nature, business, domestic, commercial, education, entertainment, and residential purposes, including but not limited to, communication and telephone, electronic and sound equipment, fibre optic and data communication systems, and the performance of any task directly related to such installation or service whether at new or existing sites, such tasks to include the placing of wire and cable and electrical power conduit or other raceway work within the equipment room and pulling wire and/or cable through conduit and the installation of any incidental conduit, such that the employees covered hereby can complete any job in full.

MARBLE FINISHER
Loading and unloading trucks, distribution of all materials (all stone, sand, etc.), stocking of floors with material, performing all rigging for heavy work, the handling of all material that may be needed for the installation of such materials, building of scaffolding, polishing if needed, patching, waxing of material if damaged, pointing up, caulking, grouting and cleaning of marble, holding water on diamond or Carborundum blade or saw for setters cutting, use of tub saw or any other saw needed for preparation of material, drilling of holes for wires that anchor material set by setters, mixing up of molding plaster for installation of material, mixing up thin set for the installation of material, mixing up of sand to cement for the installation of material and such other work as may be required in helping a Marble Setter in the handling of all material in the erection or installation of interior marble, slate, travertine, art marble, serpentine, alberene stone, blue stone, granite and other stones (meaning as to stone any foreign or domestic materials as are specified and used in building interiors and exteriors and customarily known as stone in the trade), carrara, sanionyx, vitrolite and similar opaque glass and the laying of all marble tile, terrazzo tile, slate tile and precast tile, steps, risers treads, base, or any other materials that may be used as substitutes for any of the aforementioned materials and which are used on interior and exterior which are installed in a similar manner.

MATERIAL TESTER I: Hand coring and drilling for testing of materials; field inspection of uncured concrete and asphalt.

MATERIAL TESTER II: Field inspection of welds, structural steel, fireproofing, masonry, soil, facade, reinforcing steel, formwork, cured concrete, and concrete and asphalt batch plants; adjusting proportions of bituminous mixtures.

OPERATING ENGINEER - BUILDING
Class 1. Asphalt Plant; Asphalt Spreader; Autograde; Backhoes with Caisson Attachment; Batch Plant; Benoto (requires Two Engineers); Boiler and Throttle Valve; Caisson Rigs; Central Redi-Mix Plant; Combination Back Hoe Front End-loader Machine; Compressor and Throttle Valve; Concrete Breaker (Truck Mounted); Concrete Conveyor; Concrete Conveyor (Truck Mounted); Concrete Paver Over 27E cu. ft; Concrete Paver 27E cu. ft. and Under: Concrete Placer; Concrete Placing Boom; Concrete Pump (Truck Mounted); Concrete Tower; Cranes, All; Cranes, Hammerhead; Cranes, (GCI and similar Type); Creter Crane; Spider Crane; Crusher, Stone, etc.; Derricks, All; Derricks, Traveling; Formless Curb and Gutter Machine; Grader, Elevating; Grouting Machines; Heavy Duty Self-Propelled Transporter or Prime Mover; Highlift Shovels or Front Endloader 2-1/4 yd. and over; Hoists, Elevators, outside type rack and pinion and similar machines; Hoists, One, Two and Three Drum; Hoists, Two Tugger One Floor; Hydraulic Backhoes; Hydraulic Boom Trucks; Hydro Vac (and similar equipment); Locomotives, All; Motor Patrol; Lubrication Technician; Manipulators; Pile Drivers and Skid Rig; Post Hole Digger; Pre-Stress Machine; Pump Cretes Dual Ram; Pump Cretes: Squeeze Cretes-Screw Type Pumps; Gypsum Bulker and Pump; Raised and Blind Hole Drill; Roto Mill Grinder; Scoops - Tractor Drawn; Slip- Form Paver; Straddle Buggies; Operation of Tie Back Machine; Tournapull; Tractor with Boom and Side Boom; Trenching Machines.

Class 2. Boilers; Broom, All Power Propelled; Bulldozers; Concrete Mixer (Two Bag and Over); Conveyor, Portable; Forklift Trucks; Highlift Shovels or Front Endloaders under 2-1/4 yd.; Hoists, Automatic; Hoists, Inside Elevators; Hoists, Sewer Dragging Machine; Hoists, Tugger Single Drum; Laser Screed; Rock Drill (Self-Propelled); Rock Drill (Truck Mounted); Rollers, All; Steam Generators; Tractors, All; Tractor Drawn Vibratory Roller; Winch Trucks with "A" Frame.

Class 3. Air Compressor; Combination Small Equipment Operator; Generators; Heaters, Mechanical; Hoists, Inside Elevators (remodeling or renovation work); Hydraulic Power Units (Pile Driving, Extracting, and Drilling); Pumps, over 3" (1 to 3 not to exceed a total of 300 ft.); Low Boys; Pumps, Well Points; Welding Machines (2 through 5); Winches, 4 Small Electric Drill Winches.

Class 4. Bobcats and/or other Skid Steer Loaders; Oilers; and Brick Forklift.

Class 5. Assistant Craft Foreman.

Class 6. Gradall.

Class 7. Mechanics; Welders.

OPERATING ENGINEERS - HIGHWAY CONSTRUCTION

Class 1. Asphalt Plant; Asphalt Heater and Planer Combination; Asphalt Heater Scarfire; Asphalt Spreader; Autograder/GOMACO or other similar type machines: ABG Paver; Backhoes with Caisson Attachment; Ballast Regulator; Belt Loader; Caisson Rigs; Car Dumper; Central Redi-Mix Plant; Combination Backhoe Front Endloader Machine, (1 cu. yd. Backhoe Bucket or over or with attachments); Concrete Breaker (Truck Mounted); Concrete Conveyor; Concrete Paver over 27E cu. ft.; Concrete Placer; Concrete Tube Float; Cranes, all attachments; Cranes, Tower Cranes of all types: Creter Crane: Spider Crane; Crusher, Stone, etc.; Derricks, All; Derrick Boats; Derricks, Traveling; Dredges; Elevators, Outside type Rack & Pinion and Similar Machines; Formless Curb and Gutter Machine; Grader, Elevating; Grader, Motor Grader, Motor Patrol, Auto Patrol, Form Grader, Pull Grader, Subgrader; Guard Rail Post Driver Truck Mounted; Hoists, One, Two and Three Drum; Heavy Duty Self-Propelled Transporter or Prime Mover; Hydraulic Backhoes; Backhoes with shear attachments up to 40' of boom reach; Lubrication Technician; Manipulators; Mucking Machine; Pile Drivers and Skid Rig; Pre-Stress Machine; Pump Cretes Dual Ram; Rock Drill - Crawler or Skid Rig; Rock Drill - Truck Mounted; Rock/Track Tamper; Roto Mill Grinder; Slip-Form Paver; Snow Melters; Soil Test Drill Rig (Truck Mounted); Straddle Buggies; Hydraulic Telescoping Form (Tunnel); Operation of Tieback Machine; Tractor Drawn Belt Loader; Tractor Drawn Belt Loader (with attached pusher - two engineers); Tractor with Boom; Tractaire with Attachments; Traffic Barrier Transfer Machine; Trenching; Truck Mounted Concrete Pump with Boom; Raised or Blind Hole Drills (Tunnel Shaft); Underground Boring and/or Mining Machines 5 ft. in diameter and over tunnel, etc; Underground Boring and/or Mining Machines under 5 ft. in diameter; Wheel Excavator; Widener (APSCO).

Class 2. Batch Plant; Bituminous Mixer; Boiler and Throttle Valve; Bulldozers; Car Loader Trailing Conveyors; Combination Backhoe Front Endloader Machine (Less than 1 cu. yd. Backhoe Bucket or over or with attachments); Compressor and Throttle Valve; Compressor, Common Receiver (3); Concrete Breaker or Hydro Hammer; Concrete Grinding Machine; Concrete Mixer or Paver 7S Series to and including 27 cu. ft.; Concrete Spreader; Concrete Curing Machine, Burlap Machine, Belting Machine and Sealing Machine; Concrete Wheel Saw; Conveyor Muck Cars (Haglund or Similar Type); Drills, All; Finishing Machine - Concrete; Highlift Shovels or Front Endloader; Hoist - Sewer Dragging Machine; Hydraulic Boom Trucks (All Attachments); Hydro-Blaster; Hydro Excavating (excluding hose work); Laser Screed; All Locomotives, Dinky; Off-Road Hauling Units (including articulating) Non Self- Loading Ejection Dump; Pump Cretes: Squeeze Cretes - Screw Type Pumps, Gypsum Bulker and Pump; Roller, Asphalt; Rotary Snow Plows; Rototiller, Seaman, etc., self-propelled; Self-Propelled Compactor; Spreader - Chip - Stone, etc.; Scraper - Single/Twin Engine/Push and Pull; Scraper - Prime Mover in Tandem (Regardless of Size); Tractors pulling attachments, Sheeps Foot, Disc, Compactor, etc.; Tug Boats.

Class 3. Boilers; Brooms, All Power Propelled; Cement Supply Tender; Compressor, Common Receiver (2); Concrete Mixer (Two Bag and Over); Conveyor, Portable; Farm-Type Tractors Used for Mowing, Seeding, etc.; Forklift Trucks; Grouting Machine; Hoists, Automatic; Hoists, All Elevators; Hoists, Tugger Single Drum; Jeep Diggers; Low Boys; Pipe Jacking Machines; Post-Hole Digger; Power Saw, Concrete Power Driven; Pug Mills; Rollers, other than Asphalt; Seed and Straw Blower; Steam Generators; Stump Machine; Winch Trucks with "A" Frame; Work Boats; Tamper-Form-Motor Driven.

Class 4. Air Compressor; Combination - Small Equipment Operator; Directional Boring Machine; Generators; Heaters, Mechanical; Hydraulic Power Unit (Pile Driving, Extracting, or Drilling); Light Plants, All (1 through 5); Pumps, over 3" (1 to 3 not to exceed a total of 300 ft.); Pumps, Well Points; Vacuum Trucks (excluding hose work); Welding Machines (2 through 5); Winches, 4 Small Electric Drill Winches.

Class 5. SkidSteer Loader (all); Brick Forklifts; Oilers.

Class 6. Field Mechanics and Field Welders

Class 7. Dowell Machine with Air Compressor; Gradall and machines of like nature.

OPERATING ENGINEER - FLOATING
Class 1. Craft Foreman; Master Mechanic; Diver/Wet Tender; Engineer; Engineer (Hydraulic Dredge).

Class 2. Crane/Backhoe Operator; Boat Operator with towing endorsement; Mechanic/Welder; Assistant Engineer (Hydraulic Dredge); Leverman (Hydraulic Dredge); Diver Tender.

Class 3. Deck Equipment Operator, Machineryman, Maintenance of Crane (over 50 ton capacity) or Backhoe (115,000 lbs. or more); Tug/Launch Operator; Loader/Dozer and like equipment on Barge, Breakwater Wall, Slip/Dock, or Scow, Deck Machinery, etc.

Class 4. Deck Equipment Operator, Machineryman/Fireman (4 Equipment Units or More); Off Road Trucks; Deck Hand, Tug Engineer, Crane Maintenance (50 Ton Capacity and Under) or Backhoe Weighing (115,000 pounds or less); Assistant Tug Operator.

Class 5. Friction or Lattice Boom Cranes.

Class 6. ROV Pilot, ROV Tender

TERRAZZO FINISHER
The handling of sand, cement, marble chips, and all other materials that may be used by the Mosaic Terrazzo Mechanic, and the mixing, grinding, grouting, cleaning and sealing of all Marble, Mosaic, and Terrazzo work, floors, base, stairs, and wainscoting by hand or machine, and in addition, assisting and aiding Marble, Masonic, and Terrazzo Mechanics.

TRAFFIC SAFETY
Effective November 30, 2018, the description of the traffic safety worker trade in this County is as follows: Work associated with barricades, horses and drums used to reduce lane usage on highway work, the installation and removal of temporary, non- temporary or permanent lane, pavement or roadway markings, and the installation and removal of temporary road signs.

TRUCK DRIVER - BUILDING, HEAVY AND HIGHWAY CONSTRUCTION - EAST & WEST
Class 1. Two or three Axle Trucks. A-frame Truck when used for transportation purposes; Air Compressors and Welding Machines, including those pulled by cars, pick-up trucks and tractors; Ambulances; Batch Gate Lockers; Batch Hopperman; Car and Truck Washers; Carry-alls; Fork Lifts and Hoisters; Helpers; Mechanics Helpers and Greasers; Oil Distributors 2-man operation; Pavement Breakers; Pole Trailer, up to 40 feet; Power Mower Tractors; Self-propelled Chip Spreader; Skipman; Slurry Trucks, 2-man operation; Slurry Truck Conveyor Operation, 2 or 3 man; Teamsters; Unskilled Dumpman; and Truck Drivers hauling warning lights, barricades, and portable toilets on the job site.

Class 2. Four axle trucks; Dump Crets and Adgetors under 7 yards; Dumpsters, Track Trucks, Euclids, Hug Bottom Dump Turnapulls or Turnatrailers when pulling other than self-loading equipment or similar equipment under 16 cubic yards; Mixer Trucks under 7 yards; Ready-mix Plant Hopper Operator, and Winch Trucks, 2 Axles.

Class 3. Five axle trucks; Dump Crets and Adgetors 7 yards and over; Dumpsters, Track Trucks, Euclids, Hug Bottom Dump Turnatrailers or turnapulls when pulling other than self-loading equipment or similar equipment over 16 cubic yards; Explosives and/or Fission Material Trucks; Mixer Trucks 7 yards or over; Mobile Cranes while in transit; Oil Distributors, 1-man operation; Pole Trailer, over 40 feet; Pole and Expandable Trailers hauling material over 50 feet long; Slurry trucks, 1-man operation; Winch trucks, 3 axles or more; Mechanic--Truck Welder and Truck Painter.

Class 4. Six axle trucks; Dual-purpose vehicles, such as mounted crane trucks with hoist and accessories; Foreman; Master Mechanic; Self-loading equipment like P.B. and trucks with scoops on the front.

Other Classifications of Work:
For definitions of classifications not otherwise set out, the Department generally has on file such definitions which are available. If a task to be performed is not subject to one of the classifications of pay set out, the Department will upon being contacted state which neighboring county has such a classification and provide such rate, such rate being deemed to exist by reference in this document. If no neighboring county rate applies to the task, the Department shall undertake a special determination, such special determination being then deemed to have existed under this determination. If a project requires these, or any classification not listed, please contact IDOL at 217-782-1710 for wage rates or clarifications.

LANDSCAPING
Landscaping work falls under the existing classifications for laborer, operating engineer and truck driver. The work performed by landscape plantsman and landscape laborer is covered by the existing classification of laborer. The work performed by landscape operators (regardless of equipment used or its size) is covered by the classifications of operating engineer. The work performed by landscape truck drivers (regardless of size of truck driven) is covered by the classifications of truck driver.

MATERIAL TESTER & MATERIAL TESTER/INSPECTOR I AND II
Notwithstanding the difference in the classification title, the classification entitled "Material Tester I" involves the same job duties as the classification entitled "Material Tester/Inspector I". Likewise, the classification entitled "Material Tester II" involves the same job duties as the classification entitled "Material Tester/Inspector II".

SECTION 01100

SUMMARY

PART 1 – GENERAL

1.1 PROJECT

A. Project Name: Village Green Improvements-Phase 1.
B. Owner's Name: Village of Hoffman Estates
C. The Project consists of the construction of renovations to the existing Village Green including regrading, landscaping, concrete sidewalks, and site lighting.

1.2 CONTRACT DESCRIPTION

A. Work covered by Contract Documents: Construction of renovations to the existing Village Green including regrading, landscaping, concrete sidewalks, and site lighting.
B. Definitions. The following terms are used throughout the Contract Documents. The work will be governed in accord with the definitions.
   1. Fabricated: Fabricated pertains to items specifically assembled or made of selected materials or components to meet individual design requirements.
   2. Manufactured: Manufactured means standard units, usually mass produced by an established manufacturer of the respective item.
   3. Provide: Provide means furnish and install.
   4. Shop fabricated or shop made: Shop fabricated or shop made refers to items made by a Contractor or Subcontractor in their own Shop.
C. Insurance
   1. Refer to the AIA A101 Exhibit A Document in Section 00700 for insurance requirements.
   2. The contractor may purchase and maintain Builder's Risk Insurance, but it is not required as part of the General Conditions. Should the Contractor elect to purchase Builder's Risk Insurance it shall include a deductible amount of $5,000 per occurrence.
D. Contracts
   1. The Owner will award a single construction contract for all work specified in the Contract Documents.
   2. Upon award of the construction contract, the owner will issue a Letter of Intent to award a Construction Contract to the approved contractor. This Letter of Intent shall serve as a notice to proceed with the project according to the terms and conditions set forth in the Contract Documents, until the work under Contract Documents is completed. . The contractor shall commence all construction services as specified in the contract documents upon receipt of the Letter of Intent.

1.3 DUTIES OF CONTRACTOR

A. The contractor shall be responsible for providing and paying for:
   1. Labor, materials and equipment.
   2. Tools, construction equipment and machinery.
   3. Temporary water, heat and other utilities required for construction.
   4. Other facilities and services necessary for proper execution and completion of work.
B. The contractor shall be responsible for paying and securing all permits, governmental fees and licenses other than primary building permit necessary for the proper execution and completion of the Project.
C. The contractor shall comply with all codes, ordinances, rules, regulations, orders and other legal requirements of the public authorities which govern the performance of the work under the Contract Documents.
D. The contractor shall coordinate and have completed all inspections required by public authorities relating to the performance of the work under the Contract Documents including, but not limited to:
   1. Illinois Department of Public Health (IDPH) for all rough-in and final inspections of plumbing and food service work, as required.
   2. All inspections required in Section 01400 to be performed by a Testing and Inspection Agency.

E. The contactor shall have duty to promptly submit written notice to the Architect of any known or observed variances of the Contract Documents from legal requirements that may govern the work. Upon notice to the Architect, appropriate modifications will be made to the Contract Documents to account for the legal requirements. In the event the contractor fails to provide notice of any variances, he shall assume responsibility for any work known to be contrary to those legal requirements.
   1. The contractor shall enforce strict discipline and maintain good order among employees and subcontractors. Contractor shall not employ unfit person of those not skilled in the assigned task
F. The contractor acknowledges that the Project is exempt from all State and Local use taxes. It shall be the duty of the contractor to: 1) obtain a sales tax exemption certificate number from the Owner; 2) place exemption certificate number on invoices for materials incorporated in work; 3) furnish copies of invoices to Owner upon request 4) file a notarized statement that all purchases made under exemption certificate were entitled to be exempt with Owner upon completion of work; and 5) pay any penalties assessed for the improper use of exemption certificate number.

1.4 OWNER OCCUPANCY

A. The date of Substantial Completion shall be no later than November 27, 2020, 5:00 p.m. Note: Substantial Completion for this project refers to all scheduled work being a minimum 99% complete.
B. The date of Final Completion shall be no later than March 31, 2021, 5:00 p.m. Note: Final Completion for this project refers to all scheduled work, punch list and closeout items being 100% complete.
C. The Architect's and their consultants' services will terminate sixty (60) days after (1) the date of Substantial Completion of the Work or (2) the anticipated date of Substantial Completion identified in Specifications, whichever is earlier. Any work required of the Architect and their consultants after this date will be back-charged to the contractor by the Owner.
D. Refer to General Conditions for Liquidated Damages.

1.5 JOB OPERATIONS

A. Project Security:
   1. The contractor shall provide necessary precautions such as fences or barriers to protect Owner's personnel or members of the general public in the areas in which construction activity is on-going.
   2. The contractor shall securely close-off all areas of construction after working hours to prevent entry by unauthorized persons.
B. Project Hours:
   1. Note: Village noise ordinance limits work to the hours of 7:00 a.m. to 7:00 p.m. on weekdays and 8:00 a.m. and 10:00 p.m. on Saturdays and Sundays (call to verify times).

1.6 WORK LIMITATIONS

A. All spaces around where work will be done may be occupied by Owner's personnel. Contractor shall limit the scope of its work during times of owner occupancy to prevent disturbing Owner.
B. Contractor shall schedule work in such a manner as to not disrupt mechanical or electrical systems for the existing adjacent buildings during times of Owner occupancy.
C. Contractor shall give Owner a minimum of three (3) days' notice before commencing work in Owner occupied area.

1.7 CONTRACTOR USE OF SITE AND PREMISES

A. Contractor shall confine work at the Project site as permitted by: 1) Law; 2) Permits; 3) the Contract Documents; 4) As instructed by Owner or Owner's representative; and 5) As required for Owner's use of adjacent facilities.
B. Confer with Owner's representative and obtain full knowledge of all Project site rules and regulations affecting work.

C. Contractor shall conform to the Project Site rules and regulations while engaged in its work.
D. Contractor acknowledges that the Project Site rules and regulations take precedence over other rules and regulations that may exist outside such jurisdiction.
E. Contractor shall be obligated to permit the Owner's representative to examine the contractor's list of employees, including those of his subcontractors and their agents, working on the Project Site. Contractor shall
   1. Keep all vehicles, mechanized or motorized equipment locked and secured at all times when parked and unattended on Owner's premises.
   2. Contractor shall not, under any circumstance, leave any vehicle unattended with its motor or engine running, or with its ignition key in place.
   3. All traffic control subject to Owner's representative's approval.
F. Do not unreasonably encumber site with materials or equipment.
G. Contractor shall assume full responsibility for protection safety and safekeeping of products stored on premises.
H. Contractor shall move all stored products or equipment which interferes with operations of Owner or other subcontractors.
I. Contractor shall obtain and pay for the use of additional storage or work areas needed for operations.
J. Contractor shall limit use of the Project Site for work and storage to areas depicted in the drawing or area approved in advance by Owner.
K. The contractor acknowledges that adjacent sites may be used by the Owner or members of the general public requiring contractor to maintain appropriate safety measures.
L. The contractor shall provide access to and from the Project Site as required by law and by Owner:

1.8 SUBSTANCE ABUSE PREVENTION POLICY

A. Pursuant to the Substance Abuse Prevention on Public Works Act (820 IL CS 265/1, et seq.), employees of the contractor and employees of the contractor and employees of any subcontractor are prohibited from the use of drugs or alcohol , as defined in the Act, while performing on any public works project.
B. The contractor and any subcontractor shall file with the public body engaged in the construction of the public works: a copy of the substance abuse prevention program along with a cover letter certifying that their program meets the requirements of the Act or a letter certifying that the contractor or subcontractor has a collective bargaining agreement in effect dealing with the subject matter of this Act. A certification form is attached and must be completed by the contractor and each subcontractor to this contract.

1.9 WINTER PROTECTION AND WORK

A. Contractor shall provide and pay for all materials, equipment, labor, utilities, transportation, etc. required to completely enclose and “winter protect” the Project Site during construction. The schedule dictates that complete enclosure will be required to complete the Project in a timely manner. No extensions of time or additional fees will be approved for any delays due to weather or Project Site conditions.
B. The Project Site and access routes are to be maintained as required to facilitate the winter protection and work.

1.10 WORK SEQUENCE

A. Construction services as specified herein shall commence upon issuance of the Letter of Intent to Award a Construction Contract.
B. Certificate of Insurance and all Bonds to be submitted to the Architect within 3 business days upon issuance of the Letter of Intent.
C. All Shop Drawings to be submitted to the Architect within 21 calendar days upon issuance of the Letter of Intent.

PART 2 – PRODUCTS – NOT USED

PART 3 – EXECUTION – NOT USED

END OF SECTION

SECTION 01200

PRICE AND PAYMENT PROCEDURES

PART 1 – GENERAL

1.1 SECTION INCLUDES
A. Procedures for preparation and submittal of applications for progress payments.
B. Change order procedures.

1.2 RELATED SECTIONS
A. Section 01210 - Allowances: Payment procedures relating to allowances.
B. Section 01270 - Unit Prices: Monetary values of unit prices, payment and modification procedures relating to unit prices.
C. Section 01780 - Closeout Submittals.

1.3 SCHEDULE OF VALUES
A. Submit a printed schedule on AIA Form G703 - Application and Certificate for Payment Continuation Sheet or Architect approved similar.
B. Submit Schedule of Values in duplicate within 15 days after of the Letter of Intent.
C. Include in each line item, the amount of Allowances specified. For unit cost Allowances, identify quantities taken from Contract Documents multiplied by the unit cost to achieve the total for the item.
D. Submit separate quantities and amounts for material and labor for each respective line item.
E. Revise schedule to list approved Change Orders, with each Application For Payment.
F. Support values given with data to substantiate their correctness.
G. Submit quantities of designated materials.
H. List quantities of materials specified under unit prices.
I. Include in the line items a total amount of Contractor's overhead and profit.
J. Payment for materials stored on or off site will be limited to those materials listed separately in Schedule of Values.
K. Form of Submittal
    1. Submit typewritten Schedule of Values on 8-1/2 x 11 paper format.
    2. Utilize the Table of Contents of this Project Manual.
    3. Identify each line item with number and title of the specification Section.
    4. Separate costs under the various phases.
L. Preparation
    1. Itemize separate line cost for each of following cost items:
        a. Overhead and profit.
        b. Bonds.
        c. Insurance.
        d. General Requirements.
        e. Site mobilization.
    2. Itemize separate line item cost for work specified in each section of the specifications. Identify work of:
        a. Contractor's own labor forces.
        b. All subcontractors.
        c. All major suppliers of products or equipment.
    3. Break down installed costs into:
        a. Delivered cost of product, with taxes paid.
        b. Labor cost.
    4. For each line item which has an installed value of more than $10,000.00 break down costs to list amount of labor and amount of materials under each item.
        a. Contractor, subcontractor or supplier.
        b. Specification section number.
        c. Description of work or material.
        d. Quantity.

e. Unit Price.
f. Scheduled value.
g. % of Contract.

5. Round off figures to nearest ten dollars.
6. Make sum of total costs of all items listed in Schedule equal to total contract sum.

M. Review and Resubmittal
1. After review by Architect, revise and resubmit Schedule as directed by Architect.
2. Follow original submittal procedure.

N. Update
1. Update Schedule of Values when:
a. Change in cost occurs.
b. Change of subcontractor or supplier occurs.
c. Change of product or equipment occurs.
2. Provide written justification for any changes requested by contractor.

1.4 APPLICATIONS FOR PROGRESS PAYMENTS

A. Payment Period: Submit at intervals stipulated in the Agreement.
B. The quantities appearing in the schedule of prices attached to the bid form are approximate and are prepared for the comparison of bids. Payment to the Contractor will be made only for the actual quantities of work performed and accepted or materials furnished according to the contract. The scheduled quantities of work to be done and materials to be furnished may be increased, decreased or omitted as hereinafter provided.
C. Present required information in typewritten form.
D. Form: AIA G702 Application and Certificate for Payment and AIA G703 - Continuation Sheet including continuation sheets when required or Architect approved equal.
E. For each item, provide a column for listing each of the following:
1. Item Number.
2. Description of work.
3. Scheduled Values.
4. Previous Applications.
5. Work in Place and Stored Materials under this Application.
6. Authorized Change Orders.
7. Total Completed and Stored to Date of Application.
8. Percentage of Completion
9. Balance to Finish.
10. Retainage.

F. Each item on the application for payment shall include retainage in the amount of 10% of the total work completed and stored to date of application. Upon reaching Substantial Completion, and with prior authorization of the Owner and the Architect, the retainage may be reduced to 5% for each item that is deemed substantially complete on the subsequent application for payment.
G. Execute certification by signature of authorized officer.
H. Use data from approved Schedule of Values. Provide dollar value in each column for each line item for portion of work performed and for stored Products
I. List each authorized Change Order as a separate line item, for each respective subcontractor or material supplier listing Change Order number and dollar amount as for an original item of Work.
J. Submit three pencil copies of each Application for Payment for review and approval by Architect and Owner.
K. Revise Application and Certificate of payment as directed by Architect.
L. Once pencil copy has been approved by Architect, send three copies along with supporting documentation to the corporate office of the Architect.
M. Include the following with the application:
1. Transmittal letter as specified for Submittals in Section 01300.
2. Construction progress schedule, revised and current as specified in Section 01300.
3. Current construction photographs specified in Section 01300.

4. Partial release of liens from Contractor for current period.
    a. Release of liens to be provided on forms approved by the Architect prior to the first payment being submitted.
5. Partial release of liens from all Subcontractors and vendors from prior period.
    a. Release of liens to be provided on forms approved by the Architect prior to the first payment being submitted.
6. Affidavits attesting to off-site stored products, with original invoices. Statement of transfer of title upon payment and insurance coverage specifically identifying stored items.

N. When Architect requires substantiating information, submit data justifying dollar amounts in question. Provide one copy of data with cover letter for each copy of submittal. Show application number and date, and line item by number and description.

O. Lump Sum payment for items of work will be full compensation for completing the work in compliance with the Contract Documents, inclusive of furnishing all manpower, equipment, materials, and performance of all operations relative to the construction of this project. Payment will be made on a percent complete basis.

P. In order to determine the work completed, work items may be measured using appropriate units or by other determinations as necessary. The Architect and Engineer will verify the Contractor's measurement and percent complete status indicated on each Application for Payment. The Architect's and Engineer's decisions with respect to percent complete status of the work will be final after three (3) working days if the Contractor does not submit a written notice as defined in the following paragraph.

Q. If the Contractor differs with the Architect's and Engineer's on the determination of quantities and percent complete status, it must notify the Architect in writing within three (3) days from the time that the Contractor is informed of the decision by the Architect and Engineer. Otherwise, the Architect will not consider any such difference as a claim for payment.

R. Work items that are required and their quantities not shown on the Contract Drawings will not be measured, but will be considered incidental to the Contract or incidental to specified items on the Schedule of Values as noted. No additional compensation will be allowed.

S. Note that repair of utilities, surface features, existing structures, etc. that is required due to damage resulting from construction activities that is beyond the limits of work or payment as defined on the Contract Drawings or herein shall be performed by the Contractor at no cost to the Owner

T. All quantities shown in the Contract Documents are furnished for information only. The Contractor is responsible for verifying all quantities to estimate and complete the work in accordance with the Contract Documents.

U. The Owner reserves the right to alter the Drawings, Specifications, modify incidental work as may be necessary, and increase or decrease quantities of work to be performed. Changes in the work shall not be considered as a waiver of any conditions of the Contract nor invalidate any provisions thereof. When changes result in revisions in the quantities of work to be performed, the Contractor will accept payment according to the unit prices in the Schedule of Values. The Owner reserves the right to negotiate the unit costs stated and accept or reject any or all of the listed unit prices, prior to the execution of the Contract.

V. The Contractor shall take no advantage of any apparent error or omission in the Contract Drawings or Specifications, and the Architect shall be permitted to make corrections and interpretations as may be deemed necessary for fulfillment of the intent of the Contract Documents.

1.5 PAY REQUESTS

A. The Contractor who is awarded the Contract will be expected to furnish with its first pay request a breakdown of how much of each pay item will be paid to each subcontractor, such that the Owner will be able to track the furnished waivers.

B. All pay requests shall be submitted on AIA forms G702 and G703, or in other forms as directed by the Owner.

1.6 CERTIFIED PAYROLL FOR PUBLIC WORKS PROJECTS

A. Effective August 10, 2005 the Public Act 94-0515 amended the Prevailing Wage Act., all contractors and their subcontractors who are engaged in public works projects must provide a certified monthly payroll report either in person, by mail or electrically for the Owner's records.

B. Each Contractor or Subcontractor performing Work on this Project shall comply in all respects with all laws governing the employment of Labor, Social Security, and Unemployment Insurance of both the State and Federal government. There shall be paid to each employee engaged in Work under this Contract at the site of the Project, no less than the minimum wage for the classifications of labor employed in compliance with 820 ILCS 130/1 et seq. as now existing or hereafter amended.

C. In accordance with 820 ILCS 130/5, the Contractor and each subcontractor shall make and keep, for a period of not less than 3 years, 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, social security number, classification or classifications, the hourly wages paid in each period, the number of hours worked each day, and the starting and ending times of each work day.

D. The Contractor and each subcontractor shall submit monthly, in person, by mail, or electronically a certified payroll to the Village. The certified payroll shall consist of a complete copy of the records. The certified payroll shall be accompanied by a statement signed by the contractor or subcontractor which avers that:
   1. such records are true and accurate;
   2. the hourly rate paid to each worker is not less than the general prevailing rate of hourly wages required; and
   3. the contractor or subcontractor is aware that filing a certified payroll that he or she knows to be false is a class B misdemeanor.

E. Upon 2 business days notice, the contractor and each subcontractor shall make available for inspection for the records to the Village, its officers and agents, and to the Director of Labor and his deputies and agents at all reasonable hours at a location within the State. The Contractor and each subcontractor shall permit his/her employees to be interviewed on the job, during working hours, by compliance investigators of the Department or the Department of Labor.

1.7 PROJECT DATA AND RECORDS

A. Books and accounts kept by the Contractor in connection with the Contract shall be open to the inspection.

B. The Contractor and each subcontractor shall also keep an accurate record showing the names and occupation of all laborers, workmen and mechanics employed by them in connection with the Work, and also showing the actual hourly wages paid to each of the workers. This record shall be open at all reasonable hours.

C. The Contractor shall, when required, furnish a written statement, verified by affidavit, giving the names and addresses of all persons, firms and corporations, who have up to the date thereof furnished labor or material in or about the performance of the Contract, and the amounts due or to become due to said parties.

1.8 CHANGE ORDER PROCEDURES

A. Promptly implement Change Order procedures.
   1. Provide full written data required to evaluate changes.
   2. Maintain detailed records of work done on time-and-material/force account basis.
   3. Provide full documentation to Architect.

B. Designate in writing the member of Contractor's organization:
   1. Who is authorized to accept changes in Work.
   2. Who is responsible for informing others in Contractor's employ of authorization of changes in Work.
   3. If other than the Owner, the Owner will designate in writing the person(s) authorized to execute Change Orders.

C. Initiation of Contract Changes:
   1. Requests for change by the Contractor shall be initiated in writing.
   2. Subcontractors initiating a request for change shall direct their requests to the Contractor.
   3. The Architect will review and direct the Contractor's requests for change to the Owner or Owner's Representative with recommendations.

D. Owner Authorizes:
   1. The Owner or Owner's Representative, having considered the necessity of the requested change and availability of funds will authorize the Architect to prepare a request for proposal (RFP).

E. Architect Prepares Request for Proposal:
   1. The Architect, following consultation with the Contractor regarding subcontracts which will be affected by the proposed change, will prepare a RFP for Contractor response.
   2. Two sets of the RFP and Supplemental Drawings and Specifications for each proposed change are transmitted to the Contractor.

F. Contractors Prepare Proposals:
   1. Detailed Breakdown of Material Equipment and Labor:
      a. The Contractor or Subcontractor whose work is affected by a proposed change shall prepare a proposal for change.
      b. The detailed breakdown shall be prepared in accordance with the Contract Documents.
      c. If a change affects work covered by agreed on prices, such prices shall be used as the basis for adjustments to the contract sum.
      d. In all other cases, adjustments to the contract sum shall be based on the Contractor's direct cost, including costs of material, labor, equipment, bonds and taxes as applicable.
      e. Labor rates shall be itemized on the detailed breakdown indicating the trade base wage rate, total union fringe benefits, FICA, unemployment compensation insurance and workmen's compensation insurance. Labor charges shall not include costs for inefficiencies of construction supervision or labor.
      f. Change order adjustments to the contract developed above shall include amounts for overhead and profit which do not exceed average amounts indicated in the Schedule of Values, or an amount of 15%, whichever is less, and that no overhead and profit shall be deducted from the total price for changes reducing the cost of the contract. If the changed work is performed by a subcontractor, no more than 10% may be added to the subcontractor's costs for overhead and profit. An additional not to exceed 5% may be included for the Contractor's overhead and profit on all work provided directly by a subcontractor employed on the project.

G. Contractor Reviews:
   1. Reviews: The Contractor shall review all proposals for:
      a. Conformance with the RFP to ensure that all items and only those items of work affected by the proposed change are included.
      b. Assurance that the proposals are submitted in conformance with the Contract Documents.
   2. Transmittal: The Contractor shall forward to the Architect three complete sets of proposals with its recommendation regarding the proposal.
      a. In making recommendations, the Contractor shall certify that the price is appropriate and if it is not appropriate, shall state the reasons for not certifying the price.
      b. Proposals, complete with all required information, shall be submitted to the Architect within three weeks of the date of the RFP in order to receive further consideration.

H. Architect Reviews:
   1. The Architect reviews the Contractor's proposals for completeness and conformance with the RFP and Contract Documents. Proposals which are incomplete or have inadequate detailed breakdowns will be returned to the Contractors for resubmission.
   2. The Architect will review and, when appropriate, approve all price proposals recommending Owner approve issuance of a change order.

3. When the Architect considers the costs or quantities to be inappropriate to the work requested, the Architect will notify the Contractor in writing of the concerns and the Contractor will provide the necessary backup materials to justify the submittal or modify the submittal.
4. Submittals not properly justified will not be forwarded to the Owner and written notice as to the reasons will be forwarded to the Contractor. After 30 days of said written notification and no further response by the Contractor, the request will be considered inappropriate and will receive no further consideration.

I. Architect Issues Change Order:
1. The Architect, having received what is believed to be an appropriate and acceptable Contractor proposal for the proposed change and having received Owner's approval to issue a change order, the Architect will issue a Change Order.
2. The Change Order package prepared by the Architect for submittal to the Owner shall contain the following items:
   a. Three originals of the Change Order form with appropriate original signatures, along with supporting documentation including, but not limited to:
      1) Request for Proposal with signatures.
      2) Pristine copy of drawings and specifications.
      3) On changes initiated by the Architect, a letter explaining the circumstances related to the need for the change.
      4) On Owner requested Change Orders, a letter of request signed by the Owner's Representative.
      5) Change Order Authorization Form for Owner's Signature and permanent record in accord with Public Act 85-1295. When required on public work--for changes greater than $10,000.00 or 30 Days.

J. Owner Approves or disapproves Change Order: For change in Contract Sum and/or Contract Time.

K. One copy of approved Change Order with original signatures will be returned to the Contractor or notice and explanation as to why it has been rejected will be forwarded to the Contractor.

1.9 APPLICATION FOR FINAL PAYMENT

A. Submit all closeout documents and comply with all requirements as put forth in Section 01780 - Closeout Submittals.

B. Once closeout submittal have been approved by Architect, prepare Application for Final Payment as specified for progress payments, identifying total adjusted Contract Sum, previous payments, and sum remaining due; including properly executed Consent of Surety.

C. Application for Final Payment will not be considered until the following have been accomplished:
1. All closeout procedures specified in Section 01780.

PART 2 – PRODUCTS – NOT USED

PART 3 – EXECUTION – NOT USED

END OF SECTION

SECTION 01210

ALLOWANCES

PART 1 – GENERAL

1.1 SECTION INCLUDES
A. Cash allowances.
B. Inspection and testing Allowances.
C. Payment and modification procedures relating to allowances.

1.2 RELATED SECTIONS
A. Section 01200 - Price and Payment Procedures: Additional payment and modification procedures.

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.
D. Any unused allowance funds will be credited back to Owner by Change Order prior to close out.

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.
B. Architect Responsibilities:
   1. Consult with Contractor for consideration and selection of products, suppliers, and installers.
   2. Select products in consultation with Owner and transmit decision to Contractor.
   3. Prepare Allowance Authorization.
C. Contractor Responsibilities:
   1. Assist Architect in selection of products, suppliers, and installers.
   2. Obtain proposals from suppliers and installers and offer recommendations.
   3. On notification of which products have been selected, execute purchase agreement with designated supplier and installer.
   4. Arrange for and process shop drawings, product data, and samples. Arrange for delivery.

1.6 CASH ALLOWANCES
A. Costs Included in cash allowances:
   1. Allowances shall cover the cost to the Contractor of materials and equipment delivered to the site and all required taxes, less applicable trade discounts.
   2. Contractor's costs for unloading and handling at the site, installation costs, overhead, profit and other expenses contemplated for stated allowance amounts shall be included in the Base Bid and not in the allowances.

SECTION 01210

ALLOWANCES

1.7 INSPECTION AND TESTING ALLOWANCES

A. Costs Included in Inspecting and Testing Allowances: Cost of engaging the inspecting or testing agency of record; execution of inspecting and tests; and reporting results.

B. Costs Not Included in the Inspecting and Testing Allowances:
   1. Costs of testing services used by Contractor separate from Contract Document requirements.
   2. Costs of testing services used by the Contractor from a source other than the testing agency of record.
   3. Costs of retesting upon failure of previous tests as determined by Architect.
   4. The allowance does not include incidental labor required to assist the testing agency or costs for retesting if previous tests and inspections result in failure. The cost for incidental labor to assist the testing agency shall be included in the Contract Sum.

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: Testing and Inspection Allowance: Include the sum of $7,500 for payment of inspecting and testing services specified in Section 01400.

B. Allowance No. 2: Cash Allowance: Include the sum/price of $100,000 to be used at the Owner's discretion.

END OF SECTION

SECTION 01230

ALTERNATES

PART 1 - GENERAL

1.1 SECTION INCLUDES
A. Alternate submission procedures.
B. Documentation of changes to Contract Sum and Contract Time.

1.2 RELATED SECTIONS
A. Section 00100 – Instructions to Bidders: Instructions for preparation of pricing for alternatives.

1.3 ACCEPTANCE OF ALTERNATES
A. Alternates quoted on Bid Forms will be reviewed and accepted or rejected at Owner's option. Immediately accepted alternates will be identified in the Owner-Contractor Agreement.
B. The Owner may accept any Alternate within (90) ninety days of the date of contract.
C. State the amount of Alternates prices to be added or deducted from the Base Bid price on the Bid Form.
D. Perform all portions of the work affected by this Section in accordance with the requirements of the Contract Documents.
E. Comply with requirements relative to materials and workmanship contained in the respective specification sections.
F. Coordinate related work and modify surrounding work to integrate the Work of each Alternate.

1.4 SCHEDULE OF ALTERNATES
Alternate No. 1: To change the Date of Substantial Completion

State the amount to be DEDUCTED from the base bid amount if the Date of Substantial Completion is changed to the contractor’s desired Date of Substantial Completion as indicated on the Bid Form.

Alternate No. 2: Eliminate the one for one bollard replacement

State the amount to be DEDUCTED from the base bid amount if the one for one bollard replacement (only units noted on the electrical drawings) is removed from the contract.

PART 2 – PRODUCTS – NOT USED

PART 3 – EXECUTION – NOT USED

END OF SECTION

SECTION 01270

UNIT PRICES

PART 1 – GENERAL

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

1.2 RELATED SECTIONS
A. Unit prices listed on Schedule of Prices

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

1.4 APPLICATION
A. Enter unit prices for each work item in Bid Form in space provided. Omission may result in rejection of bid.
B. Contractor shall take all measurements and compute quantities. Measurements and quantities will be verified by field measurement or assessment.

1.5 UNIT QUANTITIES SPECIFIED
A. Quantities indicated in the Schedule of Prices are for bidding and contract purposes only. Quantities and measurements of actual Work will determine the payment amount.

1.6 MEASUREMENT OF QUANTITIES
A. Measurement methods delineated in the individual specification sections complement the criteria of this section. In the event of conflict, the requirements of the individual specification section govern.
B. Take all measurements and compute quantities. Measurements and quantities will be verified by Architect or Engineer.
    1. Contractor shall provide necessary equipment, workers, and survey personnel as required at no additional cost to Owner.
C. Measurement Devices:
    1. Weight Scales: Inspected, tested and certified by the applicable state Weights and Measures department within the past year.
    2. Platform Scales: Of sufficient size and capacity to accommodate the conveying vehicle.
    3. Metering Devices: Inspected, tested and certified by the applicable State department within the past year.
D. Measurement by Weight: Concrete reinforcing steel, rolled or formed steel or other metal shapes will be measured by handbook weights. Welded assemblies will be measured by handbook or scale weight.
E. Measurement by Volume: Measured by cubic dimension using mean length, width and height or thickness.
F. Measurement by Area: Measured by square dimension using mean length and width or radius.
G. Linear Measurement: Measured by linear dimension, at the item centerline or mean chord.
H. Stipulated Sum/Price Measurement: Items measured by weight, volume, area, or linear means or combination, as appropriate, as a completed item or unit of the Work.
I. Perform surveys required to determine quantities, including control surveys to establish measurement reference lines. Notify Architect prior to starting work.
J. Contractor's Engineer Responsibilities: Sign surveyor's field notes or keep duplicate field notes, calculate and certify quantities for payment purposes.

SECTION 01270

UNIT PRICES

1.7 PAYMENT

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

1.8 DEFECT ASSESSMENT

A. Replace Work, or portions of the Work, not conforming to specified requirements.
B. If, in the opinion of Owner, it is not practical to remove and replace the Work, Owner will direct one of the following remedies:
   1. The defective Work may remain, but the unit sum/price will be adjusted to a new sum/price at the discretion of Owner.
   2. The defective Work will be partially repaired to the instructions of the Owner, and the unit sum/price will be adjusted to a new sum/price at the discretion of Owner.
C. The individual specification sections may modify these options or may identify a specific formula or percentage sum/price reduction.
D. The authority of Architect to assess the defect and identify payment adjustment is final.

1.9 SCHEDULE OF UNIT PRICES

A. Refer to Schedule of Prices attached to the Bid Form.

PART 2 – PRODUCTS – NOT USED

PART 3 – EXECUTION – NOT USED

END OF SECTION

SECTION 01300

ADMINISTRATIVE REQUIREMENTS

PART 1 – GENERAL

1.1 SECTION INCLUDES

A. Preconstruction meeting.
B. Site mobilization meeting.
C. Progress meetings.
D. Construction progress schedule.
E. Progress photographs.
F. Coordination drawings.
G. Submittals for review, information, and project closeout.
H. Number of copies of submittals.
I. Submittal procedures.

1.2 RELATED SECTIONS

A. Document 00700 - General Conditions: Dates for applications for payment.
B. Section 01100 - Summary: Stages of the Work, Work covered by each contract, occupancy,.
C. Section 01200 - Price and Payment Procedures:
D. Section 01325 - Construction Progress Schedule: Form, content, and administration of schedules.
E. Section 01700 - Execution Requirements: Additional coordination requirements.
F. Section 01780 - Closeout Submittals: Project record documents.

1.3 PROJECT COORDINATION

A. Project Coordinator: Contractor.
B. Cooperate with the Contractor in allocation of mobilization areas of site; for field offices and sheds, for access, traffic, and parking facilities.
C. During construction, coordinate use of site and facilities through the Contractor.
D. Comply with procedures for intra-project communications; submittals, reports and records, schedules, coordination drawings, and recommendations; and resolution of ambiguities and conflicts.
E. Comply with instructions of the Contractor for use of temporary utilities and construction facilities.
    1. Direct and check-out of utilities, operational systems and equipment.
    2. Record dates of start of operation of systems and equipment.
F. Coordinate field engineering and layout work under instructions of the Contractor.
G. Develop and implement procedure for review and processing of applications for progress and final payments: Submit recommendation to Architect for Certification to Owner for Payment.
H. Establish on-site lines of authority and communication; schedule and conduct project meetings among:
    1. Owner's Representative.
    2. Architect.
    3. Subcontractors.
I. Cost Control:
    1. Maintain cost accounting records for authorized work performed under Unit Costs.
    2. Develop and implement procedure for review and processing of applications for progress and final payments: Submit recommendation to Architect for Certification to Owner for Payment.
J. Administer processing of:
    1. Shop drawings, product data and samples.
    2. Field drawings.
    3. Coordination drawings.
    4. Closeout submittals.
K. Maintain Reports and Records at Job Site:
    1. Daily log of progress of work, available to Architect and Owner.
    2. Verify that all subcontractors maintain record documents on a current basis.

3. At completion of Project, assemble record documents from all subcontractors and deliver to the Architect in accordance with Section 01780.
4. Assemble documentation for handling of claims and disputes.

L. Contractor to verify that specified cleaning is done during progress of work and at the completion of each subcontractor's work.
M. Make the following types of submittals to Architect through the Project Coordinator:
1. Requests for interpretation.
2. Requests for substitution.
3. Shop drawings, product data, and samples.
4. Submittals for information.
5. Test and inspection reports.
6. Design data.
7. Manufacturer's instructions and field reports.
8. Applications for payment and change order requests.
9. Progress schedules.
10. Coordination drawings.
11. Closeout submittals.

N. Upon contractor's determination of Substantial Completion of work or portion thereof, notify Architect in writing as to project status and request inspection and compilation of punch list of incomplete or unsatisfactory items.
O. Upon Architect's Certification of Date of Substantial Completion, supervise correction and completion of work within specified period.
P. Upon Contractor's determination that Work is finally complete:
1. Submit written notice to Architect and Owner, that Work is ready for final inspection.
2. Secure and transmit to Architect required closeout submittals as put forth in Section 01780.

Q. Contractor to turn over to Architect for approval all items for closeout as put forth in Section 01780.

PART 2 – PRODUCTS - NOT USED

PART 3 – EXECUTION

3.1 PRECONSTRUCTION MEETING

A. Architect will schedule a meeting within 10 days of date of Letter of Intent.
B. Attendance Required:
1. Owner.
2. Architect.
3. Contractor:
4. Field Superintendent
5. Project Manager
6. Safety Representative.
7. Contractor's Major Subcontractors.

C. Minimum Agenda:
1. Items required to be submitted by Contractor at Preconstruction Meeting:
a. Fully executed bonds and Insurance Certificates
b. List of major Subcontractors and suppliers.
c. Tentative construction schedule.
d. Letter from Project Safety Representative certifying that he/she will be empowered as the Contractor's Safety Engineer, is responsible for enforcing all safety requirements and is familiar with the Manual of Accident Prevention in Construction by the Associated General Contractors of America, current edition, and further that the Contractor will maintain at the project a copy of said publication and will strictly enforce the applicable requirements of same.

2. Distribute and discuss documents required to be submitted by Contractor at Preconstruction meeting.
3. Execution of Owner-Contractor Agreement.
4. Identify critical work sequencing.
5. Discussion of schedule of values, and progress schedule.
6. Discussion of list of Subcontractors, list of Products, schedule of values, and progress schedule.
7. Designation of responsible personnel representing the parties to Contract; Owner, Architect and Contractor.
8. Establish chain of Authority.
9. Procedures and processing of field decisions, submittals, substitutions, applications for payments, proposal request, Change Orders, and Contract closeout procedures.
10. Scheduling.
    a. Discuss major equipment deliveries and priorities.
11. Review of use of premises:
    a. Office and storage areas.
    b. Access to site and facilities.
    c. Use of premises by Owner.
12. Owner's requirements.
13. Security procedures.
14. Review requirements of and procedures for maintaining record documents.
15. Architect will record minutes and distribute copies within five days after meeting to participants, with copies to Contractor, Owner, participants, and those directly affected by decisions made.

3.2 PROGRESS MEETINGS

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

3.3 CONSTRUCTION PROGRESS SCHEDULE - See Section 01325

3.4 COORDINATION DRAWINGS

A. Conduct coordination meetings in accordance with each respective section as work progresses. Contractor shall coordinate with Architect for such meetings.
B. Provide information required by Contractor for preparation of coordination drawings.
C. Review drawings prior to submission to Architect.

3.5 SUBMITTALS FOR REVIEW

A. When the following are specified in individual sections, submit them for review:
   1. Product data.
   2. Shop drawings.
   3. Samples for selection.
   4. Samples for verification.
B. Submit to Architect for review for the limited purpose of checking for conformance with information given and the design concept expressed in the contract documents.
C. Samples will be reviewed only for aesthetic, color, or finish selection.
D. After review, provide copies and distribute in accordance with SUBMITTAL PROCEDURES article below and for record documents purposes described in Section 01780 - CLOSEOUT SUBMITTALS.

3.6 SUBMITTALS FOR INFORMATION

A. When the following are specified in individual sections, submit them for information:
   1. Design data.
   2. Certificates.
   3. Test reports.
   4. Inspection reports.
   5. Manufacturer's instructions.
   6. Manufacturer's field reports.
   7. Other types indicated.
B. Submit for Architect's knowledge as contract administrator or for Owner.

3.7 SUBMITTALS FOR PROJECT CLOSEOUT

A. When the following are specified in individual sections, submit them at project closeout:
   1. Project record documents.
   2. Operation and maintenance data.
   3. Warranties.
   4. Bonds.
   5. Lien Waivers.
   6. Other types as indicated.
B. Submit for Owner's benefit during and after project completion.

3.8 NUMBER OF COPIES OF SUBMITTALS

A. Documents for Review or for information:
   1. The Contractor has the option of providing Submittals for review or for information either as a hard copy or electronically as outlined below.
   2. If Submittal is provided as a hard copy:
      a. Submit the number of copies which the Contractor requires, plus three copies which will be retained by the Architect.
   3. If Submittal is provided electronically:
      a. Deliver one copy of submittal to Architect via email or Compact Disc in PDF file format.
      b. At Architect’s discretion, the reviewed submittal, with any corrections, will be returned as one electronic copy in PDF format, or as one hard copy delivered to the Contractor.
B. Documents for Project Closeout: Shall be submitted as hard copies only. Make one reproduction of submittal originally reviewed. Submit one extra of submittals for information.
C. Samples: Submit the number specified in individual specification sections; one of which will be retained by Architect.

1. After review, produce duplicates.
2. Retained samples will not be returned to Contractor unless specifically so stated.

3.9 SUBMITTAL PROCEDURES

A. Sequentially number the transmittal form and clearly indicate the respective specification section number for reference. Revise submittals with original number and a sequential alphabetic suffix.
B. Identify Project, Contractor, Subcontractor or supplier; pertinent drawing and detail number, and specification section number, as appropriate on each copy.
C. Apply Contractor's stamp, signed or initialed certifying that review, approval, verification of Products required, field dimensions, adjacent construction Work, and coordination of information is in accordance with the requirements of the Work and Contract Documents.
D. Deliver submittals to Architect at business address or via email.
E. Schedule submittals to expedite the Project, and coordinate submission of related items.
F. For each submittal for review, allow 10 days excluding delivery time to and from the Contractor.
G. Identify variations from Contract Documents and Product or system limitations which may be detrimental to successful performance of the completed Work.
H. Provide space for Contractor and Architect review stamps.
I. Shop drawings which incorporate, in part or in whole, direct reproductions of the contract documents, are not acceptable and will be returned, without review, to the contractor, for resubmittal.
J. All shop drawings which are poorly prepared or hand written will be returned, without review, to the contractor for resubmittal. Architect’s determination of properly prepared shop drawings is final.
K. Electronic Media/Files
    1. Construction drawings for this project have been prepared by the Architect and Engineer utilizing the following Computer Aided Drawing (CAD) System: Auto Cad Release 2015.
    2. Upon request for electronic media or files, the Contractor shall complete the “Request for Electronic Drawing Files” issued by the Architect and issue the appropriate fee to the Architect.
    3. Sheets can be formatted to provide background information only, background plus various layers of equipment; or of complete sheets as issued for construction.
    4. The Contractor may utilize these CAD Drawings in the preparation of their Shop Drawings and as built drawings only.
    5. The information issued is provided in a good faith effort to expedite the Project and simplify the efforts of the Contractor with no guarantee by the issuer as to the accuracy or correctness of the information provided. The Architect accepts no responsibility or liability for the Contractor’s or subcontractor’s use of these CAD documents.
    6. The use of these CAD documents by the Contractor(s) does not relieve them of their responsibility to field measure existing conditions and to properly fit the work to the Project.
    7. These documents will be provided when purchased for the convenience of the Contractor and this Project. Ownership and use of the issued documents are governed by the terms of the General Conditions.
L. Submittals
    1. **Submit all submittals within 21 calendar days after date of Letter of Intent.** Failure to do so may cause scheduled contractor payments to be withheld.
    2. **Submit all manufacturer’s letter’s confirming prompt ordering of all material and equipment within 21 calendar days after date of Letter of Intent.** Failure to do so may cause scheduled contractor payments to be withheld. Confirmation Letters are to include the following:
        a. Order date.
        b. Manufacturing date.
        c. Delivery date.
        d. Confirmation that no factors will deter delivery on schedule.
        e. Any other pertinent information.

3. Submit four prints of shop drawings, and number of copies of product data and samples which Contractor requires for distribution and future submission under Section 01700 plus one copy which will be retained by Architect.
4. Submit number of samples specified in each of specification sections.
5. Accompany submittals with transmittal letter, in duplicate, containing:
    a. Date.
    b. Project title and number.
    c. Contractor's name and address.
    d. Relevant Specification section number.
    e. The number of shop drawings, product data and samples submitted.
    f. Notification of any deviations from Contract Documents.
    g. Other pertinent data.
6. Submittals shall include:
    a. Date and revision dates.
    b. Project title and number.
    c. Names of:
        1) Architect
        2) Architect's consultant(s)
        3) Subcontractor
        4) Sub-subcontractor.
        5) Supplier.
        6) Manufacturer.
        7) Separate detailer when pertinent.
    d. Identification of product or material.
    e. Relation to adjacent structure or material.
    f. Field dimensions, clearly identified as such.
    g. Specification section and page number.
    h. Specified standards, such as ASTM number or Federal Specification.
    i. A blank space, 4" x 6" for Architect's stamp.
    j. Identification of previously approved deviation(s) from Contract Documents.
    k. Identification of color selections required and color selection charts.
7. All shop drawing submittals received by the Architect which do not bear the contractor's approval stamp and initials or signatures will be returned, without review, to the contractor, for resubmittal.
8. All shop drawing submittals which do not contain a reproducible transparency set of the submittal will be returned without review, to the contractor, for resubmittal.

M. Resubmission Requirements
1. Shop Drawings:
    a. Definition: Shop Drawings are original drawings prepared by Contractor, subcontractor, sub-subcontractor, supplier or distributor, which illustrates some portion of the work, showing fabrication, layout, setting or erection details.
    b. Revise initial drawings as directed and resubmit in accordance with submittal procedures.
    c. Indicate on drawings all changes which have been made in addition to those requested by Architect.
    d. Clearly indicate by revision number and date, each resubmittal of each shop drawing.
    e. When revised for resubmission, identify all changes made since previous submission.
    f. Shop drawings which incorporate, in part or in whole, direct reproductions of the contract documents, will NOT be accepted and will be returned without review.
2. Product data and samples: Submit new data and samples as specified for initial submittal.
3. Make all resubmittals within 10 business days after date of Architect's previous review.

N. Distribution of Submittals After Review
1. Contractor will distribute copies of shop drawings and product data which carry Architect's stamp to:
    a. Contractor's file.

b. Job site file.
c. Record documents file.
d. Subcontractors.
e. Suppliers.
f. Fabricators.
g. Other contractors as required.

2. Distribute samples as directed in accordance with Contract Documents.
3. Distribute copies of reviewed submittals as appropriate. Instruct parties to promptly report any inability to comply with requirements.

O. Contractor Responsibilities
1. Review shop drawings, product data and samples prior to submission to the next level of authority.
2. Verify:
a. Field dimensions and drawing dimensions.
b. Field construction criteria.
c. Catalog numbers and similar data.
d. Compliance of items submitted with Contract Documents.
e. Dimensions and elevations requirements necessary to properly install product.
3. Coordinate each submittal with requirements of:
a. The Work.
b. The Contract Documents.
c. The work of other subcontractors.
4. Contractor's responsibility for errors and omissions in submittals is not relieved by Architect/Engineer's review of submittals.
5. Notify Architect in writing prior to submission and specifically on the submittal, of proposed deviations in submittals from contract requirements.
6. Contractor's responsibility for notifying Architect of deviations and for correcting deviations not properly identified in submittals is not relieved by Architect's review of improperly documented submittals.
7. Do not begin any work which requires submittals without having Architect's stamp and initials or signature indicating review.
8. After Architect's review, make response required by Architect's stamp and distribute copies. Indicate by transmittal that copy of approved data has been distributed.
9. Subcontractors:
a. Subcontractors send their submittals to the Contractor.
b. Contractor reviews and initials submittals for compliance with scope, coordination and integration with the work of all other subcontractors.
c. Contractor transmits his reviewed copies of subcontractor's submittals to Architect.
d. Contractor retains copy of submittals after review by Architect and distributes copies to submitting subcontractor and to other subcontractors for coordination and integration.
e. Contractor: Enforce resubmission requirements.

P. Architect's Duties
1. Review submittals within 10 business days.
2. Review for compliance to design concept of project.
3. Review all requests for proposed deviations. Obtain Owner's concurrence and respond to Contractor's request.
4. Review of separate item does not constitute review of an assembly in which item functions.
5. Affix stamp, date, and initials or signature certifying to review of submittal, and with instructions for contractor response.
6. Return submittals to Contractor for response or distribution.
7. Select product colors upon receipt of all shop drawings and submittals requiring color selections.

Q. Submittals not requested will not be recognized or processed.

END OF SECTION

SECTION 01325

CONSTRUCTION PROGRESS SCHEDULE

PART 1 – GENERAL

1.1 SECTION INCLUDES
A. Preliminary schedule.
B. Construction progress schedule, bar chart type.

1.2 RELATED SECTIONS
A. Section 01100 - Summary: Work sequence.

1.3 REFERENCES
A. AGC (CPM) - The Use of CPM in Construction - A Manual for General Contractors and the Construction Industry; Associated General Contractors of America; 1976.

1.4 PRECONSTRUCTION MEETING
A. Within 10 days after date of Agreement, submit preliminary schedule defining planned operations for the first 90 days of Work, with a general outline for remainder of Work
B. If preliminary schedule requires revision after review, submit revised schedule within 10 days.
C. Within 20 days after review of preliminary schedule, submit draft of proposed complete schedule for review.
    1. Include written certification that major contractors have reviewed and accepted proposed schedule.
        a. Within 10 days after joint review, submit complete schedule.
D. Submit updated schedule every 30 days or as requested by Architect.
E. Submit the number of opaque reproductions that Contractor requires, plus one copy which will be retained by Architect and Owner. Furnish additional copies when directed.
F. Submit under transmittal letter form specified in Section 01300.

1.5 QUALITY ASSURANCE
A. Scheduler: Contractor's personnel or specialist Consultant specializing in CPM scheduling with five years minimum experience in scheduling construction work of a complexity comparable to this Project, and having use of computer facilities capable of delivering a detailed graphic printout within 48 hours of request.

1.6 SCHEDULE FORMAT
A. Listings: In chronological order according to the start date for each activity. Identify each activity with the applicable specification section number.
B. Diagram Sheet Size: Maximum 11x17 inches or width required.
C. Sheet Size: Minimum of 8-1/2 x 11 inches, Maximum of 24" x 36".
D. Scale and Spacing: To allow for notations and revisions.

1.7 START OF CONSTRUCTION SERVICES
A. Construction services as specified herein shall commence upon issuance of the Letter of Intent to Award a Construction Contract.

PART 2 – PRODUCTS - NOT USED

PART 3 – EXECUTION

3.1 PRELIMINARY SCHEDULE

A. Prepare (preliminary) schedule in the form of a horizontal bar chart.

3.2 CONTENT

A. Show complete sequence of construction by activity, with dates for beginning and completion of each element of construction.
B. Identify each item by specification section number.
C. Identify work of separate stages and other logically grouped activities.
D. Provide sub-schedules for each stage of Work identified in Section 01100.
E. Provide sub-schedules to define critical portions of the entire schedule.
F. Include conferences and meetings in schedule.
G. Show accumulated percentage of completion of each item, and total percentage of Work completed, as of the first day of each month.
H. Provide separate schedule of submittal dates for shop drawings, product data, and samples, owner-furnished products, Products identified under Allowances, and dates reviewed submittals will be required from Architect. Indicate decision dates for selection of finishes.
I. Indicate delivery dates for owner-furnished products.
J. Coordinate content with schedule of values specified in Section 01200.
K. Provide legend for symbols and abbreviations used.

3.3 BAR CHARTS

A. Include a separate bar for each major portion of Work or operation.
B. Identify the first work day of each week.

3.4 NETWORK ANALYSIS

A. Prepare network analysis diagrams and supporting mathematical analyses using the Critical Path Method.
B. Illustrate order and interdependence of activities and sequence of work; how start of a given activity depends on completion of preceding activities, and how completion of the activity may restrain start of subsequent activities.
C. Mathematical Analysis: Tabulate each activity of detailed network diagrams, using calendar dates, and identify for each activity:
    1. Preceding and following event numbers.
    2. Activity description.
    3. Estimated duration of activity, in maximum 15 day intervals.
    4. Earliest start date.
    5. Earliest finish date.
    6. Actual start date.
    7. Actual finish date.
    8. Latest start date.
    9. Latest finish date.
    10. Total and free float; float time shall accrue to Owner and to Owner's benefit.
    11. Monetary value of activity, keyed to Schedule of Values.
    12. Percentage of activity completed.
    13. Responsibility.
D. Analysis Program: Capable of compiling monetary value of completed and partially completed activities, accepting revised completion dates, and re-computation of all dates and float.
E. Required Reports: List activities in sorts or groups:
    1. By preceding work item or event number from lowest to highest.
    2. By amount of float, then in order of early start.
    3. By responsibility in order of earliest possible start date.
    4. In order of latest allowable start dates.
    5. In order of latest allowable finish dates.

6. Contractor's periodic payment request sorted by Schedule of Values listings.
7. Listing of basic input data which generates the report.
8. Listing of activities on the critical path.

3.5 REVIEW AND EVALUATION OF SCHEDULE

A. Participate in joint review and evaluation of schedule with Architect at each submittal.
B. Evaluate project status to determine work behind schedule and work ahead of schedule.
C. After review, revise as necessary as result of review, and resubmit within 5 days.

3.6 UPDATING SCHEDULE

A. Maintain schedules to record actual start and finish dates of completed activities.
B. Indicate progress of each activity to date of revision, with projected completion date of each activity.
C. Annotate diagrams to graphically depict current status of Work.
D. Identify activities modified since previous submittal, major changes in Work, and other identifiable changes.
E. Indicate changes required to maintain Date of Substantial Completion.
F. Submit reports required to support recommended changes.
G. Provide narrative report to define problem areas, anticipated delays, and impact on the schedule. Report corrective action taken or proposed and its effect including the effects of changes on schedules of separate contractors.

3.7 DISTRIBUTION OF SCHEDULE

A. Distribute copies of updated schedules to Contractor's project site file, to Subcontractors, suppliers, Architect, Owner, and other concerned parties.
B. Instruct recipients to promptly report, in writing, problems anticipated by projections shown in schedules.

END OF SECTION

SECTION 01400

QUALITY REQUIREMENTS

PART 1 – GENERAL

1.1 SECTION INCLUDES

A. References and standards.
B. Quality assurance submittals.
C. Control of installation.
D. Tolerances.
E. Testing and Inspection Agencies.
F. Manufacturers' field services.

1.2 RELATED SECTIONS

A. Section 01210 - Allowances: Allowance for payment of testing services.
B. Section 01300 - Administrative Requirements: Submittal procedures.
C. Section 01600 - Product Requirements: Requirements for material and product quality.

1.3 SUBMITTALS

A. Design Data: Submit for Architect's knowledge as contract administrator or for the Owner, for information for the limited purpose of assessing conformance with information given and the design concept expressed in the contract documents.
B. Test Reports: After each test/inspection, promptly submit five copies of report to Architect and to Contractor.
    1. Include:
        a. Date issued.
        b. Project title and number.
        c. Testing laboratory name and address.
        d. Name and signature of inspector.
        e. Date and time of sampling or inspection.
        f. Record of temperature and weather.
        g. Identification of product and specifications section.
        h. Location in the Project.
        i. Type of test/inspection.
        j. Date of test/inspection.
        k. Results of test/inspection.
        l. Conformance with Contract Documents.
        m. When requested by Architect, provide interpretation of results.
    2. Test reports are submitted for Architect's knowledge as contract administrator or for the Owner, for information for the limited purpose of assessing conformance with information given and the design concept expressed in the contract documents.
C. Certificates: When specified in individual specification sections, submit certification by the manufacturer and Contractor or installation/application subcontractor to Architect, in quantities specified for Product Data.
    1. Indicate material or product conforms to or exceeds specified requirements. Submit supporting reference data, affidavits, and certifications as appropriate.
    2. Certificates may be recent or previous test results on material or product, but must be acceptable to Architect.
D. Manufacturer's Instructions: When specified in individual specification sections, submit printed instructions for delivery, storage, assembly, installation, start-up, adjusting, and finishing, for the Owner's information. Indicate special procedures, perimeter conditions requiring special attention, and special environmental criteria required for application or installation.
E. Manufacturer's Field Reports: Submit reports for Architect's benefit as contract administrator or for Owner.
    1. Submit report in duplicate within 30 days of observation to Architect for information.
    2. Submit for information for the limited purpose of assessing conformance with information given and the design concept expressed in the contract documents.

F. Erection Drawings: Submit drawings for Architect's benefit as contract administrator or for Owner.
   1. Submit for information for the limited purpose of assessing conformance with information given and the design concept expressed in the contract documents.
   2. Data indicating inappropriate or unacceptable Work may be subject to action by Architect or Owner.

1.4 TESTING AND INSPECTION AGENCIES

A. Contractor will employ and pay for services, from Testing Allowances, of an independent testing agency to perform specified testing and inspection.
B. Testing Agency of record: The Testing Agency of Record shall be identified by the Owner within 15 days of the Letter of Intent.
C. Employment of agency in no way relieves Contractor of obligation to perform Work in accordance with requirements of Contract Documents.
D. Inspection sampling and testing is required for:
   1. Excavation.
   2. Fill and Backfill.
   3. Cast-in-Place Concrete.
E. Additional services as requested by Architect
F. Testing Agency:
   1. Testing agency: Comply with requirements of ASTM E 329, ASTM E 548, ASTM E 543, ASTM C 1021, ASTM C 1077, ASTM C 1093, and ASTM C 1021.
   2. Inspection agency: Comply with requirements of ASTM D290.
   3. Laboratory: Authorized to operate in State in which Project is located.
   4. Laboratory Staff: Maintain a full time registered Engineer on staff to review services.
   5. Testing Equipment: Calibrated at reasonable intervals with devices of accuracy traceable to either National Bureau of Standards or accepted values of natural physical constants.

PART 2 – PRODUCTS – NOT USED

PART 3 – EXECUTION

3.1 CONTRACTOR CONTROL OF INSTALLATION

A. Monitor quality control over suppliers, manufacturers, products, services, site conditions, and workmanship, to produce Work of specified quality.
B. Comply with manufacturers' instructions, including each step in sequence.
C. Should manufacturers' instructions conflict with Contract Documents, request clarification from Architect before proceeding.
D. Comply with specified standards as minimum quality for the Work except where more stringent tolerances, codes, or specified requirements indicate higher standards or more precise workmanship.
E. Have Work performed by persons qualified to produce required and specified quality.
F. Verify that field measurements are as indicated on shop drawings or as instructed by the manufacturer.
G. Secure products in place with positive anchorage devices designed and sized to withstand stresses, vibration, physical distortion, and disfigurement.

3.2 TOLERANCES

A. Monitor fabrication and installation tolerance control of products to produce acceptable Work. Do not permit tolerances to accumulate.
B. Comply with manufacturer's tolerances. Should manufacturer's tolerances conflict with Contract Documents, request clarification from Architect before proceeding.

C. Where specified tolerances within individual sections exceed those accepted by the Manufacturer, comply with the more astringent tolerances specified.
D. Adjust products to appropriate dimensions; position before securing products in place.

3.3 TESTING AND INSPECTION

A. See individual specification sections for testing and inspection required.
B. Testing Agency Duties:
   1. Test samples of mixes submitted by Contractor.
   2. Provide qualified personnel at site. Cooperate with Architect and Contractor in performance of services.
   3. Acquaint Architect's personnel with testing procedures and with all special conditions encountered at the site.
   4. Perform specified inspections, sampling and testing of products in accordance with specified standards.
   5. Ascertain compliance of materials and mixes with requirements of Contract Documents.
   6. Promptly notify Architect and Contractor of observed irregularities or non-conformance of Work or products.
   7. Perform additional tests and inspections required by Architect.
   8. Attend preconstruction meetings and progress meetings as directed by Architect.
   9. Submit reports of all tests/inspections specified.
   10. Obtain written acknowledgement of each inspection, sampling and test made from subcontractor whose work is being tested.
C. Limits on Testing/Inspection Agency Authority:
   1. Agency may not release, revoke, alter, or enlarge on requirements of Contract Documents.
   2. Agency may not approve or accept any portion of the Work.
   3. Agency may not assume any duties of Contractor.
   4. Agency has no authority to stop the Work.
D. Contractor Responsibilities:
   1. Provide to agency at designated location, adequate samples of materials proposed to be used which require testing, along with proposed mix designs.
   2. Cooperate with laboratory personnel, and provide access to the Work and to manufacturers' facilities.
      a. Monitor or direct superintendent to monitor each inspection, sampling and test.
      b. Provide laboratory with written acknowledgement of each inspection, sampling or test.
      c. Within 24 hours notify Architect in writing of reasons for not acknowledging laboratory field procedures.
   3. Furnish copies of mill test reports.
   4. Furnish verification of compliance with contract requirements for materials and equipment
   5. Provide incidental labor and facilities:
      a. To provide access to Work to be tested/inspected.
      b. To obtain and handle samples at the site or at source of Products to be tested/inspected.
      c. To facilitate tests/inspections.
      d. To provide storage and curing of test samples.
   6. Notify Architect and laboratory 48 hours prior to expected time for operations requiring testing/inspection services.
   7. Employ services of an independent qualified testing laboratory and pay for additional samples, tests, and inspections required by Contractor beyond specified requirements.
   8. Arrange with Owner's agency and pay for additional samples, tests, and inspections required by Contractor beyond specified requirements.
   9. Correct work which is defective or which fails to conform to the Contract Documents in accordance with the General conditions. Corrective work shall not delay the project schedule or the work of other subcontractors.
   10. Re-testing required because of non-conformance to specified requirements shall be performed by the same agency on instructions by Architect. Payment for re testing will be charged to the Contractor by deducting testing charges from the Contract Price.

3.4 DEFECT ASSESSMENT

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

END OF SECTION

SECTION 01510

TEMPORARY UTILITIES

PART 1 – GENERAL

1.1 SECTION INCLUDES
A. Temporary Utilities: Electricity, lighting, heat, ventilation, and water.

1.2 RELATED SECTIONS
A. Section 01500 - Temporary Facilities and Controls: Telephone service for administrative purposes.

1.3 TEMPORARY ELECTRICITY
A. Cost: By Contractor.
B. Provide power service required from utility source.
C. Power Service Characteristics: 120/240 volt, 15 ampere, three phase, four wire, complete with circuit breakers, disconnect switches and other devices required.
D. Provide power outlets for construction operations, with branch wiring and distribution boxes located at each floor. Provide flexible power cords as required, 50 ft. maximum.
E. Provide main service disconnect and over-current protection at convenient location and meter.
F. Permanent convenience receptacles may be utilized during construction.
G. Provide adequate distribution equipment, wiring, and outlets to provide single phase branch circuits for power and lighting.
    1. Provide 20 ampere duplex outlets, single phase circuits for power tools for every 75 feet of active work area.
    2. Provide 20 ampere, single phase branch circuits for lighting.
H. All temporary equipment and wiring for power and lighting shall be in accordance with the applicable provisions of the governing codes. Maintain in a safe manner and utilize so as not to constitute a hazard to persons or property.
I. All extension cords shall be furnished by the Contractor. Any subcontractor requiring special electrical power shall arrange for the installation and costs thereof with contractor.

1.4 TEMPORARY VENTILATION
A. Existing ventilation equipment may not be used.

1.5 TEMPORARY WATER SERVICE
A. Cost of Water Used: By Contractor.
B. Provide and maintain suitable quality water service for construction operations at time of project mobilization.
C. Connect to existing water source.
    1. Exercise measures to conserve water.
    2. Provide separate metering and reimburse Owner for cost of water used.
D. Extend branch piping with outlets located so water is available by hoses with threaded connections. Provide temporary pipe insulation to prevent freezing.
E. If required, provide a house pump complete with necessary operating controls, starters and switches, to supply adequate capacity with minimum 20 lb. pressure at each outlet.
    1. Do not use pumps specified for permanent installation.

1.6 PERMANENT SYSTEM USED AS TEMPORARY FACILITIES
A. When any portions of the Permanent Systems are in operating condition, that part of the system may be used as a temporary facility, provided that the Contractor:
    1. Obtains the Architect's written approval.
    2. Assumes full responsibility for the system used.
    3. Pays all costs for operation, maintenance, cleaning, and restoration of the system.
    4. Operates the system under the supervision of the subcontractors' responsible for the systems installation and ultimate performance.

5. Pay all costs for fuel and energy consumed. Upon receipt of the Certificate of Substantial Completion arrange with utility companies to make a final reading of meters. Submit a copy of meter readings to Owner.

PART 2 – PRODUCTS – NOT USED

PART 3 – EXECUTION – NOT USED

END OF SECTION

SECTION 01525

FIELD OFFICES

PART 1 – GENERAL

1.1 SECTION INCLUDES
A. Field Offices
B. Temporary field offices for use of Engineer.
C. Maintenance and removal.

1.2 RELATED SECTIONS
A. Section 01100 - Summary: Use of premises and responsibility for providing field offices.
B. Section 01500 - Temporary Facilities and Controls: Temporary sanitary facilities, temporary telephone service, and temporary facsimile service.

1.3 USE OF EXISTING FACILITIES
A. Existing facilities shall not be used for field offices.

1.4 USE OF PERMANENT FACILITIES
A. When permanent facilities are enclosed with operable utilities, relocate offices into building, with written agreement of Owner, and remove temporary buildings.

PART 2 – PRODUCTS

2.1 MATERIALS, EQUIPMENT, FURNISHINGS
A. Materials, Equipment, Furnishings: Serviceable, new or used, adequate for required purpose.
B. Provide, maintain, field office; provide specified services, furnishings and equipment to:
   1. Engineer.
   2. General Contractor
   3. Allocate three reserved parking spaces, convenient to offices, for use of Engineer and Owner's representative.
   4. Allow for conference room with a table and chairs for a minimum of 10 people.

2.2 CONSTRUCTION
A. Portable or mobile buildings, or buildings constructed with floors raised above ground, securely fixed to foundations, with steps and landings at entrance doors. Do not use field offices for living quarters.
B. Construction: Structurally sound, secure, weather tight enclosures for office. Maintain during progress of Work; remove when no longer needed or when directed by Architect/Engineer.
C. Temperature Transmission Resistance of Floors, Walls, and Ceilings: Compatible with occupancy requirements.
D. Exterior Materials: Weather resistant, finished in one color.
E. Interior Materials in Offices: Sheet type materials for walls and ceilings, prefinished or painted; resilient floors and bases.
F. Lighting for Offices: 50 fc at desk top height, exterior lighting at entrance doors.
G. Fire Extinguishers: One standard dry chemical (ABC) type for each office.

2.3 ENVIRONMENTAL CONTROL
A. Heating, Cooling, and Ventilating: Automatic equipment to maintain 68 degrees F heating and 76 degrees F cooling.

2.4 TEMPORARY SANITARY FACILITIES
A. Provide and maintain required facilities and enclosures. Provide at time of project mobilization.
B. Adjacent to field office, provide and maintain a temporary toilet for all workers on the project, in an enclosed, roofed structure housing adequate plumbing fixtures.
C. Portable toilets shall be serviced twice weekly, including emptying tanks, recharging with a germicidal and deodorizing solution and scrubbing entire interior with germicidal solution.

D. Use of existing facilities is not permitted.
E. Maintain daily in clean and sanitary condition.

2.5 ENGINEER OFFICE
A. Space within field office dedicated for use by Engineer.
B. Area: Minimum 80 sq ft.

2.6 REQUIREMENTS OF REGULATORY AGENCIES
A. Comply with Federal and State Regulations.
B. Obtain and pay for permits required by governing authorities only on Owner's prior written authorization.

PART 3 – EXECUTION

3.1 PREPARATION
A. Fill and grade sites for temporary structures to provide drainage away from buildings.

3.2 INSTALLATION
A. Install office spaces ready for occupancy 15 days after date fixed in Notice to Proceed.
B. Orientation of office will provide view of the project through the office window.
C. Mount thermometer at convenient location but not in direct sunlight.
D. Mount fire extinguisher in prominent locations with clear access to use.

3.3 MAINTENANCE AND CLEANING
A. Weekly janitorial services for offices; periodic cleaning and maintenance for offices.
B. Maintain approach walks free of mud, water, and snow.

3.4 REMOVAL
A. At completion of Work remove all buildings, foundations, utility services, and debris. Restore areas.

END OF SECTION

SECTION 01550

TRAFFIC CONTROL AND PROTECTION

PART 1 – GENERAL

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

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

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

PART 2 – PRODUCTS

2.1 MATERIALS
A. Traffic control materials shall conform to following reference documents:
   1. Illinois Manual on Uniform Traffic Control Devices for Streets and Highways
   2. Section 701 -TRAFFIC CONTROL AND PROTECTION of the IDOT SSRBC

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

PART 3 – EXECUTION

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

C. Placement of signs and barricades shall proceed in direction of flow of traffic. Remove signs and barricades at end of construction area and proceed toward oncoming traffic.

3.2 SPECIFIC TRAFFIC CONTROL REQUIREMENTS

A. Streets
   1. One (1) lane open with flagpersons.
   2. Detours must be approved by the Owner prior to implementation.

3.3 PEDESTRIAN TRAFFIC CONTROL

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

PART 4 – EXECUTION

4.**1 TRAFFIC CONTROL AND PROTECTION** is included as a Lump Sum unit price. A percentage of the Lump Sum shall be paid on each payment application in proportion total work completed as determined by the Engineer.

END OF SECTION 01550

SECTION 01560

ENVIRONMENT PROTECTION

PART 1 – GENERAL

1.1 SECTION INCLUDES

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

1.2 SUBMITTALS

A. Storm Water Discharge Plan.

PART 2 – PRODUCTS (Not Used)

PART 3 – EXECUTION

3.1 GENERAL

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

3.2 ARCHAEOLOGICAL FINDS DURING CONSTRUCTION

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

3.3 PROTECTION OF STORM SEWERS

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

3.4 PROTECTION OF WATERWAYS

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

3.5 STORMWATER DISCHARGE

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

3.6 DISPOSAL OF EXCESS EXCAVATED AND OTHER WATSE MATERIALS

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

3.7 PROTECTION OF AIR QUALITY

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

3.8 USE OF CHEMICALS

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

3.9 NOISE CONTROL

A. Conduct operations to cause least annoyance to residents in vicinity of Work, and comply with applicable local ordinances.
B. Equip construction equipment and other apparatus with mechanical devices necessary to minimize noise.
C. Equip compressors with silencers on intake lines.
D. Equip gasoline or oil-powered equipment with silencers or mufflers on exhaust lines.
E. Line storage bins and hoppers with material that will deaden sounds.

F. Route vehicles carrying rock, concrete, or other material over such streets as will cause least annoyance to public and do not operate on public streets between hours of 7:00 p.m. and 7:00 a.m., nor on Saturdays, Sundays or legal holidays, unless approved by Owner.

3.10 DUST CONTROL

A. Take special care in providing and maintaining temporary roads, Owner's existing roads, and public roads used during construction operations in clean, dust free condition.
B. Comply with local regulations for dust control. If Contractor's dust control measures are considered inadequate by Engineer, Engineer may require Contractor to take additional dust control measures.

3.11 FUELS AND LUBRICANTS

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

3.12 TEMPORARY EROSION AND SEDIMENTATION CONTROL

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

END OF SECTION

SECTION 01585

PROJECT SIGNS

PART 1 – GENERAL

1.1 SECTION INCLUDES
A. Project identification sign.
B. Project informational signs.

1.2 RELATED SECTIONS
A. Section 01100 - Summary: Responsibility to provide signs.
B. Section 01550 - Vehicular Access and Parking: Parking and Traffic Control Signs.

1.3 QUALITY ASSURANCE
A. Design sign and structure to withstand 90 miles/hr wind velocity.
B. Sign Size: 4 feet x 8 feet.
C. Material Standards: those specified in respective specification sections for products used.
D. Sign Maker: Experienced as a professional sign painter for minimum three years.
E. Finishes, Painting: Adequate to withstand weathering, fading, and chipping for duration of construction.

1.4 SUBMITTALS
A. See Section 01300 - Administrative Requirements for submittal procedures.
B. Shop Drawing: Show content, layout, lettering, color, foundation, structure, sizes and grades of members.

PART 2 – PRODUCTS

2.1 SIGN MATERIALS
A. Structure and Framing: New or used wood but must be sound and structurally adequate.
B. Preservative Treatment: For wood supports in contact with ground, as required to prevent deterioration during specified period of use.
C. Grade: As required to meet structural requirements and suitable for specified finish.
D. Sign Surfaces: Exterior grade plywood, ADA, with medium density overlay, minimum ¾” thick.
E. Rough Hardware: Galvanized, aluminum or brass.
F. Paint and Primers: A nationally recognized manufacturer, special sign paint, one coat of primer, minimum one coat of exterior enamel.
G. Lettering: Pre-cut vinyl self adhesive products, colors as selected by architect.

2.2 PROJECT IDENTIFICATION SIGN
A. One 4’x8’ sign of construction, design, content and location to be determined by Architect/Owner.
B. Content:
   1. Project title, logo and name of Owner.
   2. Names and titles of Tria Architecture and consultants.
   3. Building rendering.
   4. Name of general contractor.
C. Refer to drawings for additional information to be included on the sign.
D. Graphic design, colors, style of lettering, etc. as designated by Tria Architecture.

2.3 PROJECT INFORMATIONAL SIGNS
A. Painted informational signs of same colors and lettering as Project Identification sign, or standard products; size lettering to provide legibility at 100 foot distance.
B. Provide at each field office and storage shed.
C. Directional signs to direct traffic into and within site. Relocate as Work progress requires.
D. Provide municipal traffic agency directional traffic signs to and within site.

PART 3 – EXECUTION

3.1 INSTALLATION

A. Install project identification sign within 30 days after date fixed by Notice to Proceed.
B. Erect at designated location.
C. Erect supports and framing on secure foundation, rigidly braced and framed to resist wind loadings.
D. Brace Framing: Drive stakes to loading requirements to secure setting minimum depth: 12 inches. Secure framing members to stakes, cut tops of stakes to even line, flush with framing members.
E. Frame members, secure to supports: to Code requirements and applicable trade standards. Space members to widths of surfacing material, maximum 24 inches on center.
F. Install sign surface plumb and level, with butt joints. Anchor securely.
G. Paint exposed surfaces of sign, supports and framing except creosoted posts.

3.2 MAINTENANCE

A. Maintain signs and supports clean, repair deterioration and damage.

3.3 REMOVAL

A. Remove signs, framing, supports and foundations at completion of Project, when approved by Architect, and restore the area.

END OF SECTION

SECTION 01600

PRODUCT REQUIREMENTS

PART 1 – GENERAL

1.1 SECTION INCLUDES
A. General product requirements.
B. Transportation, handling, storage and protection.
C. Product option requirements.
D. Substitution limitations and procedures.
E. Procedures for Owner-supplied products.
F. Spare parts and maintenance materials.

1.2 RELATED SECTIONS
A. Document 00100 - Instructions to Bidders: Product options and substitution procedures prior to bid date.
B. Section 01400 - Quality Requirements: Product quality monitoring.

1.3 REFERENCES
A. NFPA 70 - National Electrical Code; National Fire Protection Association; 2002.

1.4 SUBMITTALS
A. Proposed Products List: Submit list of major products proposed for use, with name of manufacturer, trade name, and model number of each product; submit 3 copies to Architect.
   1. Submit within 20 days after date of Letter of Intent.
   2. For products specified only by reference standards, list applicable reference standards.
B. Product Data Submittals: Submit manufacturer's standard published data. Mark each copy to identify applicable products, models, options, and other data. Supplement manufacturers' standard data to provide information specific to this Project.
C. Shop Drawing Submittals: Prepared specifically for this Project.
D. Sample Submittals: Illustrate functional and aesthetic characteristics of the product, with integral parts and attachment devices. Coordinate sample submittals for interfacing work.
   1. For selection from standard finishes, submit samples of the full range of the manufacturer's standard colors, textures, and patterns.
E. Indicate utility and electrical characteristics, utility connection requirements, and location of utility outlets for service for functional equipment and appliances.
F. Provide name and address of similar projects on which product was used and date of installation.
G. Provide detailed description and drawings illustrating construction methods.
H. Provide itemized comparison and accurate cost data of proposed substitution in comparison with product or method specified.
I. Provide data relating to changes in contracts, coordination issues, and construction schedules.
J. Manufacturer's Instructions: When Contract Documents specify that installation shall comply with manufacturer's printed instructions, obtain and distribute copies of such instructions to all parties involved in the installation, including three copies to the Architect.

PART 2 – PRODUCTS

2.1 NEW PRODUCTS
A. Provide new products unless specifically required or permitted by the Contract Documents.
B. Motors: Refer to Section 15065, NEMA MG 1 Type. Specific motor type is specified in individual specification sections.
C. Materials and Equipment Incorporated Into The Work
   1. NO MATERIAL OR PRODUCT SHALL BE DELIVERED TO, PROVIDED FOR OR INSTALLED ON PROJECT WHICH CONTAINS ANY ASBESTOS OR ASBESTOS-CONTAINING MATERIAL.
   2. Conform to project specifications and standards.
   3. Comply with size, make, type and quality specified.

4. Manufactured and fabricated products:
   a. Design, fabricate and assemble in accord with best engineering and shop practices.
   b. Manufacture like parts of duplicate units to standard sizes and gages, to be interchangeable.
   c. Two or more items of the same kind shall be identical from the same manufacturer.
   d. All parts of systems shall be from the same manufacturer to the greatest extent practicable.
   e. Adhere to equipment capacities, sizes and dimensions shown or specified unless variations are specifically approved by Change Order.

2.2 PRODUCT OPTIONS

A. Base all bids on providing all products exactly as specified.
B. Products Specified by Reference Standards or by Description Only: Use any product meeting those standards or description.
C. Products Specified by Naming One or More Manufacturers: Use a product of one of the manufacturers named and meeting specifications, no options or substitutions allowed.
D. Products Specified by Naming One or More Manufacturers with a Provision for Substitutions: Submit a request for substitution for any manufacturer not named.

2.3 SPARE PARTS AND MAINTENANCE PRODUCTS

A. Provide spare parts, maintenance, and extra products of types and in quantities specified in individual specification sections.
B. Deliver to Project site; obtain receipt prior to final payment.

PART 3 – EXECUTION

3.1 SUBSTITUTION PROCEDURES

A. Instructions to Bidders specify time restrictions for submitting requests for substitutions during the bidding period. Comply with requirements specified in this section.
B. Architect will consider requests for substitutions only within 20 days after date of Letter of Intent.
C. Substitutions may be considered at a later date only when a product becomes unavailable through no fault of the Contractor.
D. Document each request with complete data substantiating compliance of proposed substitution with Contract Documents.
E. For products specified only by reference or performance standards, select any product which meets or exceeds standards, by any manufacturers, subject to the Architect's approval.
F. For products specified by naming several products or manufacturers, select any product and manufacturer named which conforms to the intent of the documents.
G. Substitutions, Bidder/Contractor Options
   1. Prior to Bid Opening: The Architect will consider written requests to amend the bidding documents to add products not specified provided such requests are received at least 10 calendar days prior to bid opening date. Requests received after that time will not be considered. When a request is approved, the Architect will issue an appropriate addendum not less than three calendar days prior to the bid opening.
   2. With Bid: A bidder may propose substitutions with his bid by completing the Substitution Sheet with the Bid Form, subject to the provisions stated thereon. Architect will review Substitution Sheet of low bidder and recommend approval or rejection by Owner prior to award of Contract.
   3. After Award of Contract: No substitutions will be considered after Notice of Award except under one or more of the following conditions:
      a. Substitutions required for compliance with final interpretations of code requirements or insurance regulations.
      b. Unavailability of specified products, through no fault of Contractor or subcontractor.

c. Subsequent information discloses inability of all specified products to perform properly or to fit in designated space.
d. Manufacturer/fabricator refusal to certify or guarantee performance of specified product as specified.
e. When a substitution would be substantially beneficial to the Owner.

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

I. Substitutions will not be considered when they are indicated or implied on shop drawing or product data submittals, without separate written request, or when acceptance will require revision to the Contract Documents.

J. Substitution Submittal Procedure:
1. Submit three copies of request for substitution for consideration. Limit each request to one proposed substitution.
2. Submit shop drawings, product data, and certified test results attesting to the proposed product equivalence. Burden of proof is on proposer.
3. The Architect will notify Contractor in writing of decision to accept or reject request.
4. Complete data substantiating compliance of proposed substitution with Contract Documents.
5. For products:
a. Product identification, including manufacturer's name and address.
b. Manufacturer's literature:
1) Product description.
2) Performance and test data.
3) Reference standards.
c. Samples.
d. Name and address of similar projects on which product was used and date of installation.
6. For construction methods:
a. Detailed description of proposed method.
b. Drawings illustrating methods.
7. Itemized comparison of proposed substitutions with product or method specified.
8. Data relating to changes in construction schedules.
9. Identify:
a. Other contract affected.
b. Changes or coordination required.
10. Accurate cost data on proposed substitution in comparison with product or method specified.

K. Provide cost data that is complete and includes all related costs under Bidder/Contractor contract, but excludes:
1. Costs under separate contracts.
2. Architect's redesign.
3. Administrative costs of Architect.

3.2 OWNER-SUPPLIED PRODUCTS

A. See Section 01100 - Summary for identification of Owner-supplied products.

B. Owner's Responsibilities:
1. Arrange for and deliver Owner reviewed shop drawings, product data, and samples, to Contractor.
2. Arrange and pay for product delivery to site.
3. On delivery, inspect products jointly with Contractor.

4. Submit claims for transportation damage and replace damaged, defective, or deficient items.
5. Arrange for manufacturer's warranties, inspections, and service.

C. Contractor's Responsibilities:
1. Review Owner reviewed shop drawings, product data, and samples.
2. Receive and unload products at site; inspect for completeness or damage jointly with Owner.
3. Handle, store, install and finish products.
4. Repair or replace items damaged after receipt.

3.3 TRANSPORTATION AND HANDLING

A. Coordinate schedule of product delivery to designated prepared areas in order to minimize site storage time and potential damage to stored materials.
B. Transport and handle products in accordance with manufacturer's instructions.
C. Transport materials in covered trucks to prevent contamination of product and littering of surrounding areas.
D. Arrange for transportation and deliveries of materials and equipment in accordance with approved current construction schedules and in ample time to facilitate inspection prior to installation.
E. Coordinate deliveries to avoid conflict with work and condition at site.
F. Deliver products in undamaged condition in original containers or packaging, with identifying labels intact and legible. Clearly mark partial deliveries of component parts of assemblies or equipment to permit easy identification of parts and to facilitate assembly.
G. Lift packages, equipment, or components only at designated lift points.
H. Promptly inspect shipments to ensure that products comply with requirements, quantities are correct, and products are undamaged.
I. Provide equipment and personnel, including those furnished by Owner, to handle products by methods to prevent soiling, disfigurement, or damage.
J. Arrange for the return of packing materials, such as wood pallets, where economically feasible.

3.4 STORAGE AND PROTECTION

A. Designate receiving/storage areas for incoming products so that they are delivered according to installation schedule and placed convenient to work area in order to minimize waste due to excessive materials handling and misapplication.
B. Store and protect products in accordance with manufacturer's instructions.
C. Store with seals and labels intact and legible.
D. Store sensitive products in weather tight, climate controlled, enclosures in an environment favorable to product. Materials may be new or used at Contractor's option, but shall be non-staining, non-hazardous, and of sufficient strength and durability for proposed use.
E. Submittals
1. Request for allocation of storage space.
2. List of materials and equipment to be stored.
3. Proposed location for storage.
4. Special storage requirements.
5. Schedule of anticipated storage dates.

F. For exterior storage of fabricated products, place on sloped supports above ground.
G. Provide bonded off-site storage and protection when site does not permit on-site storage or protection. Off-site storage will be permitted only on Owner's prior written authorization in accordance with General Conditions.
H. Cover products subject to deterioration with impervious sheet covering. Provide ventilation to prevent condensation and degradation of products.
I. Store loose granular materials on solid flat surfaces in a well-drained area. Prevent mixing with foreign matter.
J. Prevent contact with material that may cause corrosion, discoloration, or staining.
K. Provide equipment and personnel to store products by methods to prevent soiling, disfigurement, or damage.
L. Arrange storage of products to permit access for inspection. Periodically inspect to verify products are undamaged and are maintained in acceptable condition.

M. Locate storage areas where authorized by Architect, Contractor will resolve conflicts in storage requirements of all subcontractors. Do not inhibit use of:
   1. Fire exits.
   2. Fire lanes.
   3. Parking.
   4. Work of other contractors.
   5. Owner.

N. Provide separate storage for combustible and non-combustible products. Store combustible materials in accordance with Fire Protection Agency's regulations.

O. Remove all temporary storage, contents and utilities at completion of construction activities or when requested by the Architect.

END OF SECTION

SECTION 01700

EXECUTION REQUIREMENTS

PART 1 – GENERAL

1.1 SECTION INCLUDES

A. Examination, preparation, and general installation procedures.
B. Pre-installation meetings.
C. Cutting and patching.
D. Surveying for laying out the work.
E. Cleaning and protection.
F. Starting of systems and equipment.
G. Demonstration and instruction of Owner personnel.
H. Closeout procedures, except payment procedures.

1.2 RELATED SECTIONS

A. Section 01300 - Administrative Requirements: Submittals procedures.
B. Section 01400 - Quality Requirements: Testing and inspection procedures.
C. Section 01780 - Closeout Submittals: Project record documents, operation and maintenance data, warranties and bonds.

1.3 SUBMITTALS

A. See Section 01300 - Administrative Requirements, for submittal procedures.
B. Survey work: Submit name, address, and telephone number of Surveyor before starting survey work.
    1. On request, submit documentation verifying accuracy of survey work.
    2. Submit a copy of site drawing signed by the Land Surveyor, that the elevations and locations of the work are in conformance with Contract Documents. Include the following data:
    3. Architect may at any time require written verifications of grades, lines and levels by a licensed surveyor as work progresses.
    4. All areas found to be non-conforming to the Contract Documents shall be corrected by the responsible Contractor.
    5. Submit surveys and survey logs for the project record.
C. Cutting and Patching: Submit written request in advance of cutting or alteration which affects:
    1. Structural integrity of any element of Project.
    2. Integrity of weather exposed or moisture resistant element.
    3. Efficiency, maintenance, or safety of any operational element.
    4. Visual qualities of sight exposed elements.
    5. Work of Owner or separate Contractor.
    6. Include in request:
        a. Identification of Project.
        b. Location and description of affected work.
        c. Necessity for cutting or alteration.
        d. Contractor and crafts to execute the work.
        e. Description of proposed work and products to be used.
        f. Extent of refinishing.
        g. Alternatives to cutting and patching.
        h. Effect on work of Owner or separate Contractor.
        i. Written permission of affected separate Contractor.
        j. Date and time work will be executed.
D. Designation of party responsible for cost of cutting and patching.
E. When conditions of work, or schedule, indicate change of materials or methods, submit recommendation to Architect, including:
    1. Condition indicating change.
    2. Recommendation for alternative materials or methods.
    3. Submittals specified for substitutions.

F. Submit written notice to Architect, designating time work will be uncovered, to provide for observation.
G. Payment for Costs:
   1. Costs caused by ill-timed or defective work, or work not conforming to Contract Documents, including costs for additional services of Architect - party responsible for ill timed, rejected or non-conforming work.
   2. Work done by change order, other than defective or non-conforming work - Owner.

1.4 GRADES, LINES AND LEVELS

A. Contractor lay out all of the work under this contract.
   1. Establish all working lines, levels, elevations and measurements.
B. Owner will furnish:
   1. A certified topographic survey of existing site, giving all grades and lines of streets, alleys, pavements and adjoining property, rights-of-way, encroachments, boundaries and contours of building site.
   2. Locations, dimensions and data pertaining to existing:
      a. Buildings.
      b. Underground obstructions.
      c. Trees and landscaping.
      d. Other improvements.
   3. Information as to available service and utility lines, both public and private.
C. Location of survey's baseline control points.
   1. Benchmark and temporary benchmark location and elevation of each.
D. Quality Assurance
   1. All layout work which establishes site layout dimensions or elevations or exterior building dimensions, angles or grade floor elevations shall be done by a qualified engineer or surveyor.
   2. Qualifications of Contractor's Engineer/Surveyor:
      a. Experienced in layout work of similar complexity.
      b. Licensed by State of Illinois.
E. Submittals. Architect may at any time require written verification of grades, lines and levels by a licensed surveyor as work progresses.
F. Laying Out The Work
   1. Prior to the beginning of the actual work, perform the following:
      a. Each subcontractor shall lay out their portion of the work.
      b. Establish all required bench marks and reference lines.
      c. Verify all building dimensions.
      d. Verify conformance of all actual general dimensions with those indicated on the Architect's plan.
      e. Notify the Architect immediately if any conflict whatsoever exists.
G. Survey Upon Completion
   1. Upon completion, Owner may provide a survey performed by a licensed surveyor indicating the location of the Work of this Contract and including the following data:
      a. Building location and dimensions of all walls.
      b. Elevations of finished floor at all exterior exits.
      c. Spot elevations, storm, sanitary and watermain manholes, and all invert elevations.
      d. Spot elevations of corners of all new pavement and on a 50' grid within paved areas.
   2. All areas found to be non-conforming to the Contract Documents shall be corrected by the responsible Contractor.

1.5 QUALIFICATIONS

A. For survey work, employ a land surveyor registered in the State in which the Project is located and acceptable to Architect. Submit evidence of Surveyor's Errors and Omissions insurance coverage in the form of an Insurance Certificate.
B. For field engineering, employ a professional engineer of the discipline required for specific service on Project, licensed in the State in which the Project is located.

1.6 PROJECT CONDITIONS

A. Grade site to drain. Maintain excavations free of water. Provide, operate, and maintain pumping equipment.
B. Protect site from puddling or running water. Provide water barriers as required to protect site from soil erosion.
C. Dust Control: Execute work by methods to minimize raising dust from construction operations. Provide positive means to prevent air-borne dust from dispersing into atmosphere.
D. Erosion and Sediment Control: Plan and execute work by methods to control surface drainage from cuts and fills, from borrow and waste disposal areas. Prevent erosion and sedimentation.
    1. Minimize amount of bare soil exposed at one time.
    2. Provide temporary measures such as berms, dikes, and drains, to prevent water flow.
    3. Construct fill and waste areas by selective placement to avoid erosive surface silts or clays.
    4. Periodically inspect earthwork to detect evidence of erosion and sedimentation; promptly apply corrective measures.
E. Noise Control: Provide methods, means, and facilities to minimize noise produced by construction operations.
F. Pest Control: Provide methods, means, and facilities to prevent pests and insects from damaging the work.
G. Rodent Control: Provide methods, means, and facilities to prevent rodents from accessing or invading premises.
H. Pollution Control: Provide methods, means, and facilities to prevent contamination of soil, water, and atmosphere from discharge of noxious, toxic substances, and pollutants produced by construction operations.

1.7 COORDINATION

A. Coordinate scheduling, submittals, and work of the various sections of the Project Manual to ensure efficient and orderly sequence of installation of interdependent construction elements, with provisions for accommodating items installed later.
B. Notify affected utility companies and comply with their requirements.
C. Verify that utility requirements and characteristics of new operating equipment are compatible with building utilities. Coordinate work of various sections having interdependent responsibilities for installing, connecting to, and placing in service, such equipment.
D. Coordinate space requirements, supports, and installation of mechanical and electrical work which are indicated diagrammatically on Drawings. Follow routing shown for pipes, ducts, and conduit, as closely as practicable; place runs parallel with lines of building. Utilize spaces efficiently to maximize accessibility for other installations, for maintenance, and for repairs.
E. In finished areas except as otherwise indicated, conceal pipes, ducts, and wiring within the construction. Coordinate locations of fixtures and outlets with finish elements.
F. Coordinate completion and clean-up of work of separate sections.
G. After Owner occupancy of premises, coordinate access to site for correction of defective work and work not in accordance with Contract Documents, to minimize disruption of Owner's activities.

PART 2 – PRODUCTS

2.1 PATCHING MATERIALS

A. New Materials: As specified in product sections; match existing products and work for patching and extending work.
B. Type and Quality of Existing Products: Determine by inspecting and testing products where necessary, referring to existing work as a standard.
C. Product Substitution: For any proposed change in materials, submit request for substitution described in Section 01600.

PART 3 – EXECUTION

3.1 EXAMINATION

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

3.2 PREPARATION

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

3.3 PREINSTALLATION MEETINGS

A. When required in individual specification sections, convene a pre-installation meeting at the site prior to commencing work of the section.
B. Require attendance of parties directly affecting, or affected by, work of the specific section.
C. Notify Architect four days in advance of meeting date.
D. Prepare agenda and preside at meeting:
    1. Review conditions of examination, preparation and installation procedures.
    2. Review coordination with related work.
E. Record minutes and distribute copies within two days after meeting to participants, with two copies to Architect, Owner, participants, and those affected by decisions made.

3.4 LAYING OUT THE WORK

A. Verify locations of survey control points prior to starting work.
B. Promptly notify Architect of any discrepancies discovered.
C. Contractor shall locate and protect survey control and reference points.
D. Control datum for survey is that established by Owner provided survey.
E. Protect survey control points prior to starting site work; preserve permanent reference points during construction.

F. Promptly report to Architect the loss or destruction of any reference point or relocation required because of changes in grades or other reasons.
G. Replace dislocated survey control points based on original survey control. Make no changes without prior written notice to Architect.
H. Utilize recognized engineering survey practices.
I. Establish a minimum of two permanent bench marks on site, referenced to established control points. Record locations, with horizontal and vertical data, on project record documents.
J. Establish elevations, lines and levels. Locate and lay out by instrumentation and similar appropriate means:
    1. Site improvements including pavements; stakes for grading, fill and topsoil placement; utility locations, slopes, and invert elevations.
    2. Grid or axis for structures.
    3. Building foundation, column locations, and ground floor elevations.
K. Periodically verify layouts by same means.
L. Maintain a complete and accurate log of control and survey work as it progresses.
M. On completion of foundation walls and major site improvements, prepare a certified survey illustrating dimensions, locations, angles, and elevations of construction and site work.

3.5 GENERAL INSTALLATION REQUIREMENTS

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

3.6 CUTTING AND PATCHING

A. Execute cutting and patching including excavation and fill to complete the work, to uncover work in order to install improperly sequenced work, to remove and replace defective or non-conforming work, to remove samples of installed work for testing when requested, to provide openings in the work for penetration of mechanical and electrical work, to execute patching to complement adjacent work, and to fit products together to integrate with other work.
B. Execute work by methods to avoid damage to other work, and which will provide appropriate surfaces to receive patching and finishing. In existing work, minimize damage and restore to original condition.
C. Employ original installer to perform cutting for weather exposed and moisture resistant elements, and sight exposed surfaces.
D. Cut rigid materials using masonry saw or core drill. Pneumatic tools not allowed without prior approval.
E. Restore work with new products in accordance with requirements of Contract Documents.
F. Fit work air tight to pipes, sleeves, ducts, conduit, and other penetrations through surfaces.
G. At penetrations of fire rated walls, partitions, ceiling, or floor construction, completely seal voids with fire rated material in accordance with Section 07840, to full thickness of the penetrated element.
H. Refinish surfaces to match adjacent finish. For continuous surfaces, refinish to nearest intersection or natural break. For an assembly, refinish entire unit.
I. Make neat transitions. Patch work to match adjacent work in texture and appearance. Where new work abuts or aligns with existing, perform a smooth and even transition.
J. In addition to contract requirements, upon written instructions of Architect.
    1. Uncover work to provide for observation of covered work.
    2. Remove samples of installed materials for testing.
K. Do not endanger work by cutting or altering work or any part of it.
L. Do not cut or alter work without written consent of Architect.

M. Patch or replace surfaces that are damaged, lifted, discolored, or showing other imperfections due to patching work. Repair substrate prior to patching finish. Finish patches to produce uniform finish and texture over entire area. When finish cannot be matched, refinish entire surface to nearest intersections.

3.7 PROGRESS CLEANING

A. Maintain areas free of waste materials, debris, and rubbish. Maintain site in a clean and orderly condition.
B. Maintain clean public streets on a daily basis, ensuring streets are free of debris, rock, clay, or soil at the end of every workday.
C. Remove debris and rubbish from pipe chases, plenums, attics, crawl spaces, and other closed or remote spaces, prior to enclosing the space.
D. Broom and vacuum clean interior areas prior to start of surface finishing and continue cleaning to eliminate dust.
E. Collect and remove waste materials, debris, and trash/rubbish from site periodically and dispose off-site; do not burn or bury.
F. A concrete clean-out must be placed in accordance with drawings and utilized for all concrete clean-out activities. Concrete clean-out shall be removed at the end of the project.

3.8 PROTECTION OF INSTALLED WORK

A. Protect installed work from damage by construction operations.
B. Provide special protection where specified in individual specification sections.
C. Provide temporary and removable protection for installed products. Control activity in immediate work area to prevent damage.
D. Provide protective coverings at walls, projections, jambs, sills, and soffits of openings.
E. Protect finished floors, stairs, and other surfaces from traffic, dirt, wear, damage, or movement of heavy objects, by protecting with durable sheet materials.
F. Prohibit traffic or storage upon waterproofed or roofed surfaces. If traffic or activity is necessary, obtain recommendations for protection from waterproofing or roofing material manufacturer.
G. Prohibit traffic from landscaped areas.
H. Remove protective coverings when no longer needed; reuse or recycle plastic coverings if possible.

3.9 STARTING SYSTEMS

A. Coordinate schedule for start-up of various equipment and systems with Architect and Owner's Representative.
B. Notify Architect and owner two days prior to start-up of each item.
C. Verify that each piece of equipment or system has been checked for proper lubrication, drive rotation, belt tension, control sequence, and for conditions which may cause damage.
D. Verify tests, meter readings, and specified electrical characteristics agree with those required by the equipment or system manufacturer.
E. Verify that wiring and support components for equipment are complete and tested.
F. Execute start-up under supervision of applicable Contractor personnel and manufacturer's representative in accordance with manufacturers' instructions.
G. When specified in individual specification Sections, require manufacturer and/or equipment supplier to provide authorized representative to be present at site to inspect, check, and approve equipment or system installation prior to start-up, and to supervise placing equipment or system in operation.
H. Submit a written report that equipment or system has been properly installed and is functioning correctly.

SECTION 01700

EXECUTION REQUIREMENTS

3.10 DEMONSTRATION AND INSTRUCTION

A. Demonstrate operation and maintenance of products to Owner's personnel two weeks prior to date of Substantial Completion.
B. Demonstrate start-up, operation, control, adjustment, trouble-shooting, servicing, maintenance, and shutdown of each item of equipment at scheduled time, at equipment location.
C. For equipment or systems requiring seasonal operation, perform demonstration for other season within six months.
D. Provide a qualified person who is knowledgeable about the Project to perform demonstration and instruction of owner personnel.
E. Utilize operation and maintenance manuals as basis for instruction. Review contents of manual with Owner's personnel in detail to explain all aspects of operation and maintenance.
F. Prepare and insert additional data in operations and maintenance manuals when need for additional data becomes apparent during instruction.
G. The amount of time required for instruction on each item of equipment and system is that specified in individual sections.

3.11 ADJUSTING

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

3.12 FINAL CLEANING

A. Execute final cleaning prior to final project assessment.
B. Use cleaning materials that are non-hazardous.
C. Clean debris from drainage systems.
D. Clean site; sweep paved areas, rake clean landscaped surfaces.
E. Remove waste, surplus materials, trash/rubbish, and construction facilities from the site; dispose of in legal manner; do not burn or bury.
F. Contractor provide final cleaning at completion of work, or at such other times as directed by the Architect, remove all waste, debris, rubbish, tools, equipment, machinery and surplus materials. Clean all sight exposed surfaces; leave work clean and ready for occupancy.
G. Safety Requirements
    1. Standards: Maintain project in accord with following safety and insurance standards:
        a. Federal and state regulations.
        b. National Fire Protection Association (NFPA).
    2. Hazards Control:
        a. Store volatile wastes in covered metal containers and remove from premises daily.
        b. Prevent accumulation of wastes which create hazardous conditions.
        c. Provide adequate ventilation during use of volatile or noxious substances.
    3. Conduct cleaning and disposal operations to comply with Federal and State anti-pollution laws.
        a. Do not burn or bury rubbish and waste materials on project site.
        b. Do not dispose of volatile wastes such as mineral spirits, oil or paint thinner in storm or sanitary drains.
        c. Do not dispose of wastes into streams or waterways.
H. Materials
    1. Select and use all cleaning materials and equipment with care to avoid scratching, marring, defacing, staining or discoloring surfaces cleaned.
    2. Use only cleaning materials recommended by manufacturer of surface to be cleaned.
    3. Use cleaning materials only on surfaces recommended by cleaning material manufacturer.
I. Final Cleaning
    1. Employ experienced workers or professional cleaners for final cleaning.
    2. Remove grease, dust, dirt, stains, labels, fingerprints, protection and other foreign materials from sight-exposed finished surfaces.
        a. In preparation for substantial completion or occupancy, conduct final inspection of sight-exposed surfaces, and of concealed spaces to insure performance.
    3. Repair, patch and touch up marred surfaces to specified finish, to match adjacent surfaces.

4. Soft broom clean all exposed concrete surfaces clean; other paved areas with soft or stiff broom as directed. Rake clean other surfaces on grounds.
5. Maintain finally cleaned areas until project, or designated portion thereof, is accepted by Owner.

3.13 CLOSEOUT PROCEDURES

A. Make submittals that are required by governing or other authorities.
   1. Provide copies to Architect and Owner.
B. Contractor to determine items to be listed for completion or correction in Contractor's Notice of Substantial Completion.
C. Notify Architect when work is considered ready for Substantial Completion.
D. Submit written certification that Contract Documents have been reviewed, work has been inspected, and that work is complete in accordance with Contract Documents and ready for Architect's review.
E. Substantial Completion Meeting will be scheduled by Architect. Architect will issue notice of meeting.
   1. Agenda will consist of the inspection, discussion of the punch list, determination of final completion dates, and the date and time the Owner will take occupancy. Architect will also review the requirements for contractor closeout in accord with the contract documents.
   2. Upon completion of this meeting, the Architect shall prepare the Certificate of Substantial Completion with the completed punch list and forward the package to the Contractor.
F. Owner will occupy all of the building as specified in Section 01100.
G. Contractor will correct items of work listed in punch list and comply with requirements for access to Owner-occupied areas.
H. Notify Architect when work is considered finally complete.
I. Accompany Architect on final inspection.
J. Complete items of work determined by Architect's final inspection.

END OF SECTION

SECTION 01780

CLOSEOUT SUBMITTALS

PART 1 – GENERAL

1.1 SECTION INCLUDES
A. Project Record Documents.
B. Operation and Maintenance Data.
C. Warranties and bonds.

1.2 RELATED SECTIONS
A. Conditions of the Contract: Performance bond and labor and material payment bonds, warranty, and correction of work.
B. Section 01300 - Administrative Requirements: Submittals procedures, shop drawings, product data, and samples.
C. Section 01700 - Execution Requirements: Contract closeout procedures.
D. Individual Product Sections: Specific requirements for operation and maintenance data.
E. Individual Product Sections: Warranties required for specific products or Work.

1.3 SUBMITTALS
A. Substantial Completion
    1. When Contractor considers work substantially complete, submit written declaration to Architect that work, or designated portion thereof, is substantially complete. Include list of items to be completed or corrected.
    2. Architect will make a preliminary inspection within seven business days after receipt of Contractor's declaration.
    3. Upon determining that work is substantially complete, Architect will:
        a. Prepare a punch list of items to be completed or corrected, as determined by the inspection.
        b. Prepare and process a certificate of substantial completion, containing:
            1) Date of substantial completion.
            2) Punch list of items to be completed or corrected.
            3) The time within which punch list items shall be completed or corrected.
            4) Date and time Owner will take occupancy of project or designated portion thereof.
            5) Responsibilities of Owner and Contractor for:
                a) Insurance
                b) Utilities.
                c) Operation and maintenance of mechanical, electrical and other systems.
                d) Maintenance and cleaning.
                e) Security
            6) Signatures of:
                a) Architect
                b) Contractor.
                c) Owner.
    4. Contractor:
        a. Complete all work listed for completion or correction within designated time.
        b. Perform final cleaning in accordance with 01700.
    5. At time of inspection, should substantial completion not be certified, complete the work and resubmit declaration in accord with Paragraph A.1 above.
B. Final Completion
    1. Contractor:
        a. Submit written declaration to Architect that:
            1) Work complies with all aspects of Contract Documents.
            2) All items on substantial completion punch list have been completed or corrected.
            3) All tools, construction equipment and surplus materials have been removed from site.
            4) Required surveys have been completed and verified.
    2. Architect, Engineer, and Owner will make final inspection with Contractor to ensure completion of all contract requirements.

3. When Architect considers that all work is finally complete in accordance with contract document requirements, he will prepare and process closeout documents.

C. Application for Final Payment
   1. Contractor submit duly executed:
      a. Final Affidavit and Sworn Statement.
      b. Contractor's Final Waiver of Lien.
      c. Separate releases of waivers of liens for all subcontractors, suppliers and others with lien rights against property of Owner, together with complete list of those parties.
      d. Final accounting statement, reflecting all adjustments to contract sum.
         1) Original contract sum.
         2) Additions and deductions resulting from:
            a) All change orders.
            b) Deductions for uncorrected work.
            c) Deductions for liquidated damages.
      e. Total contract sum, as adjusted.
      f. Previous payments.
      g. Sum remaining due.
   2. Architect will process final statement in accordance with Conditions of the Contract.

D. Project Record Documents: Submit documents to Architect with claim for final Application for Payment.
   1. Accompany submittal with transmittal letter, in duplicate, containing:
      a. Date.
      b. Project title and number.
      c. Contractor's name and address.
      d. Title and number of each record document.
   2. Certification that each document submitted is complete and accurate.
      a. Signature of contractor, or his authorized representative.
   3. Submit 1 copy of completed documents 15 days prior to final inspection. This copy will be reviewed and returned after final inspection, with Architect comments. Revise content of all document sets as required prior to final submission.
   4. Submit one hard copy set and two portable USB drives containing electronic copies (in PDF file format) of revised final documents in final form within 10 days after final inspection.

E. Operation and Maintenance Data:
   1. The contractor shall cause each mechanical and electrical subcontractor to provide the Contractor with three hard copies and one electronic copy of all operating manuals at the time of delivery of each major piece of equipment.
   2. Submit two copies of preliminary draft or proposed formats and outlines of contents before start of Work. Architect will review draft and return one copy with comments.
   3. For equipment, or component parts of equipment put into service during construction and operated by Owner, submit completed documents within ten days after acceptance.
   4. Submit 1 copy of completed documents 15 days prior to final inspection. This copy will be reviewed and returned after final inspection, with Architect comments. Revise content of all document sets as required prior to final submission.
   5. Submit two hard copy sets and two portable USB drives containing electronic copies (in PDF file format) of revised final documents in final form within 10 days after final inspection.

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

4. Because the warranty period begins with the issuance of the final payment from The Village to the general contractor, all warranties should include the verbiage "…for a period of (X) year(s) after the date The Village issues the final payment to the General Contractor…"

PART 2 – PRODUCTS – NOT USED

PART 3 – EXECUTION

3.1 PROJECT RECORD DOCUMENTS

A. Contractor and all subcontractors shall maintain an accurate record of deviations and changes from the Contract Documents which occur in the work.
B. Indicate all such deviations and changes on a record set of the Contract Documents and turn same over to the Architect and Owner upon completion of the Work all such documents and information such as final shop drawings and sketches, marked prints and similar data indicating the as-built conditions.
C. Create an electronic copy of all approved Project Record Documents in PDF file format and deliver to Architect and Owner on a portable USB drives.
D. Maintain on site one set of the following record documents; record actual revisions to the Work:
   1. Drawings.
   2. Project Manual.
   3. Interpretations and supplemental instructions.
   4. Specifications.
   5. Addenda.
   6. Change Orders and other modifications to the Contract.
   7. Reviewed shop drawings, product data, and samples.
   8. Manufacturer's instruction for assembly, installation, and adjusting.
   9. Other modifications to contract.
   10. Field test records.
   11. All schedules.
   12. Correspondence file.
E. Ensure entries are complete and accurate, enabling future reference by Owner.
F. Store record documents separate from documents used for construction.
G. Record information concurrent with construction progress.
H. File documents in format in accord with Project Manual Table of Contents.
I. Do not use record documents for field construction purposes.
J. Make documents available at all times for inspection by Architect and Owner.
K. Plans and sections of all concealed work, particularly concealed piping and conduit, and deviations from conditions shown on the contract drawings, shall be shown and dimensioned on the "as-built" drawings.
L. Contractor shall develop layout drawings for all concealed work that is schematically indicated on contract drawings.
M. Provide red colored pencils or felt marking pens for marking devices.
N. Do not permanently conceal any work until specified information has been recorded.
O. Specifications: Legibly mark and record at each product section description of actual products installed, including the following:
   1. Manufacturer's name and product model and number.
   2. Product substitutions or alternates utilized.
   3. Changes made by Change Order or Field Order.
   4. Other matters not originally specified.
P. Label each record document "PROJECT RECORD DOCUMENTS" in large print. Keep record documents current.

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

R. Shop Drawings: Maintain as record documents; legibly annotate drawings to record changes made after review.

S. Completed Work Survey: Requirements specified in Section 01700 - Execution Requirements.

3.2 OPERATION AND MAINTENANCE DATA

A. Compile product data and related information appropriate for Owner's maintenance and operation of products and equipment provided under the Contract.

B. For Each Product or System: List names, addresses and telephone numbers of Subcontractors and suppliers, including local source of supplies and replacement parts.

C. Product Data: Mark each sheet to clearly identify specific products and component parts, and data applicable to installation. Delete inapplicable information.

D. Drawings: Supplement product data to illustrate relations of component parts of equipment and systems, to show control and flow diagrams. Coordinate drawings with information in Product Record Documents to assure correct illustration of completed installation. Do not use Project Record Documents as maintenance drawings.

E. Typed Text: As required to supplement product data. Provide logical sequence of instructions for each procedure, incorporating manufacturer's instructions.

F. Warranty, Bond, and Service Contract: Provide information sheet for Owner's personnel with proper procedures in event of failure and instances which might affect validity of warranties of bonds.

3.3 OPERATION AND MAINTENANCE DATA FOR MATERIALS AND FINISHES

A. Submit three hard copies and two portable USB drives with electronic copies (in PDF file format) of complete manual in final form.

B. For Each Product, Applied Material, and Finish:
   1. Product data, with catalog number, size, composition, and color and texture designations.
   2. Information for re-ordering custom manufactured products.

C. Instructions for Care and Maintenance: Manufacturer's recommendations for cleaning agents and methods, precautions against detrimental cleaning agents and methods, and recommended schedule for cleaning and maintenance.

D. Moisture protection and weather-exposed products: Include product data listing applicable reference standards, chemical composition, and details of installation. Provide recommendations for inspections, maintenance, and repair.

E. Additional information as specified in individual product specification sections.

F. Provide a listing in Table of Contents for design data, with tabbed fly sheet and space for insertion of data.

3.4 OPERATION AND MAINTENANCE DATA FOR EQUIPMENT AND SYSTEMS

A. Submit three hard copies and two portable USB drives with electronic copies (in PDF file format) of complete manual in final form.

B. For Each Item of Equipment and Each System:
   1. Description of unit or system, and component parts.
   2. Identify function, normal operating characteristics, and limiting conditions.
   3. Include performance curves, with engineering data and tests.
   4. Complete nomenclature and model number of replaceable parts.

C. Panelboard Circuit Directories: Provide electrical service characteristics, controls, and communications; typed.
D. Include color coded wiring diagrams as installed.
E. Operating Procedures: Include start-up, break-in, and routine normal operating instructions and sequences. Include regulation, control, stopping, shut-down, and emergency instructions. Include summer, winter, and any special operating instructions.
F. Maintenance Requirements: Include routine procedures and guide for preventative maintenance and trouble shooting; disassembly, repair, and reassembly instructions; and alignment, adjusting, balancing, and checking instructions.
G. Provide servicing and lubrication schedule, and list of lubricants required.
H. Include manufacturer's printed operation and maintenance instructions.
I. Include sequence of operation by controls manufacturer.
J. Provide original manufacturer's parts list, illustrations, assembly drawings, and diagrams required for maintenance.
K. Provide control diagrams by controls manufacturer as installed.
L. Provide Contractor's coordination drawings, with color coded piping diagrams as installed.
M. Provide charts of valve tag numbers, with location and function of each valve, keyed to flow and control diagrams.
N. Provide list of original manufacturer's spare parts, current prices, and recommended quantities to be maintained in storage.
O. Include test and balancing reports.
P. Additional Requirements: As specified in individual product specification sections.

3.5 OPERATION AND MAINTENANCE MANUALS

A. Prepare instructions and data by personnel experienced in maintenance and operation of described products.
B. Prepare data in the form of an instructional manual.
C. Submit one copy of completed instruction manual 15 business days prior to final inspection or acceptance.
    1. Copy will be returned after final inspection or acceptance, with comments.
D. Binders: Commercial quality, 8-1/2 x 11 inch three D side ring binders with durable plastic covers; 2 inch maximum ring size. When multiple binders are used, correlate data into related consistent groupings.
E. Cover: Identify each binder with typed or printed title OPERATION AND MAINTENANCE INSTRUCTIONS; identify title of Project; identify subject matter of contents.
F. Provide tabbed dividers for each separate product and system, with typed description of product and major component parts of equipment.
G. Text: Manufacturer's printed data, or typewritten data on 24 pound paper.
H. Drawings: Provide with reinforced punched binder tab. Bind in with text; fold larger drawings to size of text pages.
I. Arrange content by systems under section numbers and sequence of Table of Contents of this Project Manual.
J. Contents: Prepare a Table of Contents for each volume, with each product or system description identified, in three parts as follows:
    1. Part 1: Directory, listing names, addresses, and telephone numbers of Architect, Contractor, Subcontractors, and major equipment suppliers.
    2. Part 2: Operation and maintenance instructions arranged by system and subdivided by specification section. For each category, identify names, addresses, and telephone numbers of Subcontractors and suppliers. Identify the following:
        a. Significant design criteria.
        b. List of equipment.
        c. Parts list for each component.
        d. Operating instructions.
        e. Maintenance instructions for equipment and systems.

f. Maintenance instructions for special finishes, including recommended cleaning methods and materials, and special precautions identifying detrimental agents.

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

K. Provide a listing in Table of Contents for design data, with tabbed dividers and space for insertion of data.

L. Table of Contents: Provide title of Project; names, addresses, and telephone numbers of Architect, Consultants, and Contractor with name of responsible parties; schedule of products and systems, indexed to content of the volume.

3.6 WARRANTIES AND BONDS

A. Obtain warranties and bonds, executed in duplicate by responsible Subcontractors, suppliers, and manufacturers, within ten days after completion of the applicable item of work. Except for items put into use with Owner's permission, leave date of beginning of time of warranty until the Date of Substantial completion is determined.

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

C. Co-execute submittals when required.

D. Retain warranties and bonds until time specified for submittal.

E. Manual: Bind in commercial quality 8-1/2 x 11 inch three D side ring binders with durable plastic covers and provide electronic copies of all warranties and bonds in PDF file format on two portable USB drives.

F. Binder Cover: Identify each binder with typed or printed title WARRANTIES AND BONDS, with title of Project; name, address and telephone number of Contractor and equipment supplier; and name of responsible company principal.

G. Table of Contents: Neatly typed, in the sequence of the Table of Contents of the Project Manual, with each item identified with the number and title of the specification section in which specified, and the name of product or work item.

H. Separate each warranty or bond with index tab sheets keyed to the Table of Contents listing. Provide full information, using separate typed sheets as necessary. List Subcontractor, supplier, and manufacturer, with name, address, and telephone number of responsible principal.

END OF SECTION

SECTION 02015

EROSION AND SEDIMENTATION CONTROLS

PART 1 – GENERAL

1.1 SECTION INCLUDES

A. Silt Fence
B. Stabilized Construction Entrance
C. Dust Control
D. Temporary Seed
E. Erosion Control Blanket
F. Turf Reinforcement Mat (TRM)
G. Turf Reinforcement Mat (Heavy Duty) (TRM)
H. Temporary Erosion Control - Polyacrylamide (PAM)
I. Hydromulch
J. Ditch Check
K. Inlet Filters
L. Diversion Channels.
M. Rock Energy Dissipator.
N. Paved Energy Dissipator.
O. Rock Basin.
P. Rock Barriers.
Q. Sediment Ponds.
R. Sediment Traps.

1.2 RELATED SECTIONS:

A. Section 03100 – Concrete Forming and Accessories.
B. Section 03200 – Concrete Reinforcing.
C. Section 03300 – Cast-In-Place Concrete.
D. Section 02300 – Soils for Earthwork.
E. Section 02110 – Demolition and Removal
F. Section 02210 – Excavation.
G. Section 02324 – Trenching
H. Section 02315 – Fill.
I. Section 02500 – Site Concrete
J. Section 02940 – Landscape Grading.

1.3 DESCRIPTION

A. Scope: Furnish all materials, labor, equipment and services necessary for and reasonably incidental to the proper execution of the project as shown on drawings and/or specified and/or directed. Contractor is responsible for all soil erosion/sedimentation control measures identified on the Plans.
B. Description: Erosion control for this work includes but is not limited to earthwork and grading operations for installation of soil erosion and sedimentation control measures and includes regular maintenance as required by the NPDES permit minimally weekly or within 24-hours of any rain or precipitation event greater than ½ inch.

1.4 UNIT PRICE - MEASUREMENT AND PAYMENT

A. Diversion Channel:
   1. Basis of Payment: Includes excavating, windrowing, compacting, seeding, and mulching.
B. Rock Energy Dissipator:
   1. Basis of Payment: Includes cleaning, excavating, backfilling, placing embankment, placing geotextile fabric, placing rock, and required grouting.
C. Rock Basin:
   1. Basis of Payment: Includes excavating, removing unsuitable material, backfilling, placing embankment, clearing, placing rock, and grouting.
D. Rock Filter:
   1. Basis of Payment: Includes placing rock, and coarse aggregate filter blanket.

E. Sediment Pond:
   1. Basis of Payment: Includes clearing, excavating, piping, placing riser footing, constructing embankment and trench and rock basin, seeding and mulching.
F. Sediment Trap:
   1. Basis of Payment: Includes clearing, excavating, forming embankment, placing aggregate or rock and geotextile fabric, seeding, and mulching.
G. Cleaning Sedimentation Structures:
   1. Includes removal, hauling and disposal of sediment and other debris in system.

1.5 REFERENCES

A. Codes and Standards: In addition to complying with all pertinent local codes and regulations, all work shall be in accordance with:
B. Illinois Department of Transportation "Standard Specifications for Road and Bridge Construction," Latest Edition:
C. USDA Natural Resources Conservation Service - Illinois Environmental Protection Agency "Illinois Urban Manual", Latest Edition.
D. American Association of State Highway and Transportation Officials:
   1. AASHTO T88 - Standard Specification for Particle Size Analysis of Soils.
   2. AASHTO M288-00 – Standard Specification for Geotextile Specification for Highway Applications.
   3. AASHTO T180 - Standard Specification for Moisture-Density Relations of Soils Using a 4.54-kg (10-lb) Rammer and a 457-mm (18-in.) Drop.
E. American Concrete Institute:
   1. ACI 301 - Specifications for Structural Concrete.
F. ASTM International:
   1. ASTM C127 - Standard Test Method for Density, Relative Density (Specific Gravity), and Absorption of Coarse Aggregate.
   2. ASTM D698 - Standard Test Method for Laboratory Compaction Characteristics of Soil Using Standard Effort (12,400 ft-lbf/ft3 (600 kN-m/m3)).
   3. ASTM D1557 - Standard Test Methods for Laboratory Compaction Characteristics of Soil Using Modified Effort (56,000 ft-lbf/ft3 (2,700 kN-m/m3)).
   4. ASTM D2922 - Standard Test Method for Density of Soil and Soil-Aggregate in Place by Nuclear Methods (Shallow Depth).
   5. ASTM D3017 - Standard Test Method for Water Content of Soil and Rock in Place by Nuclear Methods (Shallow Depth).
G. Precast/Prestressed Concrete Institute:
   1. PCI MNL-116S - Manual for Quality Control for Plants and Production of Precast and Prestressed Concrete Products.

1.6 JOB CONDITIONS

A. Protection: Use all means necessary to protect existing objects designated to remain and, in the event damage, immediately make all repairs and replacements necessary to the approval of the Landscape Architect at no additional cost to the Owner

1.7 CONTROL REQUIREMENTS

A. All earth changes shall be made in such a manner as to minimize:
   1. The area disturbed land exposed and unprotected against the erosive action of wind, ice, precipitation, and the flow of water; and
   2. The duration of such exposure.
   3. Sediment caused by accelerated soil erosion shall be restricted to a non-polluting minimum, before it leaves the site of the earth-change.
B. Sediment caused by accelerated soil erosion shall not be permitted to enter the storm water structures of wetland located on or near the site. Temporary control measures shall be created and maintained until the completion of the project.

1.8 SEQUENCING AND SCHEDULING

A. **All temporary erosion control measures to be installed prior to any soil movement.**
B. **Install other erosion control measures when appropriate to the stage of construction.**

1.9 SUBMITTALS

A. Section 01230 - Submittal Procedures: Requirements for submittals.
B. Product Data: Product Data: Submit data on geotextile.
C. Samples:
   1. Submit two samples or rock, minimum 50 pounds each. Construction site sample may be incorporated into the Work. Samples will be used as reference for judging size, and graduation of rock supplied and placed.
D. Test Reports: Indicate certified tests results for precast concrete at manufacturing facility, cast-in-place concrete in field, and granular backfill.
E. Manufacturer's Certificate: Certify Products meet or exceed specified requirements.

1.10 CLOSEOUT SUBMITTALS

A. Section 01700 - Execution and Closeout Requirements: Requirements for submittals.

1.11 QUALITY ASSURANCE

A. Perform Work in accordance with requirements of Section 01600,
B. Perform Work in accordance with State Illinois Standard Specifications for Road and Bridge Construction current edition.
C. Qualifications of Workers: At least one person who is thoroughly familiar with the types of materials and equipment being utilized shall be present at all times during the operations to direct the work where required.

1.12 PRE-INSTALLATION MEETINGS

A. Section 01200 - Administrative Requirements: Pre-installation meeting.
B. Convene minimum one week prior to commencing work of this section.

1.13 ENVIRONMENTAL REQUIREMENTS

A. Section 01600 - Product Requirements: Environmental conditions affecting products on site.
B. Do not place grout when air temperature is below freezing.
C. 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 SILT FENCE

A. Furnish materials in accordance with Illinois Department of Transportation - Standard Specifications for Road and Bridge Construction (Latest Edition). Section 280 - Temporary Erosion Control and AASHTO Standard Specification M288-00.

2.2 TEMPORARY CONSTRUCTION ENTRANCE

A. Rock Construction Entrance
   1. 3-inch size (minimum) washed stone.
   2. Stone shall meet one of the following IDOT coarse aggregate gradations: CA-1, CA-2, CA-3, or CA-4.
   3. Geotextile: Conform to material specification 592 GEOTEXTILE, Table 1 or 2, Class I, II or IV from the Illinois Urban Manual.

2.3 CONSTRUCTION FENCE

A. Furnish materials as indicated in Drawings and specified in Section 01 50 00.

2.4 DUST CONTROL

A. Water to be clear and free from suspended fine sediment.

2.5 TEMPORARY SEED

A. Furnish materials in accordance with Illinois Department of Transportation – Standard Specifications for Road and Bridge Construction (Latest Edition) Section 250 – Seeding

2.6 EROSION CONTROL BLANKET (EROSION BLANKET)

A. Comply with Illinois Department of Transportation Standard Specifications for Road and Bridge Construction (Current Edition) Section 1081.10
   1. Erosion Control Blanket -Type 1
      a. ConWed
         1) Futerra Environet® Blanket Natural
         2) Futerra F4 Netless Blanket
   2. Single Net Erosion Control Blanket - Type 2
      a. North American Green
         1) DS75 - Single Net Straw Blanket
         2) S75 - Single Net Straw Blanket
         3) S75BN - Single Net Straw Blanket
   3. Double Net Erosion Control Blanket -Type 3
      a. North American Green
         1) DS150 - Double Net Straw Blanket
         2) S150 - Double Net Straw Blanket
         3) S150BN - Double Net Straw-Coconut Blanket
         4) C125BN - Double Net Coconut Blanket

2.7 TURF REINFORCEMENT MAT (TRM)

A. Comply with Illinois Department of Transportation Standard Specifications for Road and Bridge Construction (Current Edition) Section 1081.10 (c)
   1. Long Term Turf Reinforcement Mat -Type 4
      a. North American Green
         1) C125
         2) P300
   2. Permanent Turf Reinforcement - Type 5
      a. North American Green
         1) SC250
         2) C350

2.8 TEMPORARY EROSION CONTROL – POLYACRYLAMIDE (PAM)

A. Polyacrylamide (PAM)
   1. Anionic type
   2. Acrylamide monomer 0.05%
   3. Specifically tailored for soil type and water chemistry
   4. Granular form
   5. Charge density 10 - 55% by weight
   6. Conform to all federal, state and local laws, rules, and regulations.
   7. Manufacturers:
      a. Applied Polymer Systems, Inc. Model E-Z-PAM™ or acceptable equal

2.9 HYDROMULCH

A. Comply with Illinois Department of Transportation Standard Specifications for Road and Bridge Construction (Current Edition) Section 1081.06 (a)(2)

2.10 DITCH CHECK

A. Geotextile triangular dike acceptable to the Landscape Architect.

2.11 SEDIMENT STOP

A. Shall consist of minimum 70% straw fiber 30% coconut fiber with splash aprons
B. As manufactured by North American Green or approved equal.

2.12 INLET FILTERS

A. Comply with Illinois Department of Transportation Standard Specifications for Road and Bridge Construction (Current Edition) Section 1081.15 (h).

2.13 SOURCE QUALITY CONTROL (AND TESTS)

A. Section 01400 - Quality Requirements: Testing, inspection and analysis requirements.
B. Perform tests on cement, aggregates, and mixes to ensure conformance with specified requirements.
C. Test samples in accordance with ACI 301.

PART 3 – EXECUTION

3.1 EXAMINATION

A. Section 01300 - Administrative Requirements: Verification of existing conditions before starting work.
B. Verify compacted subgrade and granular base is acceptable and ready to support devices and imposed loads.
C. Verify gradients and elevations of base or foundation for other work are correct.

3.2 EROSION CONTROL INSPECTIONS

A. Comply with erosion control inspections and NPDES requirements.

3.3 SITE STABILIZATION

A. Minimize the amount of disturbed land that is susceptible to erosion.
B. Incorporate erosion control devices indicated as indicated on the Plans at the earliest practicable time.
C. Construct, stabilize and activate erosion controls before site disturbance within tributary areas of those controls.
D. Stockpile and waste pile heights shall not exceed 16 feet. Slope stockpile sides at 2:1 (H:V) or flatter.
E. Stabilize any disturbed area of affected erosion control devices on which activity has ceased and which will remain exposed for more than 7 days.
F. During non-germinating periods, apply mulch at recommended rates.
G. Stabilize disturbed areas which are either at finished grade or will not be disturbed within one year in accordance with permanent seeding specifications.

3.4 DIVERSION CHANNELS

A. Windrow excavated material on low side of channel.
B. Compact to 95 percent maximum density.
C. On entire channel area, apply soil supplements and sow seed as specified in Section 02485.
D. Mulch seeded areas with hay as specified in Section 02485.

3.5 ROCK ENERGY DISSIPATOR

A. Excavate to indicated depth of rock lining or nominal placement thickness as follows. Remove loose, unsuitable material below bottom of rock lining, then replace with suitable material. Thoroughly compact and finish entire foundation area to firm, even surface.

NCSA Class	Nominal Placement Thickness inches
R8	48
R7	36
R6	30
R5	24
R4	18
R3	12

B. Lay and overlay geotextile fabric over substrate. Lay fabric parallel to flow from upstream to downstream. Overlap edges upstream over downstream and upslope over downslope. Provide a minimum overlap of 3 feet. Offset adjacent roll ends a minimum of 5 feet when lapped. Cover fabric as soon as possible and in no case leave fabric exposed more than 4 weeks.

C. Carefully place rock on geotextile fabric to produce an even distribution of pieces, with minimum of voids and without tearing geotextile.

D. Unless indicated otherwise, place full course thickness in one operation to prevent segregation and to avoid displacement of underlying material. Arrange individual rocks for uniform distribution.

3.6 ROCK BASIN

A. Construct generally in accordance with rock energy dissipater requirements to indicated shape and depth. Rock courses may be placed in several operations, but minimum depth of initial course must be 3 feet or greater.

3.7 ROCK BARRIER

A. Determine length required for ditch or depression slope and excavate, compact and foundation area to firm, even surface.

B. Produce an even distribution of rock pieces, with minimum voids to the indicated shape, height and slope.

C. Construct coarse aggregate filter blanket against upstream face of rock barrier to the indicated thickness.

3.8 INSTALLATION

A. Silt Fence: Conform to Illinois Department of Transportation - Standard Specifications for Road and Bridge Construction (Latest Edition) - Section 280:
   1. Install silt fence in the locations shown on the Plans, using the machine sliced installation method.
   2. Post spacing of 5 feet maximum.
   3. If necessary, splices will be made at an opposing fence post and according to the manufacturer's specifications.
   4. Install following AASHTO Standard Specification M288-00.

B. Temporary Construction Entrance (TCE):
   1. Install Temporary Construction Entrance in locations as indicated in Drawings.
   2. Construct TCE before grading begins on the Project Site.
   3. Inspect TCE and surrounding roadways daily for mud accumulation.

C. Erosion Control Blanket
   1. Comply with manufacturer's requirements
   2. Comply with Illinois Department of Transportation - Standard Specifications for Road and Bridge Construction (Latest Edition) Section 251.04.

D. Temporary Erosion Control - Polyacrylamide (PAM)
   1. Apply to moist soil
   2. Application rate:

a. 20-pounds per acre or as recommended by the manufacturer whichever is greater.
3. Apply in accordance with all OSHA requirements and manufacturer's recommendations for the specific use.
4. Apply with broadcast spreader operated and maintained to provide uniform application rates as required.
5. Do not apply directly to water, pond, or stream surfaces

E. Hydromulch
1. Comply with Standard Specifications Section 251.04 Method (3)

F. Ditch Check
1. Comply with manufacturer's installation recommendations

G. Sediment Stop
1. Comply with manufacturer’s installation recommendations.

3.9 FIELD QUALITY CONTROL

A. Section 01400 - Quality Requirements 01700 - Execution and Closeout Requirements: Field inspecting, testing, adjusting, and balancing.
B. Inspect erosion control devices on a weekly basis and after each runoff event. Make necessary repairs to ensure erosion and sediment controls are in good working order.

3.10 CLEANING

A. Section 01700 - Execution and Closeout Requirements: Requirements for cleaning.
B. When sediment accumulation in sedimentation structures has reached a point one-third depth of sediment structure or device, remove and dispose of sediment.
C. Do not damage structure or device during cleaning operations.
D. Do not permit sediment to erode into construction or site areas or natural waterways.
E. Clean channels when depth of sediment reaches approximately one half channel depth.

3.11 PROTECTION

A. Section 01700 - Execution and Closeout Requirements: Requirements for protecting finished Work.
B. Contractor is responsible for inspection, maintenance, and repair of any washouts or accumulations of sediment that occur as a result of the grading or construction. Restoration consists of grade repair, turf re-establishment, and street sweeping of mud and debris tracked from the Project Site.
C. Contractor shall comply with the National Pollutant Discharge Elimination System (NPDES) Phase 2 Storm Water Regulations.
D. Maintain Temporary Construction Entrance in a condition that prevents tracking of sediment onto public rights-of-way or streets. This may require periodic top dressing with additional aggregate. All sediment spilled, dropped, or washed onto public rights-of-way must be removed immediately. Regular street sweeping/cleaning will be required. Provide inspection and perform periodic maintenance after each rain.
E. Damages caused by construction traffic or other activity must be repaired before the end of each working day.
F. If an erosion control device has been reduced in capacity by 1/3 or more, the Contractor shall restore such features to their original condition.
G. Control dust blowing and movement on Project Site and roads as directed by Engineer to prevent exposure of soil surfaces, to reduce on and offsite damage, to prevent health hazards, and to improve traffic safety.
H. Immediately after placement, protect paving from premature drying, excessive hot or cold temperatures, and mechanical injury.
I. Do not permit construction traffic over paving for 7 days minimum after finishing.
J. Protect paving from elements, flowing water, or other disturbance until curing is completed.

END OF SECTION

SECTION 02110

DEMOLITION/REMOVAL

PART 1 – GENERAL

1.1 SCOPE OF WORK

A. General: Contract Work under this Section is subject to the requirements of the Documents, including the Supplementary Conditions.

B. Description: Provide all labor, materials and equipment required for all demolition, removal, and disposal of items indicated on the drawings and as specified, including but not limited to the following:

1. All existing foundations, asphalt paving and concrete pads within proposed improvement areas.
2. Abandoned underground sewer pipe, conduits and duct banks interfering with the new construction.
3. Lighting, power poles, wiring, other utilities as shown and directed by Landscape Architect.
4. All other demolition work shown or noted on drawings, or as required, to facilities new construction work.
5. Debris.

1.2 SPECIAL REQUIREMENTS

A. The Contractor shall be held responsible to have visited the site and fully determined to his own satisfaction all physical conditions; site characteristics; means of egress and access from and to the site; or any other peculiarities of access from and to the existing site which may influence or affect the cost of this work in any way.

B. The Contractor shall be responsible for and shall protect adjoining properties and existing thoroughfares from damage to his operations. The Contractor shall provide and maintain all barricades, lights, and all other protective devices necessary to fulfill the intent of this work, including requirements of all Federal, State or Municipal laws or ordinances. Barricades, lights and other protective devices shall be relocated as construction work progresses, and removed upon completion and acceptance of the work, or when so directed by the Architect.

C. Utilities and Services:

1. The Contractor shall carefully examine all public records and data available regarding public utilities and services and confer where necessary with the respective departments of the local agencies having jurisdiction. Contractor shall also confer with the respective private service or utility agencies to fully determine the location of all underground utilities and services.

PART 2 – PRODUCTS – NOT USED

PART 3 – EXECUTION

3.1 GENERAL

A. No demolition shall be commenced until a program of operations schedule has been coordinated with the Landscape Architect, except that preparatory work may be started if specifically approved by and coordinated with the Architect.

B. Demolition work shall be done in such manner as to avoid hazards to persons and property and interference with the use of adjacent areas or interruption of free passage to and from such areas. Care shall be taken to prevent the spread of dust and flying particles.

C. Demolition and removal work shall be executed in careful and orderly manner. Accumulation of rubbish will not be permitted.

D. After work is started it shall be continued to completion at a rate that will allow the balance of the work to be completed within the time specified. If extra shifts are necessary beyond regular working hours, the work shall proceed with a minimum of nuisance to surrounding properties.

E. Exact extent of demolition to be done may not be fully indicated by the drawings. The Contractor shall determine the nature and extent of demolition that will be necessary by comparing the drawings with the existing field conditions. It is expressly understood that this Contract includes all work of a demolition nature that may be required or necessary for a full and complete execution of the work, whether particularly referred to herein or not.
F. Portions of existing sidewalk which interfere with new construction work, shall be removed as shown on the plans, or as directed by the Architect. In removing sidewalk, provisions shall be made for satisfactory transition between replacement sand the portion remaining in place. The Contractor shall saw cut to a minimum depth of 1½" inches with a concrete sawing machine to prevent the surface from spalling when the concrete is broken out. This work shall be done in such a manner that a straight joint will be ensured.
G. Portions of existing concrete curb, gutter, combination curb and gutter which interfere with new construction work shall be removed as shown on the plans, or as directed by the Architect. In removing concrete curb, gutter, combination curb and gutter, provisions shall be made for satisfactory transition between replacements and the portion remaining in place. The Contractor shall saw cut to a minimum depth of 1 ½" inches with a concrete sawing machine to prevent the surface from spalling when the concrete is broken out. This work shall be done in a manner that a straight joint will be ensured.
H. Removal of Abandoned Improvements as designated in "Paragraph 1.1 B" above.

3.2 DISPOSAL

A. The Contractor is responsible for off-site disposal in conformance with all applicable regulations unless otherwise provided for in the contract documents.
B. Except as otherwise specified, the Contractor shall be entitled to all salvageable materials resulting from the demolition work.
C. Remove all wrecked materials, debris and rubbish from the site. Under no circumstances shall debris or rubbish be allowed to accumulate on the premises.

3.3 REMOVAL

A. On completion of the demolition and removal, clean the areas affected, including areas outside the limits of the Contractor's work area where permission to work has been granted. Remove surplus construction material or debris resulting from the demolition work and dispose of legally off the site.
B. Access routes to and from the site shall be kept clean of debris resulting from the work.
C. Burning of rubbish or debris on or near the premises will not be permitted.
D. If required, deliver to Owner from the truck and place equipment/material in the area designated by the Owner.

END OF SECTION

SECTION 02200

SITE GRADING

PART 1 – GENERAL

1.1 DESCRIPTION

A. Standards
   1. State Highway Specifications means the "ILLINOIS DEPARTMENT OF TRANSPORTATION, STANDARD SPECIFICATIONS FOR ROAD AND BRIDGE CONSTRUCTION," current edition including all supplements.
   2. All work required under this section shall conform to the State Highway Specifications whenever applicable.

B. Related work specified elsewhere.
   1. Storm Drainage (Section 02600)
   2. Bituminous Paving and Surfacing (Section 02510)
   3. Site Concrete (Section 02500)
   4. Segmental Unit Concrete Retaining Walls (Section 02832)
   5. Excavation (Section 02210)

1.2 PROTECTION

A. During grading operations, drainage of the work under construction and adjacent areas affected by the work shall be protected and maintained continuously. If during the execution of the work it is necessary to interrupt existing storm drainage, temporary drainage facilities shall be provided until the permanent drainage work has been completed. Such temporary drainage facilities shall be at the Contractor's expense.
   1. Protect existing above and below grade utilities that remain.
   2. Protect bench marks, survey control points, existing structures/fences, walks, paving and curbs from grading equipment and vehicular traffic.

1.3 ADJUSTMENTS

A. The Owner reserves the right to make minor adjustments in lines and grades as the work progresses whenever such changes are considered necessary to better accomplish the true intent of the plans, or to obtain a closer balance between cuts and fills.

PART 2 – PRODUCTS

2.1 MATERIALS

A. On-Site Soils
   1. All approved soils from cut areas shall be used as fill to fulfill the plan intent.
   2. Unsuitable materials (except topsoil) and excess cut when directed in the Bid Proposal and/or Special Conditions shall be removed from the site by the Contractor.

2.2 EQUIPMENT

A. Provide and maintain on the job sufficient equipment of the types needed to complete all work in accordance with the requirements of these specifications. Earth moving equipment capable of accomplishing the specified required results may be used.

PART 3 – EXECUTION

3.1 EXAMINATION

A. Verify that survey/bench mark and intended elevations for the work are as indicated.

3.2 PREPARATION

A. Identify required lines, levels, contours and datum.
B. Stake and flag locations of known utilities.

C. Remove all topsoil from within the building areas and all pavement areas whether they be in cut or fill areas.
D. In fill areas not under buildings or pavement, topsoil may remain undisturbed.
E. Stockpile all topsoil where indicated on plan for future use as herein directed, or for disposal by the Owner.
F. All vegetation encountered during the grading operations shall be considered incidental to grading. Remove all such materials from the site.

3.3 GRADING WORK

A. Remove topsoil from areas to be further excavated, re-landscaped or re-graded without mixing with foreign materials.
B. Do not remove topsoil when wet.
C. Remove subsoil from areas to be further excavated, re-landscaped, or re-graded
D. Do not remove subsoil when wet.
E. Stability: replace damaged or displaced subsoil to same requirements as for specified fill.
F. In “Cut” Areas
    1. Make all cuts to the lines and grade elevations indicated on the plans.
    2. In no case will the unstable or unsuitable excavated material be used on the site for fill without written authorization by the Owner.
    3. Grading operations shall be so conducted that a minimum disturbance to adjacent areas will be incurred and all material dislodged or loosened will be replaced in a matter satisfactory to the Owner.
    4. Stockpile excavated topsoil on site.
    5. Stockpiles: designated on site, pile depth not to exceed 8’. Protect from erosion.
    6. All unstable or unsuitable material encountered during the grading operations shall be excavated or removed including removal of rocks and boulders, and replaced with acceptable material.
        a. Rock Classification: Only solid rocks in ledges, bedded deposits or conglomerate deposits so firmly cemented as to present all of the characteristics of solid rock, and which cannot be removed with conventional earthmoving equipment without drilling and blasting, shall be excluded from the work of this section; boulders having a volume of one cubic yard or more shall also be excluded from the work of this section.
G. In “Fill” Areas
    1. Place fill material on prepared areas under pavements in layers spread not more than six (6) inches thick prior to compaction.
    2. Place fill material on prepared areas under turf or planting areas in layers spread not more than eight (8) inches thick prior to compaction.
    3. All fill materials shall be spread over the entire area whenever practicable. Each layer shall be spread uniformly, be kept leveled by means of approved equipment and thoroughly compacted so that it will be uniform in cross section and meet the compaction requirements before the next layer is started.
H. Compaction
    1. Each layer of fill material shall be disked or mechanically pulverized sufficiently to break down over-sized clods and thoroughly mix the different materials to secure uniform moisture content and insure uniform density and proper compaction. After each layer has been spread disked, it shall be compacted with approved mechanical equipment.
    2. Fill under all pavement and building areas shall be construction to obtain 95% compaction.
    3. Fill under all turf and planting areas shall be constructed to obtain 85% to 90% compaction.
    4. The percentage of compaction to be achieved, as stated above, will conform to the maximum obtainable at optimum moisture as specified by A.S.T.M. D=1557.
    5. All fill material shall contain the proper moisture content to achieve the required compaction. When fill material requires moisture to be added, it shall be done with approved equipment.

SECTION 02200

SITE GRADING

I. Topsoil Placement
   1. On all proposed turf and planting areas where clay soil unsuitable for turf culture or nursery stock is either added as “fill” or exposed as “cut,” a clay sub-grade shall be established 5/10 of a foot below finished grade elevation.
   2. The grading Contractor shall arrange his/her grading operations so that insofar as possible, topsoil existing within the limits of the job and suitable for turf culture shall be stripped and placed directly on completed fill area subgrades. Subgrades shall be scarified to a depth of three (3) inches prior to topsoiling to insure bonding of the subsoil and topsoil.
   3. Topsoil shall be so handled as to prevent excessive consolidation of the topsoil.

J. Grading Tolerance
   1. Final grades for all areas included under these grading specifications shall not vary more than 1/10 of a foot from the established grades as shown on the drawings.
   2. Allowances will be made by the Contractor for compaction and settlement in fill areas and topsoiling in both cut and fill areas as required herein.

K. Landscaping Grading
   1. See Division II, Section 02900

END OF SECTION

SECTION 02230

SITE PREPARATION: SITE CLEARING AND REMOVAL

PART 1 – GENERAL

1.1 SCOPE OF WORK

A. General: Contract Work under this Section is subject to the requirements of the Documents, including the Supplementary Conditions.

B. Description: Provide all labor, materials and equipment required for all demolition, removal, and disposal of items indicated on the drawings and as specified, including but not limited to the following:
   1. Protecting existing landscape plantings to remain.
   2. Removing existing vegetation and turf.
   3. Clearing and grubbing.
   4. Stripping and stockpiling topsoil.
   5. Removing above- and below-grade site improvements such as:
      a. All existing buildings, foundations and concrete pads within proposed improvement areas.
      b. Concrete sidewalks, other foundations and building pads.
      c. Concrete curbs, gutters, combination curbs and gutters.
      d. Platforms and apparatus.
      e. Signage.
      f. Debris.
   6. Utilities & Services:
      a. Disconnecting, capping or sealing, and removing site utilities when applicable
      b. Abandonment of underground sewer pipe utility structures, conduits and duct banks interfering with the new construction.
      c. Lighting, power poles, wiring, other utilities as shown and directed by Landscape Architect.
   7. Temporary erosion and sedimentation control measures.
   8. All other demolition work shown or noted on drawings, or as required, to facilities new construction work.

C. Related Work; Specified in the following Sections:
   1. Section 02210; “Excavation”
   2. Section 02514; “Concrete Pavements”
   3. Section 02547; “Bituminous Paving”
   4. Section 03300; “Cast-in-place Concrete”

1.2 SPECIAL REQUIREMENTS

A. The Contractor shall be held responsible to have visited the site and fully determined to his own satisfaction all physical conditions; site characteristics; means of egress and access from and to the site; or any other peculiarities of access from and to the existing site which may influence or effect the costs of this work in any way.

B. The Contractor shall be responsible for and shall protect adjoining properties and existing thoroughfares from damage to his operations. The Contractor shall provide and maintain all barricades, lights, and all other protective devices necessary to fulfill the intent of this work, including requirements of all Federal, State or Municipal laws or ordinances. Barricades, lights and other protective devices shall be relocated as construction work progresses, and removed upon completion and acceptance of the work, or when so directed by the Architect.

C. Utilities and Services:
   1. The Contractor shall carefully examine all public records and data available regarding public utilities and services and confer where necessary with the respective departments of the local agencies having jurisdiction. Contractor shall also confer with the respective private service of utility agencies to fully determine the location of all underground utilities and services.

SECTION 02230

SITE PREPARATION: SITE CLEARING AND REMOVAL

1.3 DEFINITIONS

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

1.4 MATERIAL OWNERSHIP

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

1.5 SUBMITTALS

A. Record drawings, identifying and accurately locating capped utilities and other subsurface structural, electrical, and mechanical conditions.

1.6 QUALITY ASSURANCE

A. Pre-installation Conference: Conduct conference at project site.

1.7 PROJECT CONDITIONS

A. Traffic: Minimize interference with adjoining roads, streets, walks, and other adjacent occupied or used facilities during site-clearing operations.
   1. Do not close or obstruct streets, walks, or other adjacent occupied or used facilities without permission from Owner and authorities having jurisdiction.
   2. Provide alternate routes around closed or obstructed traffic ways if required by authorities having jurisdiction.
B. Salvageable Improvements: Carefully remove items indicated to be salvaged and store on Owner's premises where indicated.
C. Utility Locator Service: Notify utility locator service for area where project is located before site clearing.
D. Do not commence site clearing operations until temporary erosion and sedimentation control measures are in place.

PART 2 – PRODUCTS (Not Applicable)

PART 3 – EXECUTION

3.1 PREPARATION

A. Protect and maintain benchmarks and survey control points from disturbance during construction.
B. Locate and clearly flag trees and vegetation to remain or to be relocated.
C. Protect existing site improvements to remain from damage during construction.
   1. Restore damaged improvements to their original condition, as acceptable to Owner.

3.2 GENERAL IMPLEMENTATION

A. No demolition shall be commenced until a program of operations schedule has been coordinated with the Landscape Architect, except that preparatory work may be started if specifically approved by and coordinated with the Architect.
B. Demolition work shall be done in such manner as to avoid hazards to persons and property and interference with the use of adjacent areas or interruption of free passage to and from such areas. Care shall be taken to prevent the spread of dust and flying particles.
C. Demolition and removal work shall be executed in careful and orderly manner. Accumulation of rubbish will not be permitted.

D. After work is started it shall be continued to completion at a rate that will allow the balance of the work to be completed within the time specified. If extra shifts are necessary beyond regular working hours, the work shall proceed with a minimum of nuisance to surrounding properties.
E. Exact extent of demolition to be done may not be fully indicated by the drawings. The Contractor shall determine the nature and extent of demolition that will be necessary by comparing the drawings with the existing field conditions. It is expressly understood that this Contract includes all work of a demolition nature that may be required or necessary for a full and complete execution of the work, whether particularly referred to herein or not.
F. At Platform Areas remove all bituminous paving, concrete paving, and fill material down to compatible soil. Remove all subsurface structures in their entirety.
G. Portions of existing sidewalk which interfere with new construction work, shall be removed as shown on the plans, or as directed by the Architect. In removing sidewalk, provisions shall be made for satisfactory transition between replacement sand the portion remaining in place. The Contractor shall saw cut to a minimum depth of 1½" inches with a concrete sawing machine to prevent the surface from spalling when the concrete is broken out. This work shall be done in such a manner that a straight joint will be ensured.
H. Portions of existing concrete curb, gutter, combination curb and gutter which interfere with new construction work shall be removed as shown on the plans, or as directed by the Architect. In removing concrete curb, gutter, combination curb and gutter, provisions shall be made for satisfactory transition between replacements and the portion remaining in place. The Contractor shall saw cut to a minimum depth of 1 ½" inches with a concrete sawing machine to prevent the surface from spalling when the concrete is broken out. This work shall be done in a manner that a straight joint will be ensured.
I. Existing bituminous paving, including any existing concrete slab or granite pavers under the existing bituminous paving, shall be removed as shown on the drawings, or as directed by the Architect. Saw cut bituminous paving to a minimum depth of 1½ inches, using equipment and procedure to ensure a straight line along saw cut and to make proper transition between existing paving and new construction. Contractor shall verify whether a concrete slab or granite pavers may exist under the existing bituminous paving. In the event there is a concrete slab under the existing bituminous paving, saw cut concrete slab to a depth of 1½ inches with a concrete sawing machine to prevent the surface from spalling when the concrete is broken out.
J. Removal of Abandoned Improvements as designated in "Paragraph 1.01 B" above.

3.3 TEMPORARY EROSION AND SEDIMENTATION CONTROL

A. Provide temporary erosion and sedimentation control measures to prevent soil erosion and discharge of soil-bearing water runoff or airborne dust to adjacent properties and walkways, according to requirements of authorities having jurisdiction.
B. Inspect, repair, and maintain erosion and sedimentation control measures during construction until permanent vegetation has been established.
C. Remove erosion and sedimentation controls and restore and stabilize areas disturbed during removal.

3.4 UTILITIES

A. Locate, identify, disconnect, and seal or cap off utilities indicated to be removed.
   1. Coordinate work with utility companies; notify before starting work and comply with their requirements; obtain required permits.
   2. Arrange with utility companies to shut off indicated utilities (if applicable).
   3. Protect existing utilities to remain from danger.
   4. Mark utilities to remain; mark using highly visible tags or flags with identification of utility type; protect from damage due to subsequent construction, using substantial barricades if necessary.
B. Existing Utilities: Do not interrupt utilities serving facilities occupied by Owner or others unless permitted under the following conditions and then only after arranging to provide temporary utility services according to requirements indicated:
   1. Notify d with utility interruptions with Landscape Architect's written permission.

C. Excavate for and remove underground utilities indicated to be removed.

3.5 CLEARING AND GRUBBING

A. Remove obstructions, trees, shrubs, grass, and other vegetation to permit installation of new construction.
   1. Do not remove trees, shrubs, and other vegetation indicated to remain or to be relocated.
   2. Cut minor roots and branches of trees indicated to remain in a clean and careful manner where such roots and branches obstruct installation of new construction.
   3. Grind stumps and remove roots, obstructions, and debris extending to a depth of 18 inches below exposed subgrade.
   4. Use only hand methods for grubbing within tree protection zone.
   5. Chip removed tree branches and (stockpile in areas approved by Landscape Architect) (dispose of off-site).

B. Vegetation Removal: Do not burn, bury, landfill or leave on site. Except as indicated, trees sell if marketable, if not, treat as specified for other vegetation removal.

C. Fill depressions caused by clearing and grubbing operations with satisfactory soil material unless further excavation or earthwork is indicated.
   1. Place fill material in horizontal layers not exceeding a loose depth of 8 inches (200 mm), and compact each layer to a density equal to adjacent original ground, with top surface neat in appearance and smooth enough not to constitute a hazard to pedestrians.

D. Restoration: If vegetation outside removal limits or within specified protective fences is damaged or destroyed due to subsequent construction operations, replace at no cost to the Owner.

3.6 TOPSOIL STRIPPING

A. Remove sod and grass before stripping topsoil.

B. Strip topsoil to whatever depths are encountered in a manner to prevent intermingling with underlying subsoil or other waste materials.
   1. Remove subsoil and non-soil materials from topsoil, including trash, debris, weeds, roots, and other waste materials.

C. Stockpile topsoil materials away from edge of excavations without intermixing with subsoil. Grade and shape stockpiles to drain surface water. Cover to prevent windblown dust.
   1. Limit height of topsoil stockpiles to 72 inches.
   2. Dispose of excess topsoil as specified for waste material disposal.
   3. Stockpile surplus topsoil to allow for re-spreading deeper topsoil.

3.7 SITE IMPROVEMENTS

A. Remove existing above- and below-grade improvements as indicated and as necessary to facilitate new construction.

B. Remove slabs, paving, curbs, gutters, and aggregate base as indicated.
   1. Unless existing full-depth joints coincide with line of demolition, neatly saw-cut length of existing pavement to remain before removing existing pavement. Saw-cut faces vertically.
   2. Paint cut ends of steel reinforcement in concrete to remain to prevent corrosion.

3.8 DISPOSAL

A. Disposal: Remove surplus soil material, unsuitable topsoil, obstructions, demolished materials, and waste materials including trash and debris, and legally dispose of them off Owner's property. Under no circumstances shall debris or rubbish be allowed to accumulate on the premises. On completion of the demolition and removal, clean the areas affected, including areas outside the limits of the Contractor's work area where permission to work has been granted. Remove surplus construction material or debris resulting from the demolition work and dispose of legally off the site.
   1. Separate recyclable materials produced during site clearing from other non-recyclable materials. Store or stockpile without intermixing with other materials and transport them to recycling facilities.

B. Except as otherwise specified, the Contractor shall be entitled to all salvageable materials resulting from the demolition work.
C. Access routes to and from the site shall be kept clean of debris resulting from the work.
D. Burning of rubbish or debris on or near the premises will not be permitted.

END OF SECTION

SECTION 02231

TREE AND PLANT PROTECTION

PART 1 – GENERAL

1.1 DESCRIPTION

A. This item shall consist of protecting specific, individual, existing trees, shrubs, and plant material not designated for removal which are to remain from construction damage. Such trees, shrubs, and plant materials shall be left in place and protected from damage or injury by the Contractor during construction using full and adequate methods of protection. The trees to remain or individual trees to be protected shall be identified on the drawings or in the field by the Landscape Architect.

1.2 PROCEDURES

A. Individual trees to be protected:
   1. These trees shall be identified with surveyor's flagging tape placed around the trunks at eye level.
   2. A 4' high snow fence shall be provided, erected and maintained at the drip line of each tree so identified.
   3. These protection fences shall be removed after final project acceptance or as required by the Landscape Architect.
   4. Water shall not be permitted to pond within the fenced areas at the base of the tree, except as currently occurs.
   5. No tree shall be used as an anchorage.

B. Trees to remain:
   Trees to remain identified either with surveyor's flagging tape or shown in the drawings shall have the following protection procedures apply:
   1. Work within tree drip lines: where excavating, fill or grading or soil preparation is required within the branch spread (drip line of trees the work shall be performed with care to prevent abrasion or other damage from equipment to tree trunks, limbs, and root systems. Parking or storage of equipment or materials will not be allowed within tree drip lines. Movement of vehicles within tree drip lines shall be limited to that required in the performance of specific work.
   2. Excavation within tree drip lines: Where excavation is required within tree root zones, the tree roots shall <u>not</u> be severed by the excavation equipment. Rather, the tree roots within a construction area greater than ¼" in diameter shall be cut clean with a pruning clipper, shear or saw. All crushed, torn, frayed or otherwise injured roots shall have these injured portions removed by clean cutting.
   3. All digging within the drip line shall be done by hand, except for pavement and curb excavation. For pavement and curb excavation, the Contractor shall dig to within 18" laterally of the desired limit of excavation. The remaining lateral 18" shall be dug by hand.
   4. No equipment or vehicles exceeding 1000 lbs. will be allowed within the drip line of any tree for the duration of this contract. Steel planking, or timber planking made of 4" thick material, each plank covering a min. of 8 square feet, shall be used to support backhoe and other equipment stabilizers when set within the drip-line of a tree or sodded planting strip.

PART 2 – CONSTRUCTION TECHNIQUES

A. Prior to any site disturbance, it shall be the responsibility of the contractor to install tree protection measures in accordance with plans and specifications prepared by a qualified professional. It is the contractor's responsibility to safeguard the trees designated to be preserved. Throughout planning and construction, the contractor should monitor the effect of the proposed activities on the vegetation to be preserved and maintained.

B. Concerns
   The following must not occur within the tree protection areas:
   1. Stockpiling of soils
   2. Operating or storing construction equipment
   3. Regrading causing runoff, flooding, or change of elevation

4. Parking vehicles and storing supplies
5. Spilling of toxic materials
6. Spraying of herbicides in close proximity to protected areas

PART 3 – REPAIR, REPLACEMENT AND PAYMENT FOR DAMAGE

A. Trees or other plant material not designated to be removed but that are destroyed or irreparable damaged by Contractor operations as determined by the Landscape Architect, shall be repaired or replaced by the Contractor in accordance with the Landscape Architect's recommendations.
   1. Replacements shall be of the same species and as nearly as possible of the same size as the trees to be replaced.
   2. The Contractor shall allow one (1) Working Day advance notice for inspection of nursery stock replacements by the Landscape Architect.

B. Payment: In addition to the Contractor's restoration approved by the Landscape Architect, the Contractor will be assessed damages for the difference in the dollar value of the damaged tree, shrub, or other plant material, and the dollar value of the replacement.
   1. The dollar value will be determined by the Landscape Architect from the "Guide for Establishing Values of Trees and Other Plants," prepared by the Council of Tree and Landscape Appraisers, current edition. Damages assessed will be deducted from monies due or that may become due to the Contractor.

C. Planting of replacement stock shall be done in accordance with the requirements of the Contract Documents during the first fall or spring planting period, whichever comes first.

PART 4 – TREE PRUNING

A. Pruning shall conform to ANSI A300, Tree, Shrub and Other Woody Plant Maintenance Standard practices (Pruning). Pruning prescriptions should be developed by a person familiar with tree species for the specific geographic area. Maintenance pruning shall consist of crown cleaning to remove all dead, damaged and weak branches. The removal of selected conflicting branches shall be included. Under no circumstances shall the interior of trees be stripped. Interior branches shall be selectively pruned to reduce conflict or where branches are damaged. Hazard reduction pruning shall consist of the removal of any dead branches and the correction of any other problems related to safety. Items not correctable by pruning shall be brought to the owner's and landscape architect's attention in writing.

END OF SECTION

SECTION 02300

SOILS FOR EARTHWORK

PART 1 – GENERAL

1.1 SECTION INCLUDES
A. Subsoil materials.
B. Topsoil materials.

1.2 RELATED SECTIONS:
A. Section 02015 – Erosion and Sedimentation Control
B. Section 02324 - Trenching.
C. Section 02315 - Fill.
D. Section 02940 - Landscape Grading.
E. Section 02950 - Plants.

1.3 REFERENCES
A. Illinois Department of Transportation (IDOT) – Standard Specifications for Road and Bridge Construction, current edition (Standard Specifications)
B. American Association of State Highway and Transportation Officials:
   1. AASHTO T180 - Standard Specification for Moisture-Density Relations of Soils Using a 4.54-kg (10-lb) Rammer and a 457-mm (18-in.) Drop.
C. ASTM International:
   1. ASTM D698 - Standard Test Method for Laboratory Compaction Characteristics of Soil Using Standard Effort (12,400 ft-lbf/ft3 (600 kN-m/m3)).
   2. ASTM D1557 - Standard Test Methods for Laboratory Compaction Characteristics of Soil Using Modified Effort (56,000 ft-lbf/ft3 (2,700 kN-m/m3)).
   3. ASTM D2487 - Standard Classification of Soils for Engineering Purposes (Unified Soil Classification System).

1.4 SUBMITTALS
A. Section 01230 - Submittal Procedures: Requirements for submittals.
B. Samples: Submit, in air-tight containers, 10lb sample of each type of fill to testing laboratory.
C. Materials Source: Submit name of imported materials source.
D. Manufacturer's Certificate: Certify Products meet or exceed specified requirements.

1.5 QUALITY ASSURANCE
A. Perform Work in accordance with Standard Specifications.

PART 2 – PRODUCTS

2.1 SUBSOIL MATERIALS
A. Subsoil
   1. Excavated and re-used material.
   2. Graded.
   3. Free of lumps larger than 3 inches, rocks larger than 2 inches, and debris.

2.2 TOPSOIL MATERIALS
A. Topsoil
   1. Excavated and reused material.
   2. Graded.
   3. Free of roots, rocks larger than 1/2 inch, subsoil, debris, large weeds and foreign matter.
      a. Screening: Single screened.

2.3 SOURCE QUALITY CONTROL

A. Section 01600 - Quality Requirements: Testing and Inspection Services Testing and analysis of soil material.
B. Testing and Analysis of Subsoil Material: Perform in accordance with ASTM D1557. AASHTO T180.
C. Testing and Analysis of Topsoil Material: Perform in accordance with ASTM D1557. AASHTO T180.
D. When tests indicate materials do not meet specified requirements, change material and retest.
E. Furnish materials of each type from same source throughout the Work.

PART 3 – EXECUTION

3.1 EXCAVATION

A. Excavate subsoil and topsoil from areas designated. Strip topsoil to full depth of topsoil in designated areas.
B. Stockpile excavated material meeting requirements for subsoil materials and topsoil materials.
C. Remove excess excavated materials not intended for reuse, from site.

3.2 STOCKPILING

A. Stockpile materials on site at locations indicated.
B. Stockpile in sufficient quantities to meet Project schedule and requirements.
C. Separate differing materials with dividers or stockpile apart to prevent mixing.
D. Stockpile topsoil 16 feet high maximum.
E. Prevent intermixing of soil types or contamination.
F. Direct surface water away from stockpile site to prevent erosion or deterioration of materials.

3.3 STOCKPILE CLEANUP

A. Remove stockpile, leave area in clean and neat condition. Grade site surface to prevent free standing surface water.
B. When borrow area is indicated, leave area in clean and neat condition. Grade site surface to prevent free standing surface water.

END OF SECTION

SECTION 02324

TRENCHING

PART 1 – GENERAL

1.1 SUMMARY
A. Section Includes:
   1. Excavating trenches for utilities to utility service
   2. Compacted fill from top of utility bedding to subgrade elevations
   3. Backfilling and compaction.

1.2 UNIT PRICE - MEASUREMENT AND PAYMENT
A. Trenching:
   1. Basis of Measurement: By cubic yard
   2. Basis of Payment: Includes excavating to required elevations, protecting excavation, and stockpiling excavated materials. Over-excavating: Payment is not made for over-excavated Work nor for replacement materials.

B. Subsoil Fill:
   1. Basis of Measurement: By cubic yard.
   2. Basis of Payment: Includes stockpiling, placing where required, and compacting.

C. Structural Fill:
   1. Basis of Measurement: By cubic yard.
   2. Basis of Payment: Includes stockpiling, placing where required, and compacting.

D. Granular Fill:
   1. Basis of Measurement: By cubic yard
   2. Basis of Payment: Includes furnishing fill material, stockpiling, placing where required, and compacting.

E. Concrete Fill:
   1. Basis of Measurement: By cubic yard.
   2. Basis of Payment: Includes furnishing materials, forming, mixing and placing where required, and curing.

1.3 QUALITY ASSURANCE
A. Perform Work according to State of Illinois Department of Transportation, Village of Homer Glen Department of Public Works, or other agency as appropriate standards.
B. Prepare excavation protection plan under direct supervision of professional engineer experienced in design of this Work and licensed in State of Illinois.

1.4 FIELD MEASUREMENTS
A. Verify field measurements prior to fabrication.

1.5 COORDINATION
A. Verify Work associated with lower elevation utilities is complete before placing higher elevation utilities.

PART 2 – PRODUCTS - NOT USED

PART 3 – EXECUTION

3.1 FIELD QUALITY CONTROL
A. The following tests shall be performed during placement and compaction of Final Trench Backfill in areas subject to vehicular traffic:
   1. In-Place Density (using ASTM D 1556, ASTM D 2937, or ASTM D 6938): Minimum of one test for every lift of Final Trench Backfill placed for every 100 linear feet of trench (or fraction thereof) and at each road crossing.

2. Moisture Content (using ASTM D 2216 or ASTM D 6938): Minimum of one test for every lift of Final Trench Backfill placed for every 100 linear feet of trench (or fraction thereof) and at each road crossing.

3.2 TRENCHING AND BACKFILLING

A. Backfilling and compacting shall conform to the details shown on the Drawings and as specified in the following paragraphs.
B. Place and compact Initial Trench Backfill around pipes in the “haunch zone” up to the pipe “springline” (centerline). Contractor shall take necessary measures to prevent the pipe from being displaced upwards during compaction of fill in this area. If applicable, continue placement and compaction of the material around and over pipes as follows:
   1. Reinforced Concrete Pipe (Gravity-Flow): No Initial Trench Backfill is required above pipe centerline.
   2. PVC Pipe: Place and compact Initial Trench Backfill in six-inch lifts up to approximately 12 inches above the top of the pipe.
C. Initial Trench Backfill shall be placed on both sides of pipes at the same time and to approximately the same elevation. Each lift shall be thoroughly compacted using manually-guided compaction equipment.
D. Do not place Final Trench Backfill until the piping, as installed, conforms to the specifications.
E. Place and compact Final Trench Backfill for pipe installations as follows:
   1. Place backfill in lifts not greater than six-inch loose thickness and compact as specified in the following paragraphs.
   2. Other than areas described in the following paragraph 3, compact trench backfill to at least 95 percent of the material's maximum dry density as determined by ASTM D 698.
   3. For piping under pavement and building pads, backfill placed within the top 12 inches of the finished subgrade shall be compacted to a minimum of 98 percent of the material's maximum dry density as determined by ASTM D 698.
F. Place Final Trench Backfill up to the required subgrade elevation for roadway construction or finish grade (as applicable) and as indicated on the Drawings.
G. Placement and compaction of trench backfill around and over pipes shall be performed in a manner that does not damage the pipes. Pipes that are damaged shall be replaced.
H. Construction traffic shall not be allowed to cross installed pipes prior to placement and compaction of the full depth of cover.
I. Materials not meeting density specification requirement shall be scarified, recompacted and retested.

3.3 PROTECTION OF FINISHED WORK

A. Reshape and re-compact fills subjected to vehicular traffic during construction.

END OF SECTION

SECTION 02485

LAWNS: GENERAL SEEDING & SODDING

PART 1 – GENERAL

A. The landscape contractor shall furnish all labor, material and equipment required to complete the work described herein in strict accordance with the drawings and/or terms of the contract. All previously established grades shall be in conformance with the drawings and/or specifications.
B. The landscape contractor shall be familiar with the project premises and how the existing conditions will affect the work.

1.1 DESCRIPTION

Work included: Scope as defined for this work shall consist of, but not be limited to:
A. Related Work specified in other sections.
B. Landscape Grading (Section 02940)
C. Landscape Plantings (Section 02950)

1.2 QUALITY ASSURANCE

Provide at least one person who shall be thoroughly trained and experienced in the skills required, who shall be completely familiar with the design and application of the work described for this section, and who shall be present at all times during progress of the work of this section and shall direct all work performed under this section.
A. Protection: Use all means necessary to protect site seeding areas before, during, and after installation and to protect the installed work and materials of all other trades.
B. Replacements: In the event of damage to the site seeding areas, immediately make all repairs or replacements necessary to the approval of the Owner and at all no additional cost to the Owner.
C. Seed: Conform to current U.S. Department of Agriculture Rules and Regulations under the Federal Seed Act of August 9, 1939 and all subsequent revisions thereto, and the requirements of the state seed laws.
D. Sod: Comply with state and federal laws with respect to inspection for plant diseases and insect infestation.

1.3 SUBMITTALS

A. Samples and Analysis: Submit, for approval, samples and certified analysis by approved laboratory for seed, and fertilizer lime before delivery to the project. Manufacturer's analysis for standard products will be acceptable.
B. Approval of samples shall not be construed as final acceptance. The Landscape Architect reserves the right to have samples taken of the materials delivered to the site of the Work and analyzed for compliance with the Specifications.

1.4 PRODUCT DELIVERY, STORAGE AND HANDLING

A. Protect sod, seed, fertilizer limestone and other required materials against weather conditions and injuries during transit and job storage in such a manner that their effectiveness will not be impaired.
B. Deliver all items to the site in their original containers with all labels intact and legible at time of Owners representative inspection.
C. Use all means necessary to protect all items before, during and after installation and to protect the installed work and materials of all trades
D. Replacements: In the event of damage or rejection, immediately make all repairs and replacements necessary to the approval of the Owners Representative at no additional cost to the owner.

1.5 PROTECTION

A. Install necessary barricades, temporary fences or signs to protect newly seeded or hydro-seeded/mulched areas until acceptance of the Work.

1.6 GUARANTEE

A. Guarantee this portion of the through the maintenance period and until final acceptance (See 3.03 this section.)
B. Within the guarantee period, replace all lawn areas and/or groundcover areas, which have failed to flourish and produce a satisfactory stand of grass and/or groundcover due to inferior or defective materials or workmanship, or unfavorable weather conditions. The decision of the Owner for replacement Work shall be conclusive and binding upon the Contractor. The Contractor shall also be responsible for all damage to persons or property caused by defective workmanship or materials or by the re-working of areas not acceptable.

1.7 WORKMANSHIP

A. During seeding and sodding all areas shall be kept neat and clean and precautions shall be taken to avoid damage to existing plants, turf and structures.
B. Upon completion, all debris and waste material resulting from seeding operations shall be removed from the project and the area cleaned up.
C. Any damaged areas caused by the landscape contractor shall be restored to their original condition.

PART 2 – PRODUCTS

2.1 WATER

A. Water will be furnished to the Contractor by the Owner from existing facilities such as hose bibs and street washers. The Contractor shall furnish all hose and connections necessary to water the lawn.
B. The Owner will furnish an Owner Water Meter to the Contractor where larger quantities of water are necessary for purposes of hydro-mulching or hydro-seeding, or where no existing water facilities exist. The cost of water shall be borne by the Owner.

2.2 TOPSOIL

A. Topsoil installed on grade shall attempt to match existing soil texture except for situations where a clay subsoil exists. Where a clay subsoil exists, use loam or silt loam topsoil.
B. Topsoil shall be free of stones, lumps, plants, roots and other debris over 1 ½". Topsoil must also be free of plants or plant parts of Bermuda grass, quack grass, Johnson grass, mugwort, nut sedge, poison ivy, Canada thistle or others as specified.
C. Topsoil shall not contain toxic substances harmful to plant growth (i.e. pesticide residues)

2.3 SOD

A. Sod shall be blended Blue Grass and shall not contain more than 5% of weeks or undesirable grasses. It shall be a good texture, free from obnoxious roots, stones and foreign materials. Sod shall be a fresh cultivated sod, weed, disease, and insect free. Sod to be cut in eighteen (18) inch widths, and a maximum length of six (6) feet.
B. Sod containing equal percentages of at least three of the following grass varieties: Adelphi, Glade, Parade, Ram I, or Majestic.
C. Sod shall be obtained from areas having growing conditions similar to areas to be covered. Sod shall have clean growth of acceptable grass, with not less than one (1) inch of soil firmly adhering to the roots. Cutting shall be rectangular strips of equal width and size to permit being lifted and rolled without breakage. If the soil is dry, sod shall be watered sufficiently to moisten soil to the depth at which sod is to be cut. Dumping from vehicle will not be permitted. Damaged sod or any sod that has turned yellow in color will be rejected. Re-planting sod shall be accomplished within forty-eight (48) hours after harvesting.

2.4 SEED

A. All seed shall be fresh and clean and shall be crop seed. All seed shall be delivered in the original packages, unopened, which shall bear a guaranteed analysis, by a recognized authority.
   1. Mixture "A"
      a. Grass seed mixture shall be composed of the following grass seeds mixed in proportions by weight and will be tested for the minimum percentages of purity and germination as indicated.

Proportion By Weight	Purity Name of Grass	Percent	Germination
20%	American Kentucky Blue Grass	90%	80%
20%	Challanger Kentucky Blue Grass		
10%	Adelphi Kentucky Blue Grass		
10%	Eclipse Kentucky Blue Grass		
10%	Midnight Kentucky Blue Grass		
10%	Touchdown Kentucky Blue Grass		
6%	246 Perennial Ryegrass	90%	80%
6%	Citation II Perennial Ryegrass		
5%	Charger Perennial Ryegrass		
3%	Saturn Perennial Ryegrass		

B. An additional 25 pounds of Perennial Ryegrass shall be included in the above seed mix. Separate sowing of the Perennial Ryegrass will be determined by the type of seeding equipment being used.
C. Wood Stakes: Stakes for sodding on slopes shall be wood lath or similar material, a minimum of 10 ½ inches long and pointed at one end.

2.5 FERTILIZER

A. All fertilizers shall be uniform in composition, free flowing and suitable for application with approved equipment.
B. All fertilizer shall be a commercial balanced 1:2:1 ratio fertilizer. Fertilizers shall be delivered to the site fully labeled according to applicable State Fertilizer laws and shall bear the name, trade name or trademark and warranty of the producer;
C. Commercial fertilizers shall be complete fertilizers, part of the elements of which are derived from organic sources and shall contain the following percentages by weight:

Prior to Seeding – 6-24-24; *		After seeding – 18-5-9; *	
Nitrogen	6%	Nitrogen	18%
Phosphoric Acid	24%	Phosphoric Acid	5%
Potash	24%	Potash	9%

*Or as more adequately determined by soil analysis when so designated in the bid form.

D. Nitrogen: Shall be in the form of available nitrates, ammonium sulfate or phosphate and urea. A minimum of 30% of the available nitrogen shall be water-insoluble.
E. Phosphoric Acid: Shall be derived from super phosphates or ammonium phosphates.
F. Potash: Shall be in the form of potassium nitrate or potassium sulfate.
G. Fertilizer: Shall be delivered in standard size bags, showing weights, analysis and name of manufacturer, and shall be subject to the approval of the Landscape Architect.
H. Special Protection: If stored at the site, protect fertilizer from the elements at all times.

2.6 EROSION-CONTROL MATERIALS

A. Erosion-Control Blankets: Biodegradable, dyed green Aspen wood fiber mat constructed from curled excelsior, of which 80% is six inches or longer in length. It shall have a uniform color and consistent thickness, and fibers evenly distributed over the entire blanket. Each blanket shall be covered with a photodegradable, extruded plastic mesh and shall not contain any chemical additives. Include manufacturer's recommended steel wire staples, 6 inches (150 mm) long
   1. Weight 1.06 lbs./sq. yd.
   2. North American Green S75 or approved equal.

PART 3 – EXECUTION

3.1 INSPECTION

A. Prior to beginning this Work, the Contractor shall be responsible for inspecting all final grades as completed under SITE GRADING and gaining approval of the Landscape Architect to commence the Landscape Architects operations. Any discrepancies in the final topsoil grades must be brought to the Landscape Architect's attention and corrected prior to beginning this Work.

3.2 PREPARATION

A. All areas within the limits of this project to be seeded or sodded shall be conditioned by loosening and finely pulverizing the soil to a depth of three (3) inches. The conditioning process shall consist of rototilling, discing, or harrowing with approved equipment, and bringing the finished grade to an acceptable surface in conformance with the plans and as approved by the Landscape Architect. All rocks and other debris over 1½ inches in any dimension shall be removed from the fine graded surface prior to seeding or sodding.
B. In the event that prior conditioned soil has become compacted by rain, equipment or other means, the entire area affected shall be reconditioned to a depth of not less than two (2) inches just prior to seeding or sodding time.
C. Generally, the fine grading and soil conditioning will be done just prior to seeding or sodding; however, if in the opinion of the Landscape Architect, soil or weather conditions are not suitable for seeding or sodding at that time, the Contractor shall recondition the soil and seed or sod when directed.

3.3 INSTALLATION AND APPLICATION

A. Planting Seasons:
   1. Seeded and Hydro-Seeded/Mulched Areas: Shall be seeded with the required mixture from March 15th to May 14th and from August 15th to October 1st.
   2. Sodded Areas: Lawns shall be sodded from March 15th to June 15th and from August 15th to November 1st.
   3. The actual planting of areas to be designated, however, shall be done during periods within these seasons as determined by weather conditions, by acceptable practices in the locality of the project, or as approved by the Landscape Architect.
B. Fertilizing:
   1. Commercial fertilizer shall be mechanically spread and mixed into the top three (3) inches of the topsoil at the rate of 20 lbs. Per 1000 square feet (870 lbs./acre).
C. Seeding:
   1. See Plans - Lawn areas so designated shall be seeded mechanically at the rate of 3.5 lbs. Per 1000 square feet of area (150 lbs./acre), or per manufacturer's recommendations. The seed shall be sown evenly and lightly mixed into the soil. In the event that seeding equipment does not compact, a separate rolling using a 500 lb. Roller shall be required.
D. Sodding:
   1. Sod shall be handled and placed by hand with close joints and no overlapping. The sod shall be laid in strips, edge-to-edge, with the joints on the long dimension of the sod staggered. All openings in the sod shall be plugged with sod and all joints shall be filled with topsoil.

2. Immediately after the sod is laid, it shall be sprinkled thoroughly and then tamped or rolled sufficiently to incorporate the sod with the sod beds and insure tight hand joints between the sod strips.
3. Sod laid on slopes greater than 3:1 shall be staked with not less than four (4) stakes per square yard with at least one (1) stake per piece of sod. Stakes shall be driven with the flat side against the slope and 10" into the ground leaving ½ inch above ground.

3.4 MAINTENANCE (CLEAN UP AND ACCEPTANCE)

A. Maintenance: Provide continuous maintenance until the date of final acceptance, including but not limited to: reseeding, watering, mowing, weeding, and re-working as follows:

B. Seeded Areas:
   1. Proper and adequate watering as determined by the Contractor.
   2. Re-filling with topsoil and re-seeding of rainwashed gullies and rutted areas.
   3. Re-fertilizing with 18-5-9 commercial fertilizer at the rate of 15 lbs. Per 1000 square feet after the second mowing or prior to final acceptance. Re-fertilizing will be required only in areas seeded with Mixture "A."
   4. Mowing to a height of 1½ to 2 inches when grass attains height of three (3) inches or when growth tends to smother new seedlings or as requested by Landscape Architect.
   5. Re-work any areas, which fail to show a uniform stand of grass. Re-seed with the same mixture applied at the same rate and repeat until all areas are covered with a satisfactory stand of grass. A uniform stand of grass shall be defined as a vigorous growth of grass plants evenly distributed throughout the entire seeded area. No area larger than one (1) foot void of grass plants will be accepted.
   6. Maintain seeded areas for a period of 60 days after installation or until a satisfactory stand of grass has been established.

C. Sodded Areas:
   1. Proper and adequate watering as determined by the Contractor.
   2. Re-fertilizing with 18-5-9 commercial fertilizer at the rate of 15 lbs. Per 1000 square feet after the second mowing or prior to final acceptance.
   3. Mowing to a height of 1½ to 2 inches when grass attains height of three (3) inches.
   4. Re-work areas which fail to show a uniform stand of grass or are otherwise unacceptable. Work shall be done with the same sod and repeated until satisfactory results are achieved.
   5. Maintain sodded areas for a period of 30 days after installation or until satisfactory results are achieved.

D. Clean Up:
   1. Remove from the site, all debris resulting from the Work herein specified.
   2. All pavements shall be left broom cleaned and all damaged areas in existing turf shall be restored to their original condition.

E. Final Inspection and Acceptance:
   1. Upon completion of the specified maintenance period, the Contractor shall request in writing that a final inspection be conducted by the Landscape Architect to determine final acceptance of the Work. The Contractor will be required to make said request five (5) days in advance. If acceptance is not granted, the Contractor is required to maintain those unacceptable areas until final approval has been given.

END OF SECTION

SECTION 02500

SITE CONCRETE

PART 1 – GENERAL

A. Work under this item includes, but is not limited to concrete paving for:
   1. Concrete curbing, curbs and gutters
   2. Concrete walks
   3. Concrete flatwork

1.2 DESCRIPTION

A. Published specifications, standards, tests or recommended methods fo trade, industry or governmental organizations apply to work of this section, where cited by abbreviation noted.
   1. American Society for Testing Materials, Current Edition (ASTM)
   2. American Concrete Institute (ACI).
   3. State Highway Specifications means the “ILLINOIS DEPARTMENT OF TRANSPORTATION, STANDARD SPECIFICATIONS FOR ROAD AND BRIDGE CONSTRUCTION,” current edition including all supplements.
   4. All work required under this section shall conform to the State Highway Specification applicable.

B. Related Work in Other Sections
   1. Site Grading (Section 02200).
   2. Concrete Formwork (Section 03110).
   3. Concrete Reinforcement (Section 03200).

1.3 ENVIRONMENTAL CONDITIONS

A. Concrete shall not be placed when air temperature is 45 degrees and falling. Placement will be permitted if air temperature is 40 degrees and rising.

1.4 PROTECTION

A. Cure all concrete for not less than seven (7) days after placement.

B. Protect all concrete surfaces from sun with water-saturated coverings, white polyethylene sheets or approved membrane curing compounds sprayed on the surface.

C. Concrete pours shall be protected by the Contractor from graffiti or vandalism. Each day’s pour shall be guarded until the concrete has obtained sufficient hardness to prohibit malicious damage.

1.5 CONCRETE TESTING

A. The Contractor shall provide empty test cylinders for this project.

B. A total of two (2) test cylinders shall be drawn from the same truck load for every 50 cubic yards of concrete, or two (2) cylinders per each day’s pour if less than 50 cubic yards.

C. Test cylinders shall be clearly marked with a date and load ticket number. The Contractor shall protect cylinders and store safely until picked up by testing laboratory.

D. Testing expenses shall be paid for by the Owner.

PART 2 – PRODUCTS

A. Portland Cement Concrete
   1. Class X, 6 bag mix, concrete in accordance with State Highway Specifications.
   2. Compressive strength of 4000 pounds per square inch after 28 days when tested in accordance with ASTM C39 for curb and gutters, walks, walls, and concrete foundations.
   3. Provide a slump between three (3) to four (4) inches max when tested in accordance with ASTM C143.
   4. Mix all materials for not less than one (1) minute in controlled time mixers.
   5. Ready mix concrete must be discharged from mixer within one (1) hour after all ingredients are in mixer.
   6. No water shall be added to the concrete after it has been transported to the construction site.

B. Expansion Joints
   1. Expansion joints shall be ½” bituminous saturated felt or preformed, non-absorbent closed cell polystyrene or butyl foam as recommended by manufacturer of joint sealant.

C. Joint Sealant
   1. Joint sealant shall be polyurethane based elastomeric sealing compound material of the cold applied type in a gray color (or to match color of concrete) equal to rubber caulk #230 manufactured by PRC. Dynoseal W-5-7-G. Manufactured by Williams Products Inc., and TC/900 manufactured by Trenco.
   2. The sealing materials shall be delivered to the job site in unbroken original packages bearing the manufacturer's name and brand designation.

2.2 EQUIPMENT

A. All equipment used to perform this work must conform to the IDOT Specification Section 800.

PART 3 – EXECUTION

3.1 INSPECTION

A. Prior to starting work in this section, all subgrades and subsequently prepared base courses must be inspected and approved by the Architect.

3.2 PREPARATION

A. Install a minimum of two (2) inches compacted thickness of aggregate bedding prior to installation of all concrete. Base should be properly wetted prior to concrete placement.

3.3 INSTALLATION

A. Build forms to line and grade with mortar tight joints using good lumber or metal forms properly braced and staked. Oil forms before concrete is poured. Forms may be removed 24 hours after pouring.
B. Place reinforcing steel as indicated in the details on plan.
C. Expansion joints shall be placed against existing concrete and stationary structures. Install ½ inch expansion joints in walks 30 feet on center every 30 feet using ¾ inch expansion material with standard expansion caps and smooth dowels through each joint (See Curb and Gutter Detail).
D. Notify Landscape Architect 48 hours before the intended pour.
E. Place concrete immediately after mixing and thoroughly puddle or vibrate to consolidate and bring mortar to surface.
F. Finish curb and gutters smooth by floating, troweling, and edging before brushing surface to secure final surface. Use standard ten (10) foot straight-edge test and correct irregularities over ¼ of an inch.
G. Finish walks and flatwork by floating, steel troweling, scoring, edging, and broom finishing or exposing aggregate by washing where applicable. All walks shall be free from surface defects, leaf fossils imprints of any type. All defects should be replaced at no additional expense to the owner.
H. Construct straight, well-defined score lines (control joints) five (5) feet on center in all work at right angles to walk, extending to 1½ inches depth of the concrete and 1/8 to ¼ of an inch wide. See Concrete Details for special scoring requirements.
   1. Score Lines/Control Joints
      a. Weakened plane control joints for curb and sidewalk shall be constructed at right angles to curb line, with spacing in 5 foot multiples, not to exceed 5 foot for sidewalk and 10 foot for curb.
      b. Control joints may be hand formed with joint depth to be a minimum of ¼" the total depth of the section. No sawed joints will be permitted.

2. Expansion Joints – provide in the following locations
   a. Wherever walks abut vertical surfaces
   b. Curb. Expansions joints shall be constructed at right angles to the curb line with spacing in multiples of 10 feet not to exceed 30 feet. Expansion joints shall also be placed at interface at straight curb and short radius curved sections, interface of new curb with old curb, and both sides of driveway cuts.
3. Walks.
   a. Expansion joints shall be constructed at right angles to the curb line with spacing not to exceed 30 feet.
   b. Expansion joints shall also be placed at interface with straight walk and short radius curved sections, interface of new walk with old walk and both sides of driveway approaches.
   c. Locations as indicated or necessary to prevent shrinkage from cracking concrete.

I. Remove forms carefully to avoid damaging corners and edges of exposed concrete within 24 hours after the concrete has been placed.

J. Broom finish surfaces carefully straight continuous strokes at right angles to direction of traffic, while the concrete is still green. The edges shall be rounded with approved finishing tools having the radii shown on the drawings.

K. Ramp Texture: Wheel chair ramps, where shown, shall be finished with heavier brooming transverse to slope of ramp. Texture must conform to Americans With Disabilities Act guidelines.

3.4 CLEANING, PATCHING AND DEFECTIVE WORK

A. Where concrete is under strength, out of line, level, or plumb, or shows objectionable cracks, honeycombing, rock pockets, voids, spalling, exposed reinforcing or is otherwise defective, and in the Landscape Architects judgment, these defects impair proper strength or appearance of the work, the Landscape Architect will require its removal and replacement at the Contractor's expense.

B. Immediately after stripping and before concrete is thoroughly dry, patch minor defects, form-tie holes, honeycombed areas, etc., with patching mortar. Patch shall match finish of adjacent surface unless noted. No patching is allowed on concrete surfaces to be sandblast finished.

C. Stained or discolored concrete shall be cleaned as directed and approved by the Landscape Architect.

D. Stains or other defects which cannot be removed are subject to correction by removal and replacement at no cost to owner.

END OF SECTION

SECTION 02510

WATER DISTRIBUTION

PART 1 – GENERAL

1.1 SECTION INCLUDES
A. Water pipe for site conveyance lines.
B. Underground water main piping, fittings, joints, and appurtenances.
C. Thrust Restraint.
D. Service Line Material.
E. Hydrostatic Testing.

1.2 RELATED REQUIREMENTS
A. Standards:
   1. “Standard Specifications for Water and Sewer Main Construction in Illinois” herein after referred to as Illinois Water and Sewer Specifications.
   2. Village of Hoffman Estates Development Requirements Development Requirements and Standards Manual

1.3 PRICE AND PAYMENT PROCEDURES
A. Water Main Pipe: Payment by the lineal feet of water main/service pipe of each size and type installed, measured along the centerline of piping through fittings, valves, and other appurtenances. Unit price for each size of water main pipe shall include all labor, materials, and equipment for removal of existing pipe, pipe, gaskets, lubricant, excavation, bedding, backfill, testing, disinfection, and all else necessary for a complete installation.
B. Estimated quantities of each bid item are as indicated on the Bid Form.
C. If it is determined during construction that the removal and lowering of watermain/service is not required, the watermain related items will be removed from the contract and no compensation due to the contractor.

1.4 REFERENCE STANDARDS
A. ANSI B16.5 - Pipe Flanges and Flanged Fittings.
B. AWWA C111/A21.11 - Rubber-Gasket Joints for Ductile-Iron Pressure Pipe and Fittings; 2012.
C. AWWA C153/A21.53 - Ductile-Iron Compact Fittings for Water Service; American Water Works Association; 2006 (ANSI/AWWA C153/A21.53).
D. AWWA C600 - Installation of Ductile-Iron Water Mains and Their Appurtenances; 2010.

1.5 SUBMITTALS
A. Product Data: Provide data on pipe materials, pipe fittings, valves and accessories.
B. Manufacturer's Certificate: Certify that products meet or exceed specified requirements.
C. Project Record Documents: Record actual locations of piping mains, fittings, valves, connections, and depth of cover. Identify and describe unexpected variations to subsoil conditions or discovery of uncharted utilities.
D. Test Reports: Indicate results comparative to specified requirements.
E. Certificate: Certify that cleanliness of water distribution system meets or exceeds specified requirements.

1.6 QUALITY ASSURANCE
A. Perform Work in accordance with AWWA C651 requirements.
B. Pipe: Nominal pipe size, material code designation, standard dimension ratio, pressure rating, manufacturer's name or trade mark, National Sanitation Foundation seal, and appropriate ASTM designation numbers marked on pipe.
C. Fittings and Valves: Manufacturer's name and pressure rating marked on body.

1.7 DELIVERY, STORAGE, AND HANDLING
A. Deliver, store, protect, and handle products to site under provisions of Section 01 6000.
B. Deliver and store valves in shipping containers with labeling in place.
C. Deliver, store and handle materials according to manufacturer's instructions.

1.8 QUALIFICATIONS

A. Testing Firm: Company specializing in testing potable water systems, certified and approved by the State of the State in which the Project is located for microbiological testing.

PART 2 – PRODUCTS

2.1 WATER PIPE

A. Manufacturers:
   1. American.
   2. Clow.
   3. Griffin.
   4. McWane.
   5. Tyler.
   6. US Pipe.
   7. Engineer approved equivalent.

B. Ductile Iron Pipe:
   1. All pipes shall be ductile iron pipe conforming to ANSI A21.51 or AWWA C151 with a minimum thickness of Class 52.
   2. All pipe shall have a minimum laying length of 18 feet.
   3. Pipe joints shall be push-on joints or mechanical joints conforming to AWWA C-111 (ANSI 21.11).:
   4. All DIP shall be cement-mortar lined in accordance with AWWA C104 (ANSI A21.4).
   5. Alternate pipe materials may be allowed upon review and approval of the Engineer.

2.2 FITTINGS

A. General:
   1. All water main fittings shall be ductile iron fittings conforming to AWWA specification C-110 (ANSI 21.10).
   2. Fittings shall be cement-lined in accordance with AWWA C-104 (ANSI A21.4).
   3. Alternate fitting materials may be allowed upon review and approval of the Engineering Director.
   4. All mechanical joint type fittings shall include bolts made of stainless steel.

2.3 TRACER WIRE

A. Use tracer wire with PVC pipe: No. 12 AWG solid copper conductor with Type PE insulation.
B. Splices: Use rosin core solder and plastic electricians tape.
C. Ground Rod: Copperweld or equal.

2.4 SERVICE LINE MATERIALS

A. Service line: Type K copper tubing, ASTM B 88, flared joint fittings.
B. Service connection to the water main for services less than three inch (3") diameter shall be with a Mueller double strap bronze service clamp and a corporation stop Mueller H-15020 or approved equal. Direct taps to the water main must be approved by the Director of Engineering.

2.5 BEDDING AND COVER MATERIALS

A. Bedding: Trench backfill shall be required in all locations where the water main trench is under or within two feet (2') of existing, proposed or future pavements including, but not limited to curb and gutter and sidewalks. The trench backfill shall be mechanically compacted to not less than 95% of the Village of Hoffman Estates Development Services Department Transportation and Engineering Division -23- standard laboratory density.

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.
B. Verify that piping system has been cleaned, inspected and pressure tested.
C. Perform scheduling and disinfection activity with startup, testing, adjusting and balancing, demonstration procedures, including coordination with related systems.

3.2 PREPARATION

A. Cut pipe ends square, ream pipe and tube ends to full pipe diameter, remove burrs.
B. Remove scale and dirt on inside and outside before assembly.
C. Prepare pipe connections to equipment with flanges or unions.

3.3 INSTALLATION - PIPE

A. Install pipe and appurtenances in accordance with AWWA C600 or C605.
B. Handling: Handle pipe and appurtenances in such a manner as to ensure delivery to the trench in a sound, undamaged condition. Use of web slings or end hooks not allowed.
C. Inspection for Defects: Before installation, inspect pipe and appurtenances for defects and, when applicable, tap the pipe with a light hammer to detect cracks. Reject defective, damaged, or unsound pipe and appurtenances.
D. Cutting: Cut pipe, when necessary, in a neat and workmanlike manner without damage to the pipe, interior lining, and exterior coating. Perform cutting with an approved mechanical cutter, using a wheel cutter when applicable and practicable.
E. Beveling: Grind smooth and bevel cut ends and rough edges using methods recommended by the manufacturer and approved by Engineer.
F. Pipe Joints: Pipe joints in accordance with AWWA C600 or C605 and as recommended by manufacturer; use minimum amount of gasket lubricant; apply to gasket only; do not apply lubricant to inside of bell.
G. Cleaning and Protection: Thoroughly clean each piece of pipe, valve, and fitting before lowering into trench; keep clean at all times; when pipe laying is not in progress, including lunch breaks, nights, weekends, and other non-working periods, securely close open ends of pipe and fittings with watertight plugs.
H. Pipe Deflections:
    1. Deflections from a straight line or grade, as required by vertical curves, horizontal curves, or offsets, shall not exceed the manufacturer's recommendations for the type and size of pipe and joint being used.
    2. If the alignment requires deflections in excess of the manufacturer's limitations, then bend fittings or a sufficient number of shorter lengths of pipe shall be utilized to provide angular deflections within the limits set forth.

3.4 DISINFECTION

A. Test in accordance with Village of Hoffman Estates Development Requirements Development Requirements and Standards Manual.

3.5 HYDROSTATIC TEST

A. Test all pressure lines for leakage after satisfactory completion of cleaning, flushing, and disinfection of piping and appurtenances.
B. Test using Ashcroft Model 1082 with 4.5" dial face at 1 psi increments.
C. Subject newly laid piping or any valved section of piping to a hydrostatic pressure test for at least two hours.
D. Conduct pressure tests on individual piping sections between valves in order to test the integrity of the valves as well as the piping.

E. The test pressure shall be 150 psi, or as directed by Engineer. The test pressure not less than 1.25 times the working pressure at the highest point along the test section and not less than 1.5 times the working pressure at the point of testing.
F. Pressure shall be maintained for a minimum of 2 hours.
G. Before applying the pressure, completely expel air from the system being tested.
H. Install, at Contractor's expense, corporation cocks as required at all high points in the system if necessary to completely expel all air.
I. After all the air has been expelled, remove corporation cocks and plug or close prior to testing. Owner to determine whether the corporation cocks are removed or left in place.
J. Perform leakage test if requested in writing by Engineer. Leakage tests will be required after unsatisfactory hydrostatic pressure tests.
K. Satisfactory hydrostatic pressure results are 1 psi or less of pressure loss over 2 hours.
L. At the option of the Engineer, pressure and leakage tests may be conducted simultaneously.
M. Determine amount of leakage by adding water to the system by means of a pump where pressure within the system is maintained within 5 psi of the test pressure.
N. Allowable leakage shall not exceed 11.65 gallons per mile per inch diameter per 24 hours for pipe in 18 foot lengths, 10.5 gallons for pipe in 20' lengths, and proportionally varied for other lengths at a test pressure of 150 psi.
O. When testing at pressures other than 150 psi, allowable leakage shall not exceed that computed as follows: L=(NDxSquare Root[P]/7400. Where L=Allowable leakage (gallons per hour), N=Number of joints in length being tested, D=Nominal diameter of the pipe (inches), and P=Average test pressure (psi gauge)
P. When testing against closed metal-seated valves, an additional leakage per closed valve of 0.0078 gallons per hour per inch of nominal valve size is allowed.
Q. Perform the test against closed hydrant, with the auxiliary valve open.
R. Determine acceptance on the basis of allowable leakage.
S. If any test of pipe laid discloses leakage greater than that specified above, the Contractor shall, at his expense, locate and repair the defective material until the leakage is within the specified allowance.
T. Repair all visible leaks regardless of the amount of leakage.
U. Damaged or defective pipe, fittings, valves, hydrants, or joints discovered in the pressure test shall be replaced by the Contractor and the test repeated until the test results are satisfactory.

3.6 RESTRAINT

A. Concrete Thrust Block:
   1. Thrust Blocks - Thrust blocks or megalugs shall be required at all hydrant tees and bends greater than 11¼ degrees Where undisturbed earth is not available or not likely to be available to support the thrust blocks, megalugs, shall be used as required by the Engineering Director. Thrust blocks are required on all dead-end water mains.
   2. See Thrust Block Details on the drawings.

3.7 CONSTRUCTION TESTING

A. Perform field inspection and testing in accordance with Section 01 4000.
B. The testing shall be done on a daily basis in a timely manner with the progress of the work to insure acceptable construction workmanship. Subsequent work shall not proceed without acceptable test results of the previous work. Testing of embankment or backfill shall occur at the time of placement and compaction. Coming back later to perform testing is unacceptable.
C. Test reports shall include the following:
   1. Project name.
   2. Location/Client.
   3. Offset distance left or right of centerline.
   4. Depth below finish grade and/or elevation.
   5. Results of tests performed.
   6. Comparison of test results to the project specifications.
   7. Conclusion as to meeting or failing to meet the project specifications.

8. If failing, retest results to confirm compliance with the project specifications.
9. If failing, recommendations for corrective action.

D. The following minimum testing shall be performed:
   1. Trench backfill (main line and services).
      a. Standard Proctor: One minimum.
      b. In-place Density and Moisture: 1 per 12 inch lift per 400 LF.
   2. Granular material:
      a. Gradation: 1/2000 TN.
      b. Standard Proctor: One minimum.
      c. In-place Density and Moisture: 1/500 LF.

END OF SECTION

SECTION 02600

STORM DRAINAGE

PART 1 – GENERAL

1.1 DESCRIPTION

A. Standards
   1. State Highway specifications shall mean the “ILLINOIS DEPARTMENT OF TRANSPORTATION, STANDARD SPECIFICATIONS FOR ROAD AND BRIDGE CONSTRUCTION” current edition including all supplements.
   2. All work required under this section shall conform to the State Highway Specification whenever applicable.

B. Related work specified in other sections
   1. Site Grading (Section 02200).

1.2 PROTECTION

A. During grading operations, drainage of the area under construction and adjacent areas affected by the work shall be maintained continuously. If during the course of the construction prosecution is necessary to interrupt existing storm drainage, temporary drainage facilities shall be provided until the permanent drainage work has been completed. Such temporary drainage facilities shall be at the Contractor’s expense.

PART 2 – PRODUCTS

2.1 MATERIALS

A. Storm Sewer Pipe and Drainage Structures: As indicated on the plans and of the type, class, and quality required by the IDOT Specification Sections 511, 603, and 612.

B. Drainage Casting: Gray iron or ductile iron castings as required by IDOT Specification Section 710.

C. Concrete for Cast in Place Drainage Structures: Shall conform to Section 504 of the IDOT Specification.

D. Mastic Joint Sealer: Shall conform to IDOT Specification Section 718.11.

E. Trench Backfill: Fine aggregate conforming to Section 210 of the IDOT Specification.

2.2 EQUIPMENT

A. Shall be in sufficient size and condition in order to readily perform the required work in this section.

PART 3 – EXECUTION

3.1 VERIFICATION OF EXISTING CONDITIONS

A. Visit site to determine all existing conditions with regard to underground utilities indicated on the plans which may affect the required work.

3.2 INSTALLATION

A. All work shall be installed in accordance with the applicable requirements of the State Highway Specification unless otherwise specified.

B. Excavation
   1. For Pipe: At locations and to depths indicated. To a minimum of four (4) inches below bottom of the pipe and eighteen (18) inches wider than the external pipe diameter when depths are five (5) feet or less and 36 inches wider than external pipe diameter when greater than five (5) feet in depth.
   2. For Drainage Structures: At locations and to the depth indicated. To a minimum of six (6) inches greater than the external dimension of the structure.
   3. Remove all soft and yielding areas encountered within pipe and drainage structure excavations and replace with trench backfill.

4. All excavations cut deeper than required by the plans shall be brought to proper grades with trench backfill at the Contractor's expense.

C. Laying Pipe
   1. Commence laying sewer lines at lower end and proceed upgrade.
   2. Provide a minimum of three grade boards in place during construction. Laser equipment may be used.
   3. Give full support to lower 1/3 of each pipe so no pipe bells support the pipe.
   4. No pipe joints shall be made under water.
   5. Use mastic joint sealer or performed flexible gaskets in accordance with manufacturer's recommendations.

D. Drainage Structure
   1. In accordance with the details shown on plan.
   2. Masonry units used shall be properly wetted before laying in horizontal courses with broken vertical joints and laid in full mortar joints.
   3. Precast reinforced concrete units shall be constructed in horizontal courses with full mortar joints.
   4. All concrete for drainage structures shall be placed on compacted subgrades.

E. Backfilling
   1. Pipe Trenches
      a. Outside of paved areas can be backfilled with the same materials excavated from the trench.
      b. Within four (4) feet of paved areas or structures shall be backfilled with trench backfill (See Materials).
      c. Initial backfill within twelve (12) inches above tope of pipe shall be placed as soon as conditions will permit. Place in layers not exceeding six (6) inches prior to compaction. Compact around entire pipe by hand or mechanical tampers.
      d. Material above initial backfill shall be placed in twelve (12) inch layers and compacted properly before additional layers are installed.
   2. Drainage Structures
      a. Backfill only after masonry work has cured for 48 hours.
      b. Backfill in layers to insure proper compaction.
      c. Give proper support to all inlet and outlet pipes at structures.
      d. All structures within four (4) feet of paved areas shall be backfilled with trench backfill.

F. Cleaning drainage structures of construction debris and silt accumulations shall be required prior to final inspection of the work.

END OF SECTION

SECTION 02630

STORM UTILITY DRAINAGE PIPING

PART 1 – GENERAL

1.1 SECTION INCLUDES
A. Storm drainage piping.
B. Accessories.
C. Underground pipe markers.
D. Catch basins.
E. Cleanouts.
F. Bedding and cover materials.

1.2 RELATED SECTIONS:
A. Section 03300 - Cast-In-Place Concrete: Concrete type for [catch basin] [cleanout] base pad construction.
B. Section 02210 - Excavation: Product and execution requirements for excavation and backfill required by this section.
C. Section 02324 - Trenching: Execution requirements for trenching required by this section.
D. Section 02315 - Fill: Requirements for backfill to be placed by this section.
E. Section 02630 - Subdrainage: Termination of subdrainage tile system for connection to Work of this Section.

1.3 REFERENCES
A. Standard Specifications shall mean the "ILLINOIS DEPARTMENT OF TRANSPORTATION, STANDARD SPECIFICATIONS FOR ROAD AND BRIDGE CONSTRUCTION" current edition including all supplements. (IDOT)
B. All work required under this section shall conform to the applicable requirements of the Standard Specifications for Road and Bridge Construction (IDOT) Standard Specifications.
C. American Association of State Highway and Transportation Officials:
   1. AASHTO T180 - Standard Specification for Moisture-Density Relations of Soils Using a 4.54-kg (10-lb) Rammer and a 457-mm (18-in.) Drop.

1.4 SUBMITTALS
A. Section 01330 - Submittal Procedures: Requirements for submittals.
B. Product Data: Submit data indicating pipe, pipe accessories.
C. Manufacturer's Installation Instructions: Submit special procedures required to install Products specified.
D. Manufacturer's Certificate: Certify Products meet or exceed specified requirements.

1.5 CLOSEOUT SUBMITTALS
A. Section 01700 - Execution and Closeout Requirements: Requirements for submittals.
B. Project Record Documents:
   1. Accurately record actual locations of pipe runs, connections, catch basins, cleanouts, and invert elevations.
   2. Identify and describe unexpected variations to subsoil conditions or discovery of uncharted utilities.

1.6 QUALITY ASSURANCE
A. Perform Work in accordance with Standard Specifications.

1.7 PRE-INSTALLATION MEETINGS
A. Section 01300 - Administrative Requirements: Pre-installation meeting.
B. Convene minimum one week prior to commencing work of this section.

1.8 COORDINATION
A. Section 01300 - Administrative Requirements: Coordination and project conditions.
B. Coordinate the Work with termination of storm sewer connection outside building, trenching.

1.9 PROTECTION

A. During grading operations, drainage of the area under construction and adjacent areas affected by the work shall be maintained continuously. If during the course of the construction prosecution is necessary to interrupt existing storm drainage, temporary drainage facilities shall be provided until the permanent drainage work has been completed. Such temporary drainage facilities shall be incidental to the Contract.

PART 2 – PRODUCTS

2.1 STORM DRAINAGE PIPING

A. Comply with Sections 542, 601, 1040, and 1042 of the Standard Specifications.
B. Flexible Pipe
   1. Manufacturers:
      a. Advanced Drainage Systems.
C. Polyvinyl Chloride Pipe: ASTM D2729; SDR 26, diameter as shown on Drawings; with required fittings.
D. High Density Polyethylene (HDPE):
   1. Manufacturers:
      a. Advanced Drainage Systems
   2. Comply with Village requirements and as shown on Drawings
E. Storm Sewer Pipe and Drainage Structures: As indicated on the plans and of the type, class, and quality required by the Standard Specifications.
F. Concrete for Cast in Place Drainage Structures: Shall conform to Section 504 of the IDOT Specification.
G. Mastic Joint Sealer: Shall conform to IDOT Specification Section 1055.
H. Trench Backfill: Fine aggregate conforming to Section 208 of the IDOT Specification.

2.2 ACCESSORIES

A. Filter Fabric: Non-biodegradable, non-woven; complying with Standard Specifications Section 282 and 1080.03.
B. Mastic Joint Sealer: Shall conform to IDOT Specification Section 1055.

2.3 CATCH BASINS AND DRAINAGE STRUCTURES

A. Drainage Casting: Gray iron or ductile iron castings as required by IDOT Specification Section 1006.15.
B. Catch Basin Lid and Frame:
   1. Construction: Cast iron construction.
   2. Frame Design:
      a. Neenah Foundry R1774 or approved equal
   3. Lid Design:
      a. Neenah Foundry Type D Flat Open Lid or approved equal.
C. Base Pad:
   1. Cast-in-place concrete of type specified in Section 03300.
   2. Precast concrete of type specified in Section 1020 IDOT Standard Specifications

2.4 BEDDING AND COVER MATERIALS

A. Trench Backfill: Fine aggregate conforming to Section 208 and 1003.04 of the Standard Specification.
B. Soil Backfill from Above Pipe to Finish Grade: Subsoil with no rocks over 6 inches in diameter, frozen earth or foreign matter.

2.5 EQUIPMENT

A. Shall be in sufficient size and condition in order to readily perform the required work in this section.

PART 3 – EXECUTION

3.1 EXAMINATION

A. Section 01300 - Administrative Requirements: Verification of existing conditions before starting work.
B. Verify trench cut is ready to receive work and excavations, dimensions, and elevations are as indicated on drawings.
C. Visit site to determine all existing conditions with regard to underground utilities indicated on the plans which may affect the required work.

3.2 PREPARATION

A. Hand trim excavations to required elevations. Correct over excavation with fine aggregate.
B. Remove large stones or other hard matter which could damage piping or impede consistent backfilling or compaction.

3.3 BEDDING

A. Excavate pipe trench in accordance with Section 02324 for work of this Section. Hand trim excavation for accurate placement of pipe to elevations indicated.
B. Place bedding material at trench bottom, level materials in continuous layer not exceeding 6 inches compacted depth.
C. 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 Standard Specifications Section 601. Seal joints watertight.
B. Excavation:
    1. For Pipe: At locations and to depths indicated. To a minimum of four (4) inches below bottom of the pipe and eighteen (18) inches wider than the external pipe diameter when depths are five (5) feet or less and 36 inches wider than external pipe diameter when greater than five (5) feet in depth.
    2. For Drainage Structures: At locations and to the depth indicated. To a minimum of six (6) inches greater than the external dimension of the structure.
    3. Remove all soft and yielding areas encountered within pipe and drainage structure excavations and replace with trench backfill.
    4. All excavations cut deeper than required by the plans shall be brought to proper grades with trench backfill at the Contractor's expense.
    5. Place pipe on minimum 4-inch-deep bed of trench backfill meeting requirements of Standard Specifications Section 208 compacted in accordance with Article 550.07.

3.5 LAY PIPE

A. Commence laying sewer lines at lower end and proceed upgrade.
B. Use laser equipment to control gradient.
C. Give full support to lower 1/3 of each pipe so no pipe bells support the pipe.
D. No pipe joints shall be made under water.
E. Use mastic joint sealer or preformed flexible gaskets in accordance with manufacturer's recommendations.
F. To slope gradients noted on drawings with maximum variation from indicated slope of 1/8 inch in 10 feet.
G. Install aggregate at sides and over top of pipe. Install top cover to minimum compacted thickness of 12 inches, compact to 95% Modified Proctor density.

H. Drainage Structure
   1. Install in accordance with the details shown on plan.
   2. Masonry units used shall be properly wetted before laying in horizontal courses with broken vertical joints and laid in full mortar joints.
   3. Precast reinforced concrete units shall be constructed in horizontal courses with full mortar joints.
   4. All concrete for drainage structures shall be placed on compacted subgrades.

I. Backfilling
   1. Pipe Trenches
      a. Outside of paved areas can be backfilled with the same materials excavated from the trench.
      b. Within four (4) feet of paved areas or structures shall be backfilled with trench backfill (See Materials).
      c. Initial backfill within twelve (12) inches above tope of pipe shall be placed as soon as conditions will permit. Place in layers not exceeding six (6) inches prior to compaction. Compact around entire pipe by hand or mechanical tampers.
      d. Material above initial backfill shall be placed in twelve (12) inch layers and compacted properly before additional layers are installed.
   2. Drainage Structures
      a. Backfill only after masonry work has cured for 48 hours.
      b. Backfill in layers to insure proper compaction.
      c. Give proper support to all inlet and outlet pipes at structures.
      d. All structures within four (4) feet of paved areas shall be backfilled with trench backfill.
   3. Refer to Section 02324 for backfilling and compacting requirements. Do not displace or damage pipe when compacting.
   4. Install trace wire continuous over top of pipe
   5. Connect to subdrainage tile system piping.
   6. Install Work in accordance with Standard Specifications.

3.6 FIELD QUALITY CONTROL

A. Section 01400 - Quality Requirements: Field inspecting, testing, adjusting, and balancing.
B. Request inspection prior to and immediately after placing aggregate cover over pipe.
C. Compaction Testing: In accordance with ASTM D1557.
D. When tests indicate work does not meet specified requirements, remove work, replace and retest.
E. Frequency of Compaction Tests: Not less than 1 test every 500 lineal feet of pipe installation.

3.7 PROTECTION OF FINISHED WORK

A. Section 01700 - Execution and Closeout Requirements: Protecting finished Work.
B. Protect pipe and aggregate cover from damage or displacement until backfilling operation is in progress.
   1. Take care not to damage or displace installed pipe and joints during construction of pipe supports, backfilling, testing, and other operations.
   2. Repair or replace pipe that is damaged or displaced from construction operations.

3.8 CLEANING

A. Cleaning drainage structures of construction debris and silt accumulations shall be required prior to final inspection of the work.

END OF SECTION

SECTION 02768

INTEGRALLY COLORED CONCRETE PAVING

PART 1 – GENERAL

1.1 SUMMARY
A. Section Includes:
   1. Integrally colored concrete pavement
B. Related Sections:
   1. 02500 Site Concrete.

1.2 SUBMITTALS
A. Submit according to Conditions of the Contract and Division 1 Specification Sections.
B. Product Data: For each product indicated.
C. Samples for Initial Selection: Manufacturer's color charts.
D. Qualification Data: For Installer and manufacturer specified in Quality Assurance Article, including names and addresses of completed projects, architects, and owners.

1.3 QUALITY ASSURANCE
A. Installer Qualifications: Two years' experience with projects of similar scope and quality.
B. Source Limitations: Obtain products from same source throughout Project.
C. Field Samples: Locate at site and obtain approval before start of final work. Field samples shall be minimum 4 by 4 feet.
   1. If stain does not penetrate the surface, additional cleaning or preparation is required.
   2. Demonstrate range of colors, finishes, and workmanship, including sealing procedures.
   3. Approved field samples set quality standards for comparison with remaining work.

1.4 DELIVERY, STORAGE AND HANDLING
A. Deliver materials in original packaging with labels intact.
B. Store in clean, dry and protected location, according to manufacturer's requirements.

PART 2 – PRODUCTS

2.1 FORMS
A. Comply with requirements of 02500 Site Concrete

2.2 STEEL REINFORCEMENT
A. Comply with requirements of 02500 Site Concrete

2.3 COLOR MATERIALS
A. Integral Concrete Colorant: ASTM C 979, factory-measured powdered mix in self-dissolving packaging, consisting of non-fading finely-ground synthetic mineral-oxide coloring pigments and water reducing wetting agent.
   1. Product: Butterfield Color® Uni-Mix® Integral Colorant or approved equal.
   2. Color: See Plans.

2.4 RELATED MATERIALS
A. Comply with requirements of 02500 Site Concrete or expansion joint filler, bonding agents, etc.
B. Bonding Agent: ASTM C 1059, Type II.

2.5 CURING AND SEALING MATERIALS
A. Clear, Solvent-Borne, Membrane-Forming Curing and Sealing Compound: ASTM C 309, non-yellowing, VOC-compliant, high-gloss, clear liquid.
   1. Product Butterfield Color® Color-Guard Cure & Seal or approved equal.
   2. Color to match integrally-colored concrete.
B. Slip-Resistive Additive: Finely graded aggregate or polymer additive designed to add to sealer for slip-resistant surface.

2.6 INTEGRAL CONCRETE MIXES

A. Comply with 02500 Site Concrete and as follows:
   1. Minimum Portland Cement Content: Five sacks of cement per cubic yard.
   2. Maximum Slump: 4 inches.
   3. Air Content: 6 percent plus or minus 1 percent.
B. Add integral concrete colorant according to manufacturer's instructions.
C. Maintain mix characteristics for all concrete required to have matching finish.

PART 3 – EXECUTION

3.1 EXAMINATION

A. Examine subgrade and sub base for compliance with requirements.
B. Do not proceed with decorative cement concrete pavement until unacceptable conditions are corrected.

3.2 FORMWORK

A. Comply with requirements of 02500 Site Concrete

3.3 STEEL REINFORCEMENT

A. Comply with requirements of 02500 Site Concrete

3.4 CONCRETE PLACEMENT

A. Comply with requirements of 02500 Site concrete
B. Do not add water once placing has begun. Do not retemper concrete that has started to set.

3.5 FINISHING

A. After final floating, apply a medium broom finish perpendicular to direction of traffic.

3.6 JOINTS

A. Comply with requirements of 02500 Site Concrete.

3.7 CURING AND SEALING

A. Protect decorative cement concrete pavement from prematurely drying and excessive cold or hot temperatures.
B. Cure decorative cement concrete pavement according to manufacturer's instructions.
C. Curing and Sealing Compound: Apply uniformly in continuous operation by sprayer or short nap roller according to manufacturer's instructions. After initial application is dry and tack free, apply a second coat.
   1. Do not over apply or apply in a single heavy coat.
   2. Thoroughly mix slip-resistant additive in sealer according to manufacturer's instructions. Stir occasionally to maintain uniform distribution of additive.
   3. Verify adequacy of slip resistance before opening up surfaces to traffic.
D. Do not cover concrete with plastic sheeting.

3.8 REPAIRS AND PROTECTION

A. Repair damaged decorative cement concrete pavement according to manufacturer's instructions.
B. Clean spillage and soiling from adjacent construction according to manufacturer's instructions.
C. Protect decorative cement concrete pavement from damage or deterioration until date of Substantial Completion.

END OF SECTION

SECTION 02940

LANDSCAPE GRADING

PART 1 – GENERAL

1.1 SECTION INCLUDES:
A. Final grade topsoil for finish landscaping.

1.2 RELATED SECTIONS:
A. Section 02950 – Landscape Plantings

1.3 STANDARDS
A. State Highway Specifications means the "ILLINOIS DEPARTMENT OF TRANSPORTATION, STANDARD SPECIFICATIONS FOR ROAD AND BRIDGE CONSTRUCTION," current edition including all supplements.
B. Comply with State Highway Specifications except as noted in this Section.

1.4 REFERENCES
A. Illinois Department of Transportation (IDOT) Standard Specifications for Road and Bridge Construction, current edition.
B. American Association of State Highway and Transportation Officials:
C. AASHTO T180 - Standard Specification for Moisture-Density Relations of Soils Using a 4.54-kg (10-lb) Rammer and a 457-mm (18-in.) Drop.

1.5 SUBMITTALS
A. Section 01300 - Submittal Procedures: Submittal procedures
B. Samples: Submit, in air-tight containers, 10 lb. sample of each type of fill to testing laboratory.
C. Materials Source: Submit name of imported materials source.
D. Manufacturer's Certificate: Certify Products meet or exceed specified requirements.

1.6 QUALITY ASSURANCE
A. Qualifications of Workers: Provide at least one person who shall be present at all times during execution of this portion of the work and who shall be thoroughly familiar with the types of materials procedures and equipment being used and who shall direct all work performed under this section.
B. Furnish each topsoil material from single source throughout the Work.
C. Perform Work in accordance with Standard Specifications.

PART 2 – PRODUCTS

2.1 MATERIALS
A. Topsoil for planting beds and seed turf areas within the construction area created by the site excavation. Subsurface clay material will not be allowed for topsoil use.
B. On-Site Soils
C. All approved soils from cut areas shall be used as fill to fulfill the plan intent.
D. Unsuitable materials (except topsoil) and excess cut when directed in the Bid Proposal and/or Special Conditions shall be removed from the site by the Contractor.

2.2 EQUIPMENT
A. Provide and maintain on the job sufficient equipment of the types needed to complete all work in accordance with the requirements of these specifications. Earth moving equipment capable of accomplishing the specified required results may be used.

PART 3 – EXECUTION

3.1 EXAMINATION
A. Section 01300 - Administrative Requirements: Verification of existing conditions before starting work.
B. Verify building and trench backfilling have been inspected.
C. Verify substrate base has been contoured and compacted.

3.2 PREPARATION
A. Protect landscaping and other features remaining as final Work.
B. Protect existing structures, fences, sidewalks, utilities, paving, and curbs.

3.3 SUBSTRATE PREPARATION
A. Eliminate uneven areas and low spots.
B. Remove debris, roots, branches, stones, in excess of 1/2 inch in size. Remove contaminated subsoil.
C. Scarify surface to depth of 3 inches where topsoil is scheduled. Scarify in areas where equipment used for hauling and spreading topsoil has compacted subsoil.

3.4 PLACING TOPSOIL
A. Place topsoil in areas where seeding, sodding, planting, is required to thickness as scheduled. Place topsoil during dry weather.
B. Fine grade topsoil to eliminate rough or low areas. Maintain profiles and contour of subgrade.
C. Remove roots, weeds, rocks, and foreign material while spreading.
D. Manually spread topsoil close to plant material, building, and pavement to prevent damage.
E. Lightly compact placed topsoil.
F. Remove surplus subsoil and topsoil from site.
G. Leave stockpile area and site clean and raked, ready to receive landscaping.

3.5 TOLERANCES
A. Section 01400 - Quality Requirements: Tolerances.
B. Top of Topsoil: Plus, or minus 1/2 inch.

3.6 PROTECTION OF INSTALLED WORK
A. Section 01700 - Execution and Closeout Requirements: Requirements for protecting finished Work.
B. Prohibit construction traffic over topsoil.

3.7 SCHEDULES
A. Compacted topsoil thicknesses:
B. Seeded Grass: 6 inches.
C. Sod: 4 inches.
D. Shrub Beds: 12 inches.
E. Planter Boxes: To within 3 inches of box rim.

END OF SECTION

SECTION 02950

LANDSCAPE PLANTINGS

PART 1 – GENERAL

1.1 DESCRIPTION

A. The landscape contractor shall provide all materials, labor and equipment to complete all landscape work as shown on the plans and specifications.
B. Total number of plants shall be drawn on the landscape plan. The Landscape Contractor shall state the total number of each plant with the contract price. The plant list submitted with the bid will automatically become part of the contract documents. NOTE: If the Contractor bids according to the plant list, he/she should thoroughly check the plant list quantities with the symbols drawn on the plan, to be sure there are no discrepancies
C. Landscaping as defined for this work shall consist of, but not be limited to:
    1. Planting: To consist of digging and preparing plant holes, and of furnishing, transporting, and planting of trees, shrubs and other plant materials.
    2. Other: Work shall also include all incidental operations such as mulching, bracing required, wrapping, care of living plants and replacement of unsatisfactory plants.

1.2 SECTION INCLUDES:

A. Preparation of subsoil and topsoil.
B. Topsoil bedding.
C. Trees, plants, and ground cover.
D. Mulch.
E. Fertilizer.
F. Pruning.
G. Maintenance.

1.3 UNIT PRICE - MEASUREMENT AND PAYMENT

A. Plants:
    1. Basis of Payment: Includes preparation of subsoil topsoil, placing topsoil, planting, watering and maintenance to specified time period.

1.4 REFERENCES

A. Illinois Department of Transportation – Standard Specifications for Road and Bridge Construction – current edition (Standard Specifications)
B. American National Standards Institute:
    1. ANSI A300 - Tree Care Operations - Tree, Shrub and Other Woody Plant Maintenance - Standard Practices.
    2. ANSI Z60.1 - Nursery Stock.
C. Forest Stewardship Council:
    1. FSC Guidelines - Forest Stewardship Council Guidelines.

1.5 DEFINITIONS

A. Weeds: Vegetative species other than specified species to be established in given area.
B. Plants: Living trees, plants, and ground cover specified in this Section, and described in ANSI Z60.1.

1.6 SUBMITTALS

A. Section 01330 - Submittal Procedures: Requirements for submittals.
B. Product Data: Submit list of plant material sources, data for fertilizer and other accessories.
C. Samples and Analysis: When required under “Special Conditions,” samples and certified analysis by a recognized laboratory shall be submitted by the Contractor, at his/her own expense, for approval by the Landscape Architect for topsoil, humus, fertilizer, fungicide, insecticide, tree paint, and anti-desiccant before delivery to the project. Manufacturer’s analysis for standard products will be acceptable to the Landscape Architect.

D. Approval of samples shall not be construed as final acceptance. The Landscape Architect reserves the right to take samples of the materials delivered to the site and analyze them for comparison with the specification. The cost of these tests shall be borne by the Contractor.
E. Planting Schedule: Submit three copies of proposed planting schedule, indicating dates for each type of landscape work during normal seasons for such work in area of site. Correlate with specified maintenance periods to provide maintenance from date of substantial completion. Once accepted, revise dates only as approved in writing, after documentation of reasons for delays.

1.7 CLOSEOUT SUBMITTALS

A. Section 01700 - Execution and Closeout Requirements: Requirements for submittals.
B. Operation and Maintenance Data: Include pruning objectives, types and methods; types, application frequency, and recommended coverage of fertilizer.
C. Closeout Submittals: Submit maintenance instructions and schedules according to Section 01700 – Contract Closeout.

1.8 QUALITY ASSURANCE

A. Tree Pruning: ANSI A300 Pruning Standards for Woody Plants.
B. Perform Work in accordance with Standard Specifications
C. Qualification of workmen: Provide at least one person who shall be present at all times during execution of this portion of the work and who shall be thoroughly familiar with the type of materials being installed and the best methods for their installation and who shall direct all work performed under this section.
D. Codes and Reference Standards: All materials shall conform to the standards adopted by and published by the American Nursery & Landscape Association (ANLA).
E. All material shall be balled and burlapped.
F. Standards:
    1. When required herein or as specified under Special Conditions, provide analysis and tests of topsoil, fertilizer and humus in accordance with the requirements of the Association of Official Agriculture chemists.
    2. Plant names used in the plant list are in accordance with “Standardized Plant Names,” published by the American Joint Committee of Horticulture Nomenclature (current edition).
    3. Size and grading standards of plant materials shall be in accordance with the latest edition of “U.S.A. Standard for Nursery Stock” and The American Nursery & Landscape Association.
G. Source Quality Control:
    1. Ship landscape materials with certificates of inspection and analysis. Comply with all regulatory requirements for landscape materials, fertilizer, herbicide and pesticide composition and application.
H. Labeling Requirements:
    1. Label at least one plant of each variety with a securely attached waterproof tag bearing legible designation of botanical and common name.
    2. Fertilizer shall be labeled with content and manufacturer.
    3. Anti-desiccant shall have original label from manufacturer intact and legible.
    4. Pesticide shall have original label from manufacturer intact and legible.
I. Uniformity:
    1. Where formal arrangements or consecutive order of trees or shrubs are shown, select stock for uniform height and spread.
J. Inspection:
    1. The Landscape Architect may inspect trees and shrubs either at place of growth or at site before planting, for compliance with requirements for genus, species, variety, size, and quality. The Landscape Architect retains right to further inspect trees and shrubs for size and condition of balls and root systems, insects, injuries and latent defects, and to reject unsatisfactory or defective material at any time during progress of work. Remove rejected plants immediately from project site.

1.9 SUBSTITUTIONS: PRE-BID

A. It is the Landscape Contractor's responsibility to make every reasonable effort to find the material specified by the Landscape Architect. The Landscape Contractor is responsible for qualifying his/her proposal to document any plant suitability or availability problems. The Landscape Contractor may offer substitutions to the Landscape Architect for his/her consideration. The Landscape Contractor will notify the Landscape Architect if there are known diseases or insect resistant species that can be substituted for a selected pest-prone plant. The Contractor shall submit in a base bid as per plan plus price clarifications for all recommended substitutions.

1.10 SUBSTITUTIONS: POST-BID

A. It is the intent to eliminate post-bid substitutions. However, in the event that the contract material has become unavailable, submit proof of non-availability to the Landscape Architect together with proposal for use of equivalent material. An appropriate substitution must be approved by the owner's representative and the Landscape Architect.

1.11 UTILITIES AND UNDERGROUND FEATURES

A. The Landscape Contractor shall notify J.U.L.I.E. and/or the general contractor in advance of construction to locate utilities.
B. Street lighting and other private utilities, including cable TV, communication lines, etc. shall be located by the owner or general contractor.
C. If there is a conflict with the utilities and the planting, the Landscape Architect shall be responsible for relocating plants prior to the planting process.
D. Underground features including – but not limited to – existing irrigation, septic systems, drain systems, invisible pet fencing, landscape lighting, underground natural gas and security systems shall be located by the owner or general contractor.

1.12 CONCEALED CONTINGENCIES

A. The correction of undisclosed subsurface conditions including but not limited to rock, roots, stumps, water, clay pan, soils contaminated with toxic substances or other obstacles encountered in excavation work, which are not apparent at the time of estimating, will result in additional costs to the owner, Upon discovery of undisclosed conditions, the Landscape Contractor shall notify the Landscape Architect in writing regarding any additional costs, before corrective measures are taken. No work shall commence without authorization to proceed.

1.13 DRAINAGE

A. If plants are to be installed in areas that show obvious poor drainage, and the plants are inappropriate for that condition, the Landscape Contractor shall notify the Landscape Architect. If deemed necessary, the plants shall be relocated; the contract shall be adjusted to allow for drainage correction at a negotiated cost, or the plant selection modified by the Landscape Architect to accommodate the poor drainage situation.

1.14 WORKMANSHIP

A. During delivery and installation, the Landscape Contractor shall perform in a professional manner; coordinating his/her activities so as not to interfere unduly with the work of other trades and leaving his/her work area(s) clean of litter and debris at the close of each work day.
B. During planting, all areas shall be kept neat and clean, and precautions shall be taken to avoid damage to existing plants, large trees, turf and structures. Where existing trees are to be preserved, additional precautions should be taken to avoid unnecessary accumulation of excavated materials, soil compaction or root damage.
C. Upon completion, all debris and waste material resulting from planting operations shall be removed from the project and the area cleaned up.
D. Any damaged areas caused by the Landscape Contractor shall be restored to their original condition.

1.15 QUALIFICATIONS

A. Nursery: Company specializing in growing and cultivating plants with three years' experience.
B. Installer: Company specializing in installing and planting plants with five years' experience.
C. Tree Pruner: Company specializing in performing work of this section with minimum three years' experience.
D. Maintenance Services: Performed by installer.

1.16 PRODUCT DELIVERY, STORAGE AND HANDLING

A. Section 01600 - Product Requirements: Requirements for transporting, handling, storing, and protecting products.
B. Transportation:
    1. The Contractor shall exercise care to prevent injury and drying out of the plant material.
    2. Delivery and Storage:
        a. Deliver all items to the site in their original containers with all labels intact and legible at time of the Landscape Architect's inspection.
        b. Use all means necessary to protect all items before, during, and after installation, and to protect the installed work and materials of all other trades. Deliver plants after preparations for planting have been completed and plant immediately. If planting is delayed more than 6 hours after delivery, set plants in shade, protect from weather and mechanical damage, keep roots moist by covering with mulch, burlap or other acceptable means of retaining moisture.
        c. Balled and burlapped or container-grown plants may remain on the site only 72 hours prior to being planted or put in storage.
        d. Plants shall be kept moist and protected from freezing. Do not remove from containers until planting time.
        e. Pesticides: Deliver pesticide materials to the site in original unopened containers with legible label indicating Environmental Protection Agency (EPA) pesticides or anti-desiccants with other landscape materials.
        f. Plants: Provide container grown or boxed plants. Do not prune prior to delivery unless otherwise approved by Landscape Architect. Deliver branched plants with branches tied. Do not bend or bind-tie trees or shrubs in such manner as to damage bark, break branches, or destroy natural shape. Provide protective covering with material that allows air circulation during delivery.
    3. Replacements: In the event of damage or rejection, immediately make all repairs and replacements necessary to the approval of the Landscape Architect and at no additional cost to the owner.
    4. Storage of Materials: Fertilizer, humus, and spray materials shall be stored in weatherproof storage areas and in such a manner that their effectiveness will not be impaired.
    5. Inspections:
        a. All plants shall be subject to inspection and approval by the Landscape Architect. Plants required for the work may be inspected and tagged at the place of growth before being dug. Inspection and tagging at the place of growth shall not affect the Landscape Architect's right to reject such plants on or after delivery thereof to the site as well as in place.
        b. Prior to the inspection of plant materials by the Landscape Architect, the Contractor shall select and tag with identification numbers, all tree specimen plants, and three (3) or more samples typical to each kind and size of all other plant materials proposed for use in accordance with types and designations as shown on the drawings.
        c. Inspection of plants by the Landscape Architect at the place of growth or upon delivery will be for quality and size. Variety, color, and all other requirements shall be the responsibility of the Contractor. Inspection for size of ball or roots, latent defects and for other requirements will be made at the site during progress of the work by the Landscape Architect.

d. Tagged samples of plant materials shall be delivered to the site and planted in locations as shown on the drawings, or as designated by the Landscape Architect. These tagged samples shall be maintained, protected, and used as standards for comparison with the plants furnished for the work.
e. The Contractor shall make a written request to the Landscape Architect five- (5) working days in advance for all inspections at the various nurseries and collecting grounds. This request shall state the location of the nursery or collecting grounds and shall list the particular plants which are to be inspected, as well as the size of such plants.
f. If the plants and materials, which are required to be inspected by the Landscape Architect, are located outside a radius of fifty (50) miles from the project site, the entire cost of the inspectors will borne and paid for the Contractor.
g. The Contractor or the Landscape Architect's authorized representative shall be present during all required inspections as specified or as may be required by the Landscape Architect.

6. Digging and Handling of Plant Material:
   a. Plants marked "B&B" on the list shall be balled and burlapped with ball diameters as specified in the USA Standard for Nursery Stock. Container grown nursery stock will be accepted as approved by the Landscape Architect.
   b. NO plant will be accepted when the ball has been cracked or broken in moving, or during the process of planting, or when the burlap and ropes have been removed. All balled and burlapped plants that cannot be planted immediately on delivery shall be set on the ground and the balls well covered with soil or other acceptable mulch material and shall be kept moist until planted.
   c. Plants marked "POT" shall be pot grown with a well-established root system. Diameter spread determines standard inside diameter or pot in which they shall be grown for at least three (3) months prior to delivery.
   d. All plants shall be handled so that the roots are adequately protected at all times. During shipment, all plants shall be properly protected by a tarpaulin or other suitable covering. No plant shall be so bound with rope or wire at any time as to damage the bark, break branches, or destroy its natural shape.
   e. Plants shall be properly marked for identification and for checking as designated on the plant list. Each bundle of plants and all separate plants shall have legible waterproof labels securely attached thereto before delivery to the site.
7. Rejection:
   a. All plant material shall be inspected and should the roots be dried out, large branches broken, balls of earth broken or loosened, or areas of bark torn, the Landscape Architect may reject the injured materials.
   b. Plant material damaged as a result of delivery, storage or handling will be rejected.

C. Deliver fertilizer in waterproof bags showing weight, chemical analysis, and name of manufacturer.
D. Protect and maintain plant life until planted.
E. Deliver plant materials immediately prior to placement. Keep plants moist.

1.17 PROTECTION

A. Protect all planted areas and plants from trespassing by individuals and from damage of any kind until completion of all contract work. If any plants are injured, they shall be treated or replaced as required by the Landscape Architect. No work shall be executed in or over prepared plant areas, or adjacent planting, without proper safeguards and protection.

1.18 WARRANTY

A. The Contractor shall further guarantee that during the period of the guarantee he will make good any defects to the work and all damage caused to the owner's property by such defects or by the work required to remedy such defects.

B. Within this period of the guarantee, replacements of plants or other materials or work shall be made as approved by the Landscape Architect and guaranteed for one (1) year thereafter, excluding bulbs, sod and annuals, commencing on the date of install acceptance. All plants shall be alive and in satisfactory growth at the end of the guarantee period.

C. At any time within the period of the guarantee, the Contractor shall replace any plant which has died or is in a dying condition, or which has failed to flourish in such a manner or is such a degree that its usefulness or appearance has impaired due to inferior or defective materials or workmanship, or unfavorable weather conditions. The decision of the Landscape Architect for making replacements shall be conclusive and binding upon the Contractor. The Contractor shall also make good damage to persons or property caused by defective workmanship or materials.
   1. Any trees, shrubs, or vines found to be unacceptable as described above shall be removed from the site and replaced during the next planting season.
   2. Plant replacements shall be of the same kind and size as specified in the itemized plant list. All plant replacements shall be inspected, furnished, planted and mulched as specified at the Contractor's expense. All sidewalks and other paved areas shall be kept clean at all times.
   3. Where trees are replaced, the Contractor shall be responsible for repairing any damage caused by this replacement to lawns or pavements.

D. During the guarantee period, the Contractor shall, from time to time, inspect the watering, cultivation, and other maintenance operations carried on by the owner, or its agents with respect to such work, and promptly report to the owner any methods, practices or operations which he considers unsatisfactory, and not in accord with the Landscape Architect's interests or good horticultural practices. The failure of the Contractor to so inspect or report shall be construed as an acceptance by him of the owner's maintenance operations, and he shall not thereafter claim or assert that any defects which may later develop are the results of such methods or practices or operations. The Contractor shall have the opportunity, together with the owner, to establish the maintenance program to be followed.

E. Any material that is 25% dead or more shall be considered dead and must be replaced at no charge. A tree shall be considered dead when the main leader has died back, or 25% of the crown is dead.

F. Perennials shall be guaranteed for one year after initial acceptance.

G. Warranty may be void if proper care, by owner or owner's maintenance contractor, is not maintained.

H. The Landscape Contractor shall be responsible for a one-time replacement only.

I. The Landscape Contractor will not be responsible for plant material that has been damaged by vandalism, fire, removal, relocation, wildlife, theft or other activities beyond the Landscape Contractor's control. Plant losses due to abnormal weather conditions such as floods, excessive wind damage, drought, severe freezing or abnormal rains will in no way be the responsibility of the Landscape Contractor.

J. Existing plant material transplanted shall not be guaranteed unless otherwise stated by the Landscape Contractor.

1.19 SITE CONDITIONS

A. Environmental Requirements:
   1. Do not install plants when the ambient temperatures may drop to below 35° degrees F or increase above 90° degrees F.
   2. Do not install plants when wind velocity exceeds 30 mph.

1.20 SEQUENCING AND SCHEDULING

A. Requirements: Coordinate the work of this Section with other site work including installation of underground irrigation system, utilities, piping and watering heads when required.
   1. Landscape Mulch: Shall not be placed until the required water distribution systems and planting operations have been completed within the area.
B. Planting: Install plants during the normal planting season.

1.21 MAINTENANCE

A. Section 01700 - Execution and Closeout Requirements: Requirements for maintenance service.
B. Instructions: Submit instructions for continuing maintenance under provisions of Section 01700 – Contract Closeout.
C. Schedule: Begin maintenance immediately after installation of plants and continue maintenance until final acceptance by the Landscape Architect.
D. Maintain plant life for six months after Date of Substantial Completion.
E. Maintain plant life immediately after placement until plants are well established and exhibit vigorous growing condition. Continue maintenance until termination of warranty period.
F. Maintenance includes:
   1. Cultivation and weeding plant beds and tree pits.
   2. Applying herbicides for weed control. Remedy damage resulting from use of herbicides.
   3. Remedy damage from use of insecticides.
   4. Irrigating sufficient to saturate root system.
   5. Pruning, including removal of dead or broken branches.
   6. Disease control.
   7. Maintaining wrapping, guys, turnbuckles, and stakes. Adjust turnbuckles to keep guy wires tight. Repair or replace accessories when required.
   8. Replacement of mulch.

1.22 PRE-INSTALLATION MEETINGS

A. Section 01300 - Administrative Requirements: Pre-installation meeting.
B. Convene minimum one week prior to commencing work of this section.

1.23 COORDINATION

A. Section 01300 - Administrative Requirements: Requirements for coordination.
B. Install plant life after and coordinate with installation of underground irrigation system piping and watering heads specified in Section 32 84 00.

PART 2 – PRODUCTS

2.1 TREES, PLANTS, AND GROUND COVER

A. Plant Species: Provide trees, shrubs, ornamental grasses and ground cover of the size, genus, species, and variety shown on the drawing's tree plant schedule. Plants shall have been grown under climatic conditions similar to those in which they will be installed under this contract.
   1. Furnish nursery-grown plants with healthy root systems developed by transplanting or root pruning. Provide well-shaped, fully-branched, healthy, vigorous stock free of disease, insects, eggs, larvae, and defects such as knots, sun scald, injuries, abrasions and disfigurement.
   2. Plants of a larger size may be used if acceptable to the Landscape Architect with a proportionate increase in size of roots or balls.
   3. Shade trees shall be single-stem trees with straight trunk, well-balanced crown, and intact leader, of size indicated. Branching height shall be ½ of tree height, minimum.
   4. Ornamental trees shall be small upright or spreading type multi-stem trees branched or pruned naturally according to species and type, and with appropriate relationship of caliper, height, and branching.

5. Deciduous shrubs shall have not less than the minimum number of canes appropriate for the type, shape, and height of shrub.
6. Broadleaf evergreens shall be normal-quality, well-balanced, of type, height, spread, and shape required.
7. Groundcovers shall be established and well rooted in removable containers or integral peat pots and with the appropriate number and length of runners for the pot size indicated.

2.2 WATER

A. Water will be furnished to the Contractor by the owner from existing facilities. The Contractor shall furnish all hose and connections necessary for watering plants.
B. The owner will furnish a water meter to the Contractor where larger quantities of water are necessary or where no existing water facilities exist; however the Contractor must obtain the meter from the Owner. The cost of water shall be borne by the owner.

2.3 HUMUS

A. Peat moss of partially decomposed fibrous or cellular stems and leaves of any of several species of sphagnum mosses shall be used, conforming to the following requirements:
   1. Texture and Composition: Texture may vary from porous fibrous to spongy fibrous, and crumbly or compact, but fairly elastic and substantially homogeneous. It shall be free from decomposed colloidal residue, excessive woody materials (roots and stems) and mineral matter such as iron and sulfur. It should be dark brown in color with shredded particles not exceeding ¼ inch in size.
   2. Acidity: pH value not less than 3.2 and not greater than 5.5 at approximately 25 degrees C.
   3. Ash: Based on oven dry weight, the ash content shall not exceed 5%.
   4. Water Holding Capacity: Shall not be less than 800% by weight, on an oven dry basis. When delivered to the site, the moisture content shall be between 35% and 50%.

2.4 FERTILIZER

A. All fertilizer shall be a commercial type fertilizer with the following approximate analysis:
   1. Nitrogen…….. 6%
   2. Phosphoric Acid……. 24%
   3. Potash……. 24%

2.5 SHREDDED HARDWOOD BARK MULCH

A. Shredded bark similar to product called “Pay-Gro,” manufactured by Pay-Gro Division, Mead Corporation, Dayton, Ohio.
B. Shredded hardwood bark mulch shall be free of harmful chemicals, diseases, and insects. Mulch shall have a min. 1/8-inch dimension and a maximum length of 2-1/2”.

2.6 TREE WRAP

A. Burlap for Wrapping: Material for wrapping tree trunks shall be of burlap, first quality, at least eight (8) ounces in weight and six (6) inches in width.
B. Tree wrap for wrapping the trunks shall be either burlap strips, or first quality, 4-inch wide bituminous impregnated tape, corrugated or crepe paper, specifically manufactured for tree wrapping and having qualities to resist insect infestation.

2.7 TREE STAKING AND GUYING (when applicable)

A. Hose: Hose for tree guys shall be new black two-ply fiber-bearing garden hose, not less than ½ inch inside diameter.
B. Wire: Wire for tree guys shall be pliable #10 gauge twisted galvanized annealed steel wire.
C. Stakes: For guying trees shall be 2 inch by 4 inch construction grade lumber, 18 inches long and sharpened at one end.

2.8 TREE PAINT

A. Waterproof, adhesive, and elastic, free from kerosene, coal, tar, creosote, or any other materials injurious to the life of the tree. Tree paint shall contain an antiseptic.

2.9 TREE WATERING BAG

A. Deciduous Trees
   1. Treegator® Original or approved equal
      a. for all deciduous trees up to 8-inch caliper
B. Evergreen Trees
   1. Treegator® Jr. Pro or approved equal
   2. for all evergreen trees with branches more than 6-inches above the ground

2.10 ANTI-DESICCANT

A. An emulsion equal to “Wilt-Pruf,” which will provide a protective film over plant surfaces, permeable enough to permit transpiration. Anti-desiccant shall be delivered in the sealed containers of the manufacturer and shall be mixed and applied according to manufacturer’s instruction.

2.11 INSECTICIDE

A. An all-purpose spray equal to “Malathion” and shall be effective against all types of pests and insects. The spray should be delivered in the manufacturer’s containers and shall be mixed and sprayed according to manufacturer’s instructions.

2.12 FUNGICIDE

A. Fungicide: A dry powder form equal to mixture of 50% “Fermate” and 50% “Ferbem.” Fungicide shall be delivered in manufacturer’s containers and shall be mixed and applied according to the manufacturer’s instructions.

2.13 HERBICIDE

A. Shrub Beds: A granular form herbicide equal to “Ronstar G” as manufactured by Chipco. Apply only as recommended by manufacturer.
B. Groundcover Beds: A granular form herbicide equal to “Treflan” as manufactured by Elanco Products Co., a division of Eli Lilly and Co. Apply only as recommended by manufacturer.

2.14 MUSHROOM COMPOST

A. A 3-inch deep layer of approved mushroom compost will be added to the entire surface area of all mass planting beds. The mushroom compost will be from approved supplier. Contractor will supply product information regarding material properties. Submit sample.

2.15 TOPSOIL

A. All additional topsoil required for planting operations shall be furnished by the Contractor. The topsoil used shall be of the consistency and quality as approved by the Landscape Architect. Topsoil shall be new, fertile, friable, natural loam, surface soil, reasonably free of subsoil, clay lumps, bugs, roots, weeds, and stones larger than 2” diameter, stalks, debris, extraneous or toxic matter harmful to plant growth. All such undesirable material shall be disposed of by this Contractor off the premises or as directed by the Landscape Architect.

2.16 PLANTING MIXTURE

A. Soil for planting shall consist of seven (7) parts approved topsoil to one (1) humus with one (1) pound of fertilizer thoroughly mixed into each cubic yard of planting mixture.

2.17 WEED CONTROL

A. Non-Selective, pre-emergent weed control.

2.18 PLANT MATERIALS

A. Planting Stock:
   1. Species: In accordance with Standardized Plant Names, official code of American Joint Committee on Horticulture Nomenclature.
   2. Identification: Label individual plants or each bundle of plants when tied in bundles.
   3. Plants: No. 1 Grade conforming to “American Standard for Nursery Stock” of American Association of Nurserymen (AAN); well-branched, vigorous and balanced root and top growth; free from disease, injurious insects, mechanical wounds, broken branches, decay and other defects.
   4. Trees: Furnish with reasonably straight trunks, well balanced tops, and single leader.
   5. Deciduous plants: Furnish in dormant state, except those specified as container grown.

B. Trees Plants and Ground Cover: Species and size identifiable in plant schedule, grown in climatic conditions similar to those in locality of the Work.

PART 3 – EXECUTION

3.1 EXAMINATION

A. Section 01300 - Administrative Requirements: Verification of existing conditions before starting work.
B. Verify prepared subsoil and planters are ready to receive work.
C. Saturate soil with water to test drainage.
D. Verify required underground utilities are available, in proper location, and ready for use.
E. The Contractor shall stake out all plant material locations as per the plans and specifications and gain the Landscape Architects approval of all layout work prior to any excavation for plant holes.
F. Locate all utilities prior to layout work.
G. Any conflicts between plant locations and existing utilities or other site elements shall be called to the attention of the Landscape Architect who will determine alternate locations.
H. Excavation:
   1. Perform all necessary excavations as required for planting operations. Contract prices shall include rock, broken concrete and similar excavations as may be required to fulfill the intent of the plans and specifications.
   2. All excess excavated materials shall be disposed of by the Contractor as desired.

3.2 INSTALLATION

A. Planting Seasons:
   1. Deciduous Plants:
      a. April 1st to June 15th.
      b. October 1st to December 15th.
   2. Evergreen Plants:
      a. April 1st to May 15th.
      b. September 1st to October 1st.

B. The actual planting, however, shall be done during good weather within these time periods to obtain acceptable results. If good weather is present outside the time frame, planting can occur with the approval of the Landscape Architect and Owner.
C. The planting periods designated above may be extended for container grown plants or as weather conditions allow as determined by the Landscape Architect.
D. Pruning, Painting and Spraying:
   1. Each tree and shrub shall be pruned to preserve the natural character of the plant and in a manner appropriate to its particular requirement in the landscape design. In general, at least 1/3 of the wood shall be removed by the thinning or shortening branches, but no leaders shall be cut. Pruning shall be heavier on collected plants and on nursery grown plants. Any sucker growth and broken or badly bruised branches shall be removed with clean cuts.

2. Prune with sharp tools only. Make all cuts flush and clean; especially where lower branches have been removed from collected trees. Paint all pruning cuts over ¾ inches in diameter with tree paint.
3. The Landscape Architect must be present to approve any exceptional pruning plants to fulfill a definite purpose. All pruning shall be completed on the site after delivery.
4. Spraying will be required only as directed when conditions warrant additional protection.

E. Mulching and Herbicide Applications:
1. All shade trees, ornamental trees, singularly planted shrubs and hedge plantings shall be mulched. The mulch as herein specified shall cover the entire planting pit or trench with a minimum of two (2) inches and not more than three (3) inches in depth.
2. All massed or bedded plantings will be mulched as specified above Item 1. The entire bed shall be mulched under the plants. In addition, the Contractor shall be responsible for the application of a herbicide as herein specified. Application must follow the manufacturer's directions exactly.
3. No mulching will be required in groundcover areas or trees planted within pavement areas. No herbicides shall be used on newly established groundcover beds. Once the beds are established, a pre-emergent granular herbicide, Treflan, or equal may be used according to manufacturer's directions on groundcovers that do not die back in winter. NO herbicides may be used on groundcovers that do die back each winter.

F. Wrapping:
1. All tree trunks of 2-1/2" diameter or larger shall be wrapped with burlap. Wrapping shall start at the base of the tree and extend up the entire trunk to the height of the first branches. Burlap shall overlap the preceding wrap by 3- inches and shall be tied at the top and bottom and at 2- feet intervals with suitable twine.

G. Staking and Guying (where applicable):
1. All guying and staking shall be done immediately after wrapping. Plants shall stand plumb after staking.
2. All evergreen trees shall be staked and guyed. Deciduous trees 4- inches and over shall be staked and guyed.
3. Other trees shall be staked as required by the Landscape Architect in special locations due to the unusual site conditions.
4. Staking shall be done to conform to the standard landscape construction methods, using a three-point guying procedure with galvanized wires, hosed loops around tree trunks, turn buckles and wooden stakes driven eighteen (18) inches into the ground. Staking of trees in planters shall conform to detail on plan.

H. Watering Bags
1. Install Treegator® watering bags on all deciduous trees up to 8-inch caliper and all evergreen trees 4-ft high and greater.
2. Maintain water levels in all watering bags for first growing season.

3.3 SCOPE OF WORK

A. The Landscape Contractor shall be responsible for furnishing and installing all plant material shown on the drawings and plant list, as submitted with the contract. The Landscape Contractor shall have investigated the sources of supply and satisfied himself/herself that he/she can supply all the plants specified on the drawings in the size, variety and quality noted before submitting the bid. Failure to take this precaution will not relieve the successful bidder from the responsibility for furnishing and installing all the plant material in strict accordance with the contract requirements.

3.4 STANDARDS

A. Plants will be in accordance with the current ANLA's standards and conform in general to representative species.

B. Bare Root

1. Bare-rooted shrubs shall be dug with adequate roots and shall have minimum root spreads as follows:

Height of Plant:	18in.	2 ft.	3 ft.	4 ft.	5 ft.	6 ft.
Minimum Root Spread:	10 in.	11in	14 in.	16 in.	18 in.	20 in.

2. Roots shall be protected during handling and planting to guard against drying out and damage.

C. Balled and Burlapped (B&B)

1. Balled and burlapped plants shall be dug with firm root balls free of noxious weeds. There should be no excess soil on top of the root ball or around the trunk.
2. Ball sizes shall be in accordance with ANLA Standards.
3. Caliper and Height Measurement: In size grading B&B single-trunk trees, caliper shall take precedence over height. Caliper of the trunk shall be taken 6" above the ground level (up to and including 4" caliper size) and 12" above the ground level for larger trees. For multiple-trunk trees, height measurement shall take precedence over caliper.

D. Container-Grown Stock

1. The size of container-grown shrubs is measured by height and width of plant. Container-grown trees are measured by the same standards listed in section 3.02, C.3 above. Herbaceous perennials shall be measured by pot size, not top growth. The root system of container-grown plants shall be well-developed and well-distributed throughout the container.
2. All container-grown trees and shrubs that have circling and matted roots shall be treated in the following manner prior to planting: using a knife or sharp blade, make 4-5 cuts, 1" deep, the length of the root ball, to cut all circling roots.
3. All container-grown plants should be grouped and watered daily until they are planted in the landscape. To properly acclimate to new conditions after being planted in the landscape, container material must have ample soil moisture. Until roots penetrate the soil, soil must remain moist. Water twice weekly or at four-day intervals until the equivalent of one inch of rainfall or supplemental irrigation is received.

E. Root control bags – trees and shrubs: Plants grown in root control bags may be slightly larger than root ball sizes identified by ANLA standards. Before transplanting these into the landscape, the geotextile bag must be completely removed from around the root ball, and the tree properly staked. Adequate irrigation is essential to root control bag trees and shrubs.

F. Trees shall be nursery-grown unless otherwise specified. Pruning shall be done before planting or during the planting operations.

G. All plant material in transit shall be covered to keep material from drying out. The covering shall comply with state and local laws pertaining to the transport of materials.

3.5 PLANT MATERIAL INSPECTION

A. Plants may be subject to inspection and approval by the Landscape Architect or owner at the place of growth or holding yard for conformity to specification requirements as to quality, size and variety. It is the Landscape Contractor's responsibility to know his/her sources. The Landscape Contractor shall select plants ahead of inspection visits to prevent rejection of materials delivered to the site. Cost of the inspection visits shall be borne by each individual party.

B. Plants damaged in handling or transportation can be rejected by the Landscape Architect or the owner.

C. Any plant material inspected at the place of growth, accepted and tagged by the Landscape Architect or owner that has not been damaged during transportation, cannot be rejected at the site as long as the tag remains attached to the plant.
D. State nursery inspection certificates shall be furnished to the Landscape Architect upon request.

3.6 PLANT MATERIALS

A. Plant Materials: Nursery grown plants shall mean plants which are healthy, vigorous plants lined out in rows in a nursery and which are annually cultivated, sprayed, pruned and fertilized all in accordance with good horticultural practice as approved by the Landscape Architect. All plants shall be nursery grown unless specified to be collected. All plants shall have grown under climatic conditions similar to those in the locality of the project, or have been acclimated to the conditions of the locality for at least two (2) years.
B. All plants shall be freshly dug or container grown. Neither heeled-in plants nor plants from cold storage will be accepted. All nursery grown plants shall have been transplanted or root pruned at least once in the past three- (3) years. Balled and burlapped plants must come from soil which will hold a firm ball.
C. All plants shall be typical of their species or variety, shall have a normal habit of growth, and shall be first quality, sound, healthy vigorous, well branched and densely foliated. They shall be free of disease, insect pests, eggs or larvae.
D. All plants shall conform to the measurements specified in the plant list and shall conform to the U.S.A. Standards for Nursery Stock.
E. All plants and all tree trunks shall be measured when the branches are in their normal position. Dimensions for height and spread as contained herein refer to the main body of the plant and not from branch-tip to branch-tip. The heights of tree trunks need not be as specified if the required height can be obtained by pruning the lower branches without leaving unsightly scars or otherwise damaging the trunk. No pruning of branches to obtain the required height, however, shall be done before the plants are delivered to the site unless so approved in writing by the Landscape Architect.
F. All trees must have straight trunks with a single leader intact. There shall be no abrasion of the bark, and no fresh cuts of limbs over 1-1/4 inch, which have not completely callused over.
G. Specimen Plants: Whenever specimen plants are called for in the plant list, it shall denote plants of the specified size, symmetrical and full branched on all sides, exceptionally heavy and of uniform size.
H. No substitutions shall be made from the plants specified unless written request is received from the Contractor and permission is granted in writing by the owner.

3.7 PLANTING PROCEDURE FOR TREES

A. PREPARING TREE PIT
   1. Walls of tree pit shall be dug so that they are vertical, or sloping outward in heavy soils, and scarified and the bottoms horizontal.
   2. The tree pit must be a minimum of 9”-12” larger on every side than the ball of the tree. (Ball diameter plus 24”)
   3. The tree pit shall be deep enough to accommodate the ball depth to allow 1/8 of the ball to be above the existing grade. Plants shall rest on undisturbed existing soil or well-compacted backfill.
   4. Pits for bare-rooted trees shall only be broad enough to accommodate the roots fully extended and only deep enough so that the uppermost roots will be just below the original grade.
   5. If poor drainage is suspected, a percolation test may be required. A twelve-inch wide by eighteen-inch deep hole must be filled with water and eight hours later, the hole should be empty. Sub-drainage may be needed if the hole does not drain properly in eight hours.
B. PLACING TREE IN PIT
   1. Place the tree in the pit carrying the ball and then lowering it into the pit. Never lift the tree by the trunk or branches.

2. Set the tree straight and in the center of the pit with the most desirable side facing toward the prominent view.
3. For bare-rooted trees, set the tree in the pit so that all roots, when fully extended, will not touch walls of the planting pit and the uppermost root is just below the original grade.
4. All bare rootstock shall be planted in holes large enough to accommodate the full spread of the roots without crowding. Backfill the plant material (approximately ¾ of the hole) with the planting soil mixture and thoroughly water in place. Set all plants plumb and in straight lines when required. All bare root material shall be planted 1-1/2 inches lower than originally planted in the nursery. All material shall be root pruned to remove undesirable root growth and to improve characteristics.
5. Remove containers from all container-grown trees. Slash the edges of the root balls from top to bottom, at least 1" deep. The slashing of roots may not be required for containers pre-treated with copper coating or plants grown in a Cellugro system or in root containment bags.

C. BACKFILLING TREE PIT
1. Each site is unique. Soil tests should be used to identify special conditions. Backfill mixture for trees and shrubs shall be ¾ existing soil mixed with ¼ organic material, plus granular fertilizer. If compost is used, omit the granular fertilizer.
2. If any other additives are found to be needed at the time of planting, it shall be with the approval of the Landscape Contractor, Landscape Architect and owner or owner's representative at an additional negotiated cost.
3. Backfill tree pit with a soil mixture stated in the specifications, except where existing soil is suitable according to soil test results.
4. If trees are to be staked or guyed at the time of installation, you must cut and remove rope or wire off the top 50% of rootball and pull burlap back to the edge of the ball. Remove as much burlap, woven products and twine as possible. All plastic or synthetic film or twine must be removed from the rootball. Cut all twine away from trunk. If trees are not staked at the time of installation, the owner must be notified in writing to remove all rope and burlap from the top of the rootball one year from installation date.
5. The tree must remain straight during backfilling procedure.
6. Thoroughly mix soil amendments, if needed, either prior to filling pit or as pit is being filled.
7. Backfill sides of tree pit halfway with soil mixture and tamp as pit is being filled. Do not over compact top 2/3 of planting mixture.
8. Finish backfilling sides of tree pit and tamp firmly.
9. Never cover top of rootball with soil.
10. Form a saucer above existing grade, around the outer rim of the tree pit, especially on slopes and in heavy soils.
11. Mulch top of root ball and saucer to a minimum depth of 3", not to exceed 3". Do not place mulch against the trunk.
12. Water thoroughly on the interior of the tree saucer until it is filled, even if it is raining. A second watering may be necessary to insure saturation of the root ball and elimination of air pockets. An alternative watering method is to backfill half of the pit, flood the pit and completely backfill afterwards. Slow release watering devices or automatic drip irrigation systems will improve survival.
13. Remove all tags, labels, strings and wire from the tree, unless otherwise directed.

3.8 PLANTING PROCEDURES FOR SHRUBS

A. PLANTING SHRUBS
1. For a single shrub, the pit shall be dug 18 inches wider than the rootball diameter and deep enough to allow 1/8 of the rootball to set above existing grade.
2. For a shrub mass planting, the entire bed area shall be tilled 4-6" deep. Tilling should only be done in moist soil to avoid compaction. If the soil is in clay or silt or loam, organic material should be added. Each shrub pit shall be excavated for the proper setting of the rootball.

3. Place the shrub in the pit by lifting and carrying it by the rootball or container. Remove containers from all container-grown shrubs; slash the edges of the rootball from top to bottom 1: deep. The slashing of roots may not be required for containers pre-treated with copper coating or plants grown in a Cellugro system or in root containment bags.
4. Set the shrub straight and in the center of the pit with the most desirable side facing toward the prominent view.
5. For individual shrub planting, use a backfill mixture except when existing soil is suitable as determined by soil test.
6. The shrub must remain straight during backfilling procedure.
7. Backfill sides of the pit halfway up with soil mixture and tamp as the pit is being filled. Enough planting soil mixture shall be used to bring the surface when settled to the required grade.
8. Cut and remove rope or wire off the top of the rootball and pull burlap back to the edge of the ball. Remove as much burlap, woven products and twine as possible. All plastic or synthetic film or twine must be removed from the rootball. Cut all twine away from trunk.
9. Finish backfilling the sides of the shrub pit and tamp firmly.
10. The grading of the shrub pot shall form a saucer at least 4 inches in depth above the existing grade and completely around the planting pit.
11. Mulch tops of rootball and saucer a maximum depth of 2-inches.
12. Water shrub or shrub mass thoroughly even if it is raining. A second watering may be necessary to insure saturation of the rootball and elimination of air pockets. An alternative watering method is to backfill half of the pit, flood the pit and completely backfill afterwards. Slow release watering devices or automatic drip irrigation systems will improve survival.
13. Prune out any dead or broken branches. Prune hedge as directed by Landscape Architect.
14. Remove all tags, labels, strings, wire, etc. from the plant unless otherwise directed.

3.9 PLANTING PROCEDURES FOR ALL CONTAINER GROWN TREES & SHRUBS

A. CONTAINER REMOVAL
   1. Remove the plant either by cutting or inverting the container.
   2. For untreated plastic container-grown plants with circling roots, use a sharp knife to make 4-5 1” cuts the length of the rootball.
   3. Plant shrub or tree a minimum of 1/8 of the height of the rootball above existing grade.
   4. Apply a 2 to 3” thick layer of approved mulch.
   5. Plants grown in root containment bags must have the bags removed during the planting operation. No additional slashing of the rootball is necessary.

3.10 PLANTING PROCEDURES FOR GROUND COVER, PERENNIALS & ANNUALS

A. PREPARING GROUND COVER, PERENNIAL & ANNUAL BEDS
   1. The planting bed shall be loosened when the soil is moist prior to planting by tilling. Soil shall be loosened to a depth of 4 to 6-inches.
      a. Organic matter shall be spread over the bed to a depth of 2” for peat moss or 1” deep for compost, i.e., not to exceed 4 cubic yards of compost/1000 square feet, after the soil has been loosened. The organic matter shall then be worked into the bed by tilling
      b. Fertilizer shall be top dressed over bed area (except when compost is applied) based on soil test results. In the establishment stage, liquid fertilizer may be applied to annuals as directed by owner or Landscape Architect.
      c. Mulch entire bed to a minimum depth of 1”, 2”maximum, with approved mulch, such as pine fines, pine needles or unscreened compost.

3.11 PLANTING GROUND COVER, PERENNIALS & ANNUALS BEDS

A. Before planting, biodegradable pots shall be split, and non-biodegradable pots shall be removed. Root systems of all potted plants shall be split or crumbled.
B. Excavate all groundcover areas to a depth of 9- inches and replace with 6- inches of topsoil and 3- inches of mushroom manure or well-rotted manure thoroughly worked into the total depth of topsoil.

C. The plants, either potted or bare root, shall be installed so that the roots are by soil below the mulch. Potted plants shall be set so that the top of the pot is even with the existing grade. The roots of bare root plants shall be covered to the crown. (Ground cover and perennial excavation shall be minimally the depth of the container plus 8 inches)
D. Spacing of plants shall be installed as noted on the landscape plan or contract.
E. The entire planting bed shall be thoroughly watered.
F. Treat the mulched and planted bed with a pre-emergent, soil-applied herbicide if directed by the owner or Landscape Architect. Apply the pre-emergent herbicide only when all foliage is dry to prevent foliar burn.

3.12 PLANTING PROCEDURES FOR BULBS

A. The planting bed shall be loosened when the soil is moist prior to planting by tilling. Depth of loosening depends on bulb species.
B. Spread Organic matter over the bed to a depth of 2-inches for peat moss or 1-inch deep for compost, i.e., not to exceed 4 cubic yards of compost/1,000 square feet, after the soil has been loosened. Work organic matter into the bed by tilling.
C. Incorporate fertilizer into the soil, except when compost is used, to the planting depth of perennials and bulbs. The fertilizer rate will be based on the results of the soil test.
D. Do not fertilize annual bulbs.
E. Mulch entire bed to a minimum depth of 2-inches with approved mulch.

3.13 PLANTING BULBS

A. Install bulbs by one of the following methods:
    1. When planting small quantities of bulbs or in crowded areas among other plants:
        a. Dig the bulb planting hole through the mulch with a hand trowel, bulb planter or power auger.
    2. When planting large quantities of bulbs in one area:
        a. Excavate to the recommended planting depth. Set out the bulbs and then cover the bulbs with soil.
    3. Bulbs used as a single season display may be planted at a lesser depth.
B. Plant bulbs so that the basal plate faces down in the planting hole.
C. Space bulbs as noted on the landscape plan or contract.
D. Treat mulched and planted bed with a pre-emergent approved for bulbs.

3.14 OTHER MATERIALS

A. All other materials not specifically described but required for complete and proper completion of the work of this section, shall be as selected by the Contractor subject to the approval of the Landscape Architect.
B. Method:
    1. Prune in such a manner as to preserve the natural growth habit of each plant.
    2. Procedure and percentage of growth to be removed shall be subject to the approval of the Landscape Architect.
    3. All wound surfaces larger than one inch in diameter shall be treated with a commercial pruning compound.
C. Deciduous Trees:
    1. Pruning shall consist of thinning the twigs or branches as indicated by the habit of growth of the species.
    2. Leader and terminal buds shall not be cut unless directed by the Landscape Architect.
D. Deciduous Shrubs:
    1. Cut back rapid growing or suckering shrubs 1/3.
    2. Prune slow-growing shrubs the same manner as deciduous trees.
E. Evergreens
    1. Do not prune evergreens except to remove broken branches.

3.15 MAINTENANCE, CLEAN UP AND ACCEPTANCE

A. Maintenance of Trees, Shrubs, and Groundcovers:
   1. Maintenance shall begin immediately upon completion of all planting and shall continue for sixty (60) days during the period of May 1st to November 1st, weather depending. If subsequent months prove to be warm dry months, the contractor shall continue to water the plant material to ensure proper establishment. Maintenance periods that are incomplete on November 1st shall be completed the following maintenance year unless approved by the Landscape Architect – weather permitting.
   2. During the maintenance period, the Contractor shall water, cultivate, weed, reset, upright, and straighten all plants as required for healthy growth.
   3. The Contractor shall water the plants to receive a 1 (one) inch of water per week. A rain gauge should be placed in the planting to catch both rainfall and irrigation water to verify the amount of application. Provide sufficient water to saturate root system.
   4. The Contractor shall maintain the planting area free from competing weeds. Apply herbicides in accordance with manufactures instructions. Replace plants damaged from use of herbicides.
   5. The Contractor shall regularly inspect the planting for insects and diseases, notifying the Landscape Architect of any noted occurrences. Apply pesticides in accordance with manufacturer instructions. Replace plants damaged from lack of pesticides.
   6. Trimming and pruning of dead or broken branches, treatment of pruned areas or other wounds, and removal of all debris.
   7. After the acceptance of the planting, the Contractor is responsible for settling of the planting beds.
   8. Furnish and apply all sprays necessary to correct and protect against disease and insect infestation.
   9. Protect all plantings against trespassing, damage, and theft.
   10. Protect landscaping from damage due to landscape operations, by other contractors and trades, and trespassers. Maintain protection during installation and maintenance periods. Treat, repair, or replace damaged landscape work as directed.
   11. Maintain by pruning, cultivating, and weeding as required for healthy growth. Restore planting saucers. Tighten and repair stake and guy supports and rest plants to proper grades or vertical position as required. Restore or replace damaged wrappings. Spray as required to keep trees and shrubs free of insects and disease.
   12. Maintain all plants until final acceptance following the warranty period.
   13. The owner will be responsible for all maintenance requirements for new plantings after this required sixty (60) day period and preliminary acceptance by the owner.

B. Clean Up:
   1. Remove from the site, all debris resulting from the work herein specified.
   2. All pavements and walks shall be left broom clean.

C. Preliminary Acceptance:
   1. There should be a verification of performance for work by contract documents to be conducted by the Landscape Architect or owner's representative on-site and in the presence of the Landscape Contractor, for the purpose of acceptance.
   2. Preliminary acceptance shall be given with regard to the completed planting operations for the purpose of the owner assuming the responsibility for maintenance of the project. This preliminary acceptance will be given only after the Contractor has completed all of the requirements as herein specified, but will not release the Contractor of his/her responsibilities.
   3. The Contractor shall make his/her written notification request for an inspection to determine preliminary acceptance to the Landscape Architect five (5) days in advance.
   4. During inspection for initial acceptance, the Landscape Contractor shall have an acceptance form to be signed by the owner or owner's representative.

5. Initial Acceptance: There should be an approval of the work inspected. Acceptance can be on partially completed work under the contract, if approved by the Landscape Architect or owner. If, for reasons beyond the Landscape Contractor's control, work has stopped, inspection shall be made on partially completed work. Warranty shall begin after landscape inspection and acceptance. Maintenance after initial inspection and acceptance shall be the responsibility of the owner, unless an optional maintenance contract has been specified.

D. Final Inspection and Acceptance:
   1. Upon completion of the guarantee period and all necessary replacement plantings, the Contractor will make their request for final inspection in writing giving a minimum of ten (10) days' notice.
   2. Upon completion of the final inspection and the Landscape Architect's approval of the findings, the Landscape Architect will certify to the owner that the project should receive Final Acceptance.

END OF SECTION

SECTION 03100

CONCRETE FORMING AND ACCESSORIES

PART 1 – GENERAL

1.1 SECTION INCLUDES:
A. Formwork for cast-in place concrete.
B. Shoring, bracing, and anchorage.
C. Form accessories.
D. Form stripping.

1.2 RELATED SECTIONS:
A. Section 03200 - Concrete Reinforcing.
B. Section 03300 - Cast-In-Place Concrete.

1.3 REFERENCES
A. Illinois Department of Transportation – Standard Specifications for Road and Bridge Construction, current edition (Standard Specifications)
B. American Concrete Institute:
   1. ACI 117 - Standard Specifications for Tolerances for Concrete Construction and Materials.
   2. ACI 301 - Specifications for Structural Concrete.
   3. ACI 318 - Building Code Requirements for Structural Concrete.
   4. ACI 347 - Guide to Formwork for Concrete.
C. American Forest and Paper Association:
   1. AF&PA - National Design Specifications for Wood Construction.
D. The Engineered Wood Association:
   1. APA/EWA PS 1 - Voluntary Product Standard for Construction and Industrial Plywood.
E. American Society of Mechanical Engineers:
   1. ASME A17.1 - Safety Code for Elevators and Escalators.
F. ASTM International:
   1. ASTM D1751 - Standard Specification for Preformed Expansion Joint Filler for Concrete Paving and Structural Construction (Nonextruding and Resilient Bituminous Types).
   2. ASTM E96/E96M - Standard Test Methods for Water Vapor Transmission of Materials.
G. West Coast Lumber Inspection Bureau:
   1. WCLIB - Standard Grading Rules for West Coast Lumber.

1.4 QUALITY ASSURANCE
A. Perform Work in accordance with ACI 301.
B. For wood products furnished for work of this Section, comply with AF&PA.
C. Perform Work in accordance with Standard Specifications.

1.5 COORDINATION
A. Section 01300 - Administrative Requirements: Coordination and project conditions.
B. Coordinate this Section with other sections of work, requiring attachment of components to formwork.

PART 2 – PRODUCTS

2.1 WOOD FORM MATERIALS
A. Form Materials: At discretion of Contractor.
B. Lumber Forms:
   1. Application: Use for edge forms and unexposed finish concrete.
   2. Boards: 6 inches or 8 inches in width, shiplapped or tongue and groove, “Standard” Grade Douglas Fir, conforming to WCLIB Standard Grading Rules for West Coast Lumber. Surface boards on four sides.
C. Plywood Forms:
   1. Application: Use for exposed finish concrete.

2.2 FORMWORK ACCESSORIES

A. Form Ties: Snap-off type, metal, adjustable length, free of defects
B. Spreaders: Standard, non-corrosive metal form clamp assembly, of type acting as spreaders and leaving no metal within 1 inch of concrete face. Wire ties, wood spreaders or through bolts are not permitted.
C. Form Anchors and Hangers:
    1. Do not use anchors and hangers exposed concrete leaving exposed metal at concrete surface.
    2. Symmetrically arrange hangers supporting forms from structural steel members to minimize twisting or rotation of member.
    3. Penetration of structural steel members is not permitted.
D. Form Release Agent: Colorless mineral oil that will not stain concrete, or absorb moisture.
E. Corners: Fillet, wood strip type.
F. Bituminous Joint Filler: ASTM D1751.
G. Nails, Spikes, Lag Bolts, Through Bolts, Anchorages: Size, strength and character to maintain formwork in place while placing concrete.

PART 3 – EXECUTION

3.1 EXAMINATION

A. Section 01300 - Administrative Requirements: Coordination and project conditions.
B. Verify lines, levels, and centers before proceeding with formwork. Verify dimensions agree with Drawings.
C. When formwork is placed after reinforcement resulting in insufficient concrete cover over reinforcement before proceeding, request instructions from Architect/Engineer.

3.2 INSTALLATION

A. Earth Forms:
    1. Trench earth forms neatly, accurately, and at least 2 inches wider than footing widths indicated on Drawings.
    2. Trim sides and bottom of earth forms.
    3. Construct wood edge strips at top of each side of trench to secure reinforcing and prevent trench from sloughing.
    4. Form sides of footings where earth sloughs.
    5. Tamp earth forms firm and clean forms of debris and loose material before depositing concrete.
B. Formwork - General:
    1. Provide top form for sloped surfaces steeper than 1.5 horizontal to 1 vertical to hold shape of concrete during placement, unless it can be demonstrated that top forms can be omitted.
    2. Construct forms to correct shape and dimensions, mortar-tight, braced, and of sufficient strength to maintain shape and position under imposed loads from construction operations.
    3. Camber forms where necessary to produce level finished soffits unless otherwise shown on Drawings.
    4. Carefully verify horizontal and vertical positions of forms. Correct misaligned or misplaced forms before placing concrete.
    5. Complete wedging and bracing before placing concrete.
C. Forms for Smooth Finish Concrete:
    1. Use steel, plywood or lined board forms.
    2. Use clean and smooth plywood and form liners, uniform in size, and free from surface and edge damage capable of affecting resulting concrete finish.
    3. Install form lining with close-fitting square joints between separate sheets without springing into place.
    4. Use full size sheets of form lines and plywood wherever possible.

5. Tape joints to prevent protrusions in concrete.
6. Use care in forming and stripping wood forms to protect corners and edges.
7. Level and continue horizontal joints.
8. Keep wood forms wet until stripped.

D. Framing, Studding and Bracing:
1. Space studs at 16 inches on center maximum for boards and 12 inches on center maximum for plywood.
2. Size framing, bracing, centering, and supporting members with sufficient strength to maintain shape and position under imposed loads from construction operations.
3. Construct beam soffits of material minimum of 2 inches thick.
4. Distribute bracing loads over base area on which bracing is erected.
5. When placed on ground, protect against undermining, settlement or accidental impact.

E. Erect formwork, shoring, and bracing to achieve design requirements, in accordance with requirements of ACI 301.

F. Arrange and assemble formwork to permit dismantling and stripping. Do not damage concrete during stripping. Permit removal of remaining principal shores.

G. Obtain Architect/Engineer’s approval before framing openings in structural members not indicated on Drawings.

H. Install void forms in accordance with manufacturer's recommendations.

3.3 APPLICATION - FORM RELEASE AGENT

A. Apply form release agent on formwork in accordance with manufacturer's recommendations.

B. Apply prior to placement of reinforcing steel, anchoring devices, and embedded items.

C. Do not apply form release agent where concrete surfaces are indicated to receive special finishes or applied coverings that are affected by agent. Soak inside surfaces of untreated forms with clean water. Keep surfaces coated prior to placement of concrete.

D. Reuse and Coating of Forms: Thoroughly clean forms and reapply form coating before each reuse. For exposed work, do not reuse forms with damaged faces or edges. Apply form coating to forms in accordance with manufacturer’s specifications. Do not coat forms for concrete indicated to receive “scored finish”. Apply form coatings before placing reinforcing steel.

3.4 INSTALLATION - INSERTS, EMBEDDED PARTS, AND OPENINGS

A. Install formed openings for items to be embedded in or passing through concrete work.

B. Locate and set in place items required to be cast directly into concrete.

C. Coordinate with Work of other sections in forming and placing openings, slots, reglets, recesses, sleeves, bolts, anchors, other inserts, and components of other Work.

D. Position recessed reglets for brick veneer masonry anchors in accordance with spacing and intervals as recommended by the manufacturer.

E. Install accessories straight, level, and plumb. Ensure items are not disturbed during concrete placement.

F. Install water stops continuous without displacing reinforcement.

G. Provide temporary ports or openings in formwork where required to facilitate cleaning and inspection. Locate openings at bottom of forms to allow flushing water to drain.

H. Close temporary openings with tight fitting panels, flush with inside face of forms, and neatly fitted so joints will not be apparent in exposed concrete surfaces.

I. Form Ties:
1. Use sufficient strength and sufficient quantity to prevent spreading of forms.
2. Place ties at least 1 inch away from finished surface of concrete.
3. Leave inner rods in concrete when forms are stripped.
4. Space form ties equidistant, symmetrical and aligned vertically and horizontally unless otherwise shown on Drawings.

J. Arrangement: Arrange formwork to allow proper erection sequence and to permit form removal without damage to concrete.

K. Construction Joints:
   1. Install surfaced pouring strip where construction joints intersect exposed surfaces to provide straight line at joints.
   2. Just prior to subsequent concrete placement, remove strip and tighten forms to conceal shrinkage.
   3. Show no overlapping of construction joints. Construct joints to present same appearance as butted plywood joints.
   4. Arrange joints in continuous line straight, true and sharp.
L. Embedded Items:
   1. Make provisions for pipes, sleeves, anchors, inserts, reglets, anchor slots, nailers, water stops, and other features.
   2. Do not embed wood or uncoated aluminum in concrete.
   3. Obtain installation and setting information for embedded items furnished under other Specification sections.
   4. Securely anchor embedded items in correct location and alignment prior to placing concrete.
   5. Verify conduits and pipes, including those made of coated aluminum, meet requirements of ACI 318 for size and location limitations.
M. Openings for Items Passing Through Concrete:
   1. Frame openings in concrete where indicated on Drawings. Establish exact locations, sizes, and other conditions required for openings and attachment of work specified under other sections.
   2. Coordinate work to avoid cutting and patching of concrete after placement.
   3. Perform cutting and repairing of concrete required as result of failure to provide required openings.
N. Screeds:
   1. Set screeds and establish levels for tops of concrete slabs and levels for finish on slabs.
   2. Slope slabs to drain where required or as shown on Drawings.
   3. Before depositing concrete, remove debris from space to be occupied by concrete and thoroughly wet forms. Remove freestanding water.
O. Screed Supports:
   1. For concrete over waterproof membranes and vapor retarder membranes, use cradle, pad or base type screed supports which will not puncture membrane.
   2. Staking through membrane is not be permitted.
P. Cleanouts and Access Panels:
   1. Provide removable cleanout sections or access panels at bottoms of forms to permit inspection and effective cleaning of loose dirt, debris and waste material.
   2. Clean forms and surfaces against which concrete is to be placed. Remove chips, saw dust and other debris. Thoroughly blow out forms with compressed air just before concrete is placed.

3.5 FORM CLEANING

A. Clean forms as erection proceeds, to remove foreign matter within forms.
B. Clean formed cavities of debris prior to placing concrete.
C. Flush with water or use compressed air to remove remaining foreign matter. Ensure that water and debris drain to exterior through clean-out ports.
D. During cold weather, remove ice and snow from within forms. Do not use de-icing salts. Do not use water to clean out forms, unless formwork and concrete construction proceed within heated enclosure. Use compressed air or other means to remove foreign matter.

3.6 FORM REMOVAL

A. Do not remove forms or bracing until concrete has gained sufficient strength to carry its own weight and imposed loads and removal has been approved by Architect/Engineer.
B. Loosen forms carefully. Do not wedge pry bars, hammers, or tools against finish concrete surfaces scheduled for exposure to view.

C. Store removed forms in manner that surfaces to be in contact with fresh concrete will not be damaged. Discard damaged forms.
D. Leave forms in place for minimum number of days as specified in ACI 347.

3.7 ERECTION TOLERANCES

A. Construct formwork to maintain tolerances required by ACI 301.

3.8 FIELD QUALITY CONTROL

A. Section 01400 - Quality Requirements: Field inspecting, testing, adjusting, and balancing.
B. Inspect erected formwork, shoring, and bracing to ensure that work is in accordance with formwork design, and that supports, fastenings, wedges, ties, and items are secure.
C. Notify Architect/Engineer after placement of reinforcing steel in forms, but prior to placing concrete.
D. Schedule concrete placement to permit formwork inspection before placing concrete.

END OF SECTION

SECTION 03200

CONCRETE REINFORCING

PART 1 – GENERAL

1.1 SECTION INCLUDES:
A. Reinforcing bars.
B. Welded wire fabric.
C. Reinforcement accessories.

1.2 RELATED SECTIONS:
A. Section 03100 - Concrete Forming and Accessories.
B. Section 03300 - Cast-In-Place Concrete.

1.3 REFERENCES
A. Illinois Department of Transportation – Standard Specifications for Road and Bridge Construction, current edition (Standard Specifications)
B. American Concrete Institute:
   1. ACI 301 - Specifications for Structural Concrete.
   2. ACI 318 - Building Code Requirements for Structural Concrete.
   3. ACI 530.1 - Specifications for Masonry Structures.
   4. ACI SP-66 - ACI Detailing Manual.
C. ASTM International:
   1. ASTM A82/A82M - Standard Specification for Steel Wire, Plain, for Concrete Reinforcement.
   2. ASTM A184/A184M - Standard Specification for Fabricated Deformed Steel Bar Mats for Concrete Reinforcement.
   3. A185/A185M-07 Standard Specification for Steel Welded Wire Reinforcement, Plain, for Concrete.
   4. ASTM A496/A496M - Standard Specification for Steel Wire, Deformed, for Concrete Reinforcement.
   5. ASTM A497/A497M - Standard Specification for Steel Welded Wire Fabric, Deformed, for Concrete Reinforcement.
   6. ASTM A615/A615M - Standard Specification for Deformed and Plain Billet-Steel Bars for Concrete Reinforcement.
   7. ASTM A704/A704M - Standard Specification for Welded Steel Plain Bar or Rod Mats for Concrete Reinforcement.
   8. ASTM A706/A706M - Standard Specification for Low-Alloy Steel Deformed and Plain Bars for Concrete Reinforcement.
   9. ASTM A767/A767M - Standard Specification for Zinc-Coated (Galvanized) Steel Bars for Concrete Reinforcement.
   10. ASTM A775/A775M - Standard Specification for Epoxy-Coated Steel Reinforcing Bars.
   11. ASTM A884/A884M - Standard Specification for Epoxy-Coated Steel Wire and Welded Wire Reinforcement.
   12. ASTM A934/A934M - Standard Specification for Epoxy-Coated Prefabricated Steel Reinforcing Bars.
   13. ASTM A996/A996M - Standard Specification for Rail-Steel and Axle-Steel Deformed Bars for Concrete Reinforcement.
D. American Welding Society:
   1. AWS D1.4 - Structural Welding Code - Reinforcing Steel.
E. Concrete Reinforcing Steel Institute:
   1. CRSI - Manual of Standard Practice.
   2. CRSI - Placing Reinforcing Bars.

1.4 SUBMITTALS
A. Section 01 33 00 - Submittal Procedures: Submittal procedures.
B. Shop Drawings: Indicate bar sizes, spacings, locations, and quantities of reinforcing steel and welded wire fabric, bending and cutting schedules, and supporting and spacing devices.
C. Certificates: Submit AWS qualification certificate for welders employed on the Work.

1.5 QUALITY ASSURANCE
A. Perform Work in accordance with CRSI - Manual of Standard Practice.
B. Prepare shop drawings in accordance with ACI SP-66.
C. Perform Work in accordance with Standard Specifications.

1.6 QUALIFICATIONS
A. Welders: AWS qualified within previous 12 months.

1.7 COORDINATION
A. Section 01 30 00 - Administrative Requirements: Coordination and project conditions.
B. Coordinate with placement of formwork, formed openings and other Work.

PART 2 – PRODUCTS

2.1 REINFORCEMENT
A. Deformed Reinforcement: ASTM A706/A706M; 60 ksi yield strength, steel bars, unfinished.
B. Plain Wire: ASTM A82/A82M; unfinished.
C. Welded Plain Wire Fabric: ASTM A185/A185M; in coiled rolls; unfinished.

2.2 ACCESSORY MATERIALS
A. Tie Wire: Minimum 16 gage annealed type
B. Chairs, Bolsters, Bar Supports, Spacers: Sized and shaped for strength and support of reinforcement during concrete placement conditions.

2.3 FABRICATION
A. Fabricate concrete reinforcement in accordance with CRSI Manual of Practice.

2.4 SOURCE QUALITY CONTROL
A. Section 01400 - Quality Requirements: Testing, inspection and analysis requirements.

PART 3 – EXECUTION

3.1 PLACEMENT
A. Place, support and secure reinforcement against displacement. Do not deviate from required position beyond specified tolerance.
   1. Do not weld crossing reinforcement bars for assembly.
B. Do not displace or damage vapor retarder.
C. Accommodate placement of formed openings.
D. Space reinforcement bars with minimum clear spacing in accordance with ACI 318.
   1. Where bars are indicated in multiple layers, place upper bars directly above lower bars.

E. Maintain concrete cover around reinforcement as follows:

Reinforcement Location		Minimum Concrete Cover
Footings and Concrete Formed Against Earth		3 inches (75 mm)
Concrete exposed to earth or weather	No. 6 (19) bars and larger	2 inches (50 mm)
	No. 5 (16) bars and smaller	1-1/2 inches (38 mm)
Supported Slabs, Walls, and Joists	No. 14 (43) bars and larger	1-1/2 inches (38 mm)
	No. 11 (36) bars and smaller	3/4 inches (19 mm)
Beams and Columns		1-1/2 inches (38 mm)
Shell and Folded Plate Members	No. 6 (19) bars and larger	3/4 inches (19 mm)
	No. 5 (16) bars and smaller	1/2 inches (13 mm)

3.2 ERECTION TOLERANCES

A. Section 01400 - Quality Requirements: Tolerances.

B. Install reinforcement within the following tolerances for flexural members, walls, and compression members:

Reinforcement Depth	Depth Tolerance	Concrete Cover Tolerance
Greater than 8 inches (200 mm)	plus or minus 3/8 inch (10 mm)	minus 3/8 inch (10 mm)
Less than 8 inches (200 mm)	plus or minus 1/2 inch (13 mm)	minus 1/2 inch (13 mm)

C. Install reinforcement within the tolerances specified in ACI 530.1 for foundation walls.

3.3 FIELD QUALITY CONTROL

A. Section 01400 - Quality Requirements: Field inspecting, testing, adjusting, and balancing.

B. Perform field inspection and testing in accordance with ACI 318.

C. Provide free access to Work and cooperate with appointed firm.

D. Reinforcement Inspection:

1. Placement Acceptance: Specified and ACI 318 material requirements and specified placement tolerances.
2. Welding: Inspect welds in accordance with AWS D1.1.
3. Periodic Placement Inspection: Inspect for correct materials, fabrication, sizes, locations, spacing, concrete cover, and splicing.
4. Weldability Inspection: Inspect for reinforcement weldability when formed from steel other than ASTM A706/A706M.
5. Periodic Weld Inspection: Other welded connections.

END OF SECTION

SECTION 03300

CAST-IN-PLACE CONCRETE

PART 1 – GENERAL

1.1 SUMMARY:

A. Work under this item includes, but is not limited to:
   1. Furnishing, mixing, forming, placing, finishing and curing all concrete required for construction of curbs and gutters, sidewalks, concrete paving, walls, foundation walls and footings.
   2. Furnishing and installing all required reinforcing steel.

1.2 SECTION INCLUDES:

A. Cast-in-place concrete for the following:
   1. Slabs on grade.
   2. Concrete walks
   3. Control, expansion and contraction joint devices.
   4. Equipment pads.
   5. Walls
   6. Foundation Walls
   7. Footings

1.3 RELATED SECTIONS:

A. Section 03100 - Concrete Forming and Accessories: Formwork and accessories.
B. Section 03200 - Concrete Reinforcing.

1.4 DESCRIPTION

A. Published specifications, standards, tests or recommended methods fo trade, industry or governmental organizations apply to work of this section, where cited by abbreviation noted.
B. American Society for Testing Materials, Current Edition (ASTM)
C. American Concrete Institute (ACI).
D. State Highway Specifications means the "ILLINOIS DEPARTMENT OF TRANSPORTATION, STANDARD SPECIFICATIONS FOR ROAD AND BRIDGE CONSTRUCTION," current edition including all supplements (Standard Specifications).
E. All work required under this section shall conform to the State Highway Specification applicable.

1.5 REFERENCES

A. Illinois Department of Transportation – Standard Specifications for Road and Bridge Construction, current edition (Standard Specifications)
B. American Concrete Institute:
   1. ACI 301 - Specifications for Structural Concrete.
   2. ACI 305 - Hot Weather Concreting.
   3. ACI 306.1 - Standard Specification for Cold Weather Concreting.
   4. ACI 308.1 - Standard Specification for Curing Concrete.
   5. ACI 318 - Building Code Requirements for Structural Concrete.
C. ASTM International:
   1. ASTM B221 - Standard Specification for Aluminum and Aluminum-Alloy Extruded Bars, Rods, Wire, Profiles, and Tubes.
   2. ASTM C31/C31M - Standard Practice for Making and Curing Concrete Test Specimens in the Field.
   3. ASTM C33 - Standard Specification for Concrete Aggregates.
   4. ASTM C39/C39M - Standard Test Method for Compressive Strength of Cylindrical Concrete Specimens.
   5. ASTM C42/C42M - Standard Test Method for Obtaining and Testing Drilled Cores and Sawed Beams of Concrete.
   6. ASTM C94/C94M - Standard Specification for Ready-Mixed Concrete.
   7. ASTM C143/C143M - Standard Test Method for Slump of Hydraulic Cement Concrete.

8. ASTM C150 - Standard Specification for Portland Cement.
9. ASTM C172 - Standard Practice for Sampling Freshly Mixed Concrete.
10. ASTM C173/C173M - Standard Test Method for Air Content of Freshly Mixed Concrete by the Volumetric Method.
11. ASTM C231 - Standard Test Method for Air Content of Freshly Mixed Concrete by the Pressure Method.
12. ASTM C260 - Standard Specification for Air-Entraining Admixtures for Concrete.
13. ASTM C330 - Standard Specification for Lightweight Aggregates for Structural Concrete.
14. ASTM C494/C494M - Standard Specification for Chemical Admixtures for Concrete.
15. ASTM C595 - Standard Specification for Blended Hydraulic Cements.
16. ASTM C618 - Standard Specification for Coal Fly Ash and Raw or Calcined Natural Pozzolan for Use as a Mineral Admixture in Concrete.
17. ASTM C685/C685M - Standard Specification for Concrete Made By Volumetric Batching and Continuous Mixing.
18. ASTM C845 - Standard Specification for Expansive Hydraulic Cement.
19. ASTM C989 - Standard Specification for Ground Granulated Blast-Furnace Slag for Use in Concrete and Mortars.
20. ASTM C1017/C1017M - Standard Specification for Chemical Admixtures for Use in Producing Flowing Concrete.
21. ASTM C1064/C1064M - Standard Test Method for Temperature of Freshly Mixed Hydraulic-Cement Concrete.
22. ASTM C1107/C1107M - Standard Specification for Packaged Dry, Hydraulic-Cement Grout (Nonshrink).
23. ASTM C1116 - Standard Specification for Fiber-Reinforced Concrete and Shotcrete.
24. ASTM C1157 - Standard Performance Specification for Hydraulic Cement.
25. ASTM C1218/C1218M - Standard Test Method for Water-Soluble Chloride in Mortar and Concrete.
26. ASTM C1240 - Standard Specification for Silica Fume Used in Cementitious Mixtures.
27. ASTM D994 - Standard Specification for Preformed Expansion Joint Filler for Concrete (Bituminous Type).
28. ASTM D1751 - Standard Specification for Preformed Expansion Joint Filler for Concrete Paving and Structural Construction (Nonextruding and Resilient Bituminous Types).
29. ASTM D1752 - Standard Specification for Preformed Sponge Rubber and Cork Expansion Joint Fillers for Concrete Paving and Structural Construction.
30. ASTM D6690 - Standard Specification for Joint and Crack Sealants, Hot Applied, for Concrete and Asphalt Pavements.
31. ASTM E96/E96M - Standard Test Methods for Water Vapor Transmission of Materials.
32. ASTM E119 - Standard Test Methods for Fire Tests of Building Construction and Materials.
33. ASTM E1643 - Standard Practice for Installation of Water Vapor Retarders Used in Contact with Earth or Granular Fill under Concrete Slabs.
34. ASTM E1745 - Standard Specification for Plastic Water Vapor Retarders Used in Contact with Soil or Granular Fill under Concrete Slabs.

1.6 SUBMITTALS

A. Section 01330 - Submittal Procedures: Submittal procedures.
B. Product Data: Submit data on joint devices, attachment accessories, and admixtures.
C. Design Data:
   1. Submit concrete mix design for each concrete strength. Submit separate mix designs when admixtures are required for the following:
   2. Hot and cold weather concrete work.
   3. Air entrained concrete work.
   4. Identify mix ingredients and proportions, including admixtures.
   5. Identify chloride content of admixtures and whether or not chloride was added during manufacture.
D. Samples: Submit two x ten-inch-long samples of expansion/contraction joint and control joint.

E. Manufacturer's Installation Instructions: Submit installation procedures and interface required with adjacent Work.

1.7 CLOSEOUT SUBMITTALS

A. Section 01700 - Execution and Closeout Requirements: Closeout procedures.
B. Project Record Documents: Accurately record actual locations of embedded utilities and components concealed from view in finished construction.

1.8 QUALITY ASSURANCE

A. Perform Work in accordance with ACI 301.
B. Conform to ACI 305 when concreting during hot weather.
C. Conform to ACI 306.1 when concreting during cold weather.
D. Acquire cement and aggregate from one source for Work.
E. Perform Work in accordance with Standard Specifications.

1.9 ENVIRONMENTAL REQUIREMENTS

A. Section 01 60 00 - Product Requirements: Environmental conditions affecting products on site.
B. Concrete shall not be placed when air temperature is 45 degrees and falling. Placement will be permitted if air temperature is 40 degrees and rising.
C. Maintain concrete temperature after installation at minimum 50 degrees F (10 degrees C) for minimum 7 days.

1.10 COORDINATION

A. Section 01300 - Administrative Requirements: Coordination and project conditions.
B. Coordinate placement of joint devices with erection of concrete formwork and placement of form accessories.

PART 2 – PRODUCTS

2.1 CONCRETE MATERIALS

A. Portland Cement Concrete
   1. Class X, 6 bag mix, concrete in accordance with State Highway Specifications.
   2. Compressive strength of 4000 pounds per square inch after 28 days when tested in accordance with ASTM C39 for curb and gutters, walks, walls, and concrete foundations.
   3. Provide a slump between three (3) to four (4) inches max when tested in accordance with ASTM C143.
   4. Mix all materials for not less than one (1) minute in controlled time mixers.
   5. Redi-mix concrete must be discharged from mixer within one (1) hour after all ingredients are introduced into the mixer, or from the time the truck leaves the concrete plant, whichever is sooner.
   6. No water shall be added to the concrete after it has been transported to the construction site.
B. Expansion Joints
   1. Expansion joints shall be ½" bituminous saturated felt or preformed, non-absorbent closed cell polystyrene or butyl foam as recommended by manufacturer of joint sealant.
C. Joint Sealant
   1. Joint sealant shall be polyurethane based elastomeric sealing compound material of the cold applied type in a gray color (or to match color of concrete) equal to rubber caulk #230 manufactured by PRC. Dynoseal W-5-7-G. Manufactured by Williams Products Inc., and TC/900 manufactured by Trenco.
   2. The sealing materials shall be delivered to the job site in unbroken original packages bearing the manufacturer's name and brand designation.
D. Cement: ASTM C150, Type I - Normal Portland type

E. Normal Weight Aggregates: ASTM C33.
   1. Coarse Aggregate Maximum Size: In accordance with ACI 318.

2.2 ADMIXTURES
A. Air Entrainment: ASTM C260.

2.3 ACCESSORIES
A. Concrete Reinforcing Fibers: ASTM C1116, high strength industrial-grade fibers specifically engineered for secondary reinforcement of concrete. Tensile strength -130 ksi; toughness 15 ksi; 3/4-inch-long fibers, 34 million/lb fiber count.
B. Detectable warning panels for accessible routes.
   1. Manufacturer:
      a. EJ USA 301 Spring Street East Jordan, MI or approved equal
   2. Natural finish

2.4 JOINT DEVICES AND FILLER MATERIALS
A. Joint Filler; Asphalt impregnated fiberboard or felt, 1/4-inch-thick; tongue and groove profile;
B. Construction Joint Devices: Integral extruded plastic; formed to tongue and groove profile, knockout holes spaced at 6 inches, ribbed steel spikes with tongue to fit top screed edge;

2.5 CONCRETE MIX
A. Provide concrete to the following criteria:
   1. Comply with Section 1020.11 of the Standard Specifications.
B. Admixtures: Include admixture types and quantities indicated in concrete mix designs only when approved by Landscape Architect.
   1. Use accelerating admixtures in cold weather. Use of admixtures will not relax cold weather placement requirements.
   2. Do not use calcium chloride nor admixtures containing calcium chloride.
   3. Use set retarding admixtures during hot weather.
   4. Add air entrainment admixture to concrete mix for work exposed to freezing and thawing.
   5. For concrete exposed to deicing chemicals, limit fly ash, pozzolans, silica fume, and slag content as required by applicable code.
   6. Average Compressive Strength Reduction: Permitted in accordance with ACI 318.
   7. Ready Mixed Concrete: Mix and deliver concrete in accordance with ASTM C94/C94M.
   8. Site Mixed Concrete: Mix concrete in accordance with ACI 318.

2.6 EQUIPMENT
A. All equipment used to perform this work must conform to the IDOT Specification Section 800.

PART 3 – EXECUTION

3.1 EXAMINATION
A. Section 01300 - Administrative Requirements: Coordination and project conditions.
B. Verify requirements for concrete cover over reinforcement.
C. Verify anchors, seats, plates, reinforcement and other items to be cast into concrete are accurately placed, positioned securely, and will not interfere with placing concrete.

3.2 INSPECTION
A. Prior to starting work in this section, all subgrades and subsequently prepared base courses must be inspected and approved by the Landscape Architect.

3.3 PREPARATION
A. Install compacted thickness of aggregate bedding prior to installation of all concrete. Base should be properly wetted prior to concrete placement.

B. Prepare previously placed concrete by cleaning with steel brush and applying bonding agent. Remove laitance, coatings, and unsound materials.
C. In locations where new concrete is doweled to existing work, drill holes in existing concrete, insert steel dowels and pack solid with non-shrink grout.
D. Remove debris and ice from formwork, reinforcement, and concrete substrates.
E. Remove water from areas receiving concrete before concrete is placed.

3.4 INSTALLATION

A. Build forms to line and grade with mortar tight joints using good lumber or metal forms properly braced and staked. Oil forms before concrete is poured. Forms may be removed 24 hours after pouring.
B. Place reinforcing steel as indicated in the details on plan.
C. Expansion joints shall be placed against existing concrete and stationary structures. Install ½ inch expansion joints in walks 30 feet on center every 30 feet using ¾ inch expansion material with standard expansion caps and smooth dowels through each joint (See Curb and Gutter Detail).
D. Notify Landscape Architect 48 hours before the intended pour.
E. Place concrete immediately after mixing and thoroughly puddle or vibrate to consolidate and bring mortar to surface.
F. Finish curb and gutters smooth by floating, troweling, and edging before brushing surface to secure final surface. Use standard ten (10) foot straight-edge test and correct irregularities over ¼ of an inch.
G. Finish walks and flatwork by floating, steel troweling, scoring, edging, and broom finishing or exposing aggregate by washing where applicable. All walks shall be free from surface defects, leaf fossils imprints of any type. All defects should be replaced at no additional expense to the owner.
H. Construct straight, well-defined score lines (control joints) five (5) feet on center in all work at right angles to walk, extending to 1½ inches depth of the concrete and 1/8 to ¼ of an inch wide. See Concrete Details for special scoring requirements.
    1. Score Lines/Control Joints
        a. Weakened plane control joints for curb and sidewalk shall be constructed at right angles to curb line, with spacing in 5-foot multiples, not to exceed 5 foot for sidewalk and 10 foot for curb.
        b. Control joints may be hand formed with joint depth to be a minimum of ¼" the total depth of the section. No sawed joints will be permitted.
    2. Expansion Joints – provide in the following locations
        a. Wherever walks abut vertical surfaces
        b. Curb. Expansions joints shall be constructed at right angles to the curb line with spacing in multiples of 10 feet not to exceed 30 feet. Expansion joints shall also be placed at interface at straight curb and short radius curved sections, interface of new curb with old curb, and both sides of driveway cuts.
    3. Walks.
        a. Expansion joints shall be constructed at right angles to the curb line with spacing not to exceed 30 feet.
        b. Expansion joints shall also be placed at interface with straight walk and short radius curved sections, interface of new walk with old walk and both sides of driveway approaches.
        c. Locations as indicated or necessary to prevent shrinkage from cracking concrete.
I. Remove forms carefully to avoid damaging corners and edges of exposed concrete within 24 hours after the concrete has been placed.
J. Broom finish surfaces carefully straight continuous strokes at right angles to direction of traffic, while the concrete is still green. The edges shall be rounded with approved finishing tools having the radii shown on the drawings.

K. Ramp Texture: Wheel chair ramps, where shown, shall be finished with heavier brooming transverse to slope of ramp. Texture must conform to Americans With Disabilities Act guidelines

3.5 PLACING CONCRETE

A. Place concrete in accordance with ACI 301.
B. Notify testing laboratory and Landscape Architect minimum 24 hours prior to commencement of operations.
C. Ensure reinforcement, inserts, embedded parts, formed expansion and contraction joints are not disturbed during concrete placement.
D. Separate slabs on grade from vertical surfaces with 3/4-inch-thick joint filler.
E. Extend joint filler from bottom of slab to within 1/4 inch of finished slab surface.
F. Install construction joint devices in coordination with pattern placement sequence. Set top to required elevations. Secure to resist movement by wet concrete.
G. Deposit concrete at final position. Prevent segregation of mix.
H. Place concrete in continuous operation for each panel or section determined by predetermined joints.
I. Consolidate concrete.
J. Maintain records of concrete placement. Record date, location, quantity, air temperature, and test samples taken.
K. Place concrete continuously between predetermined expansion, control, and construction joints.
L. Do not interrupt successive placement; do not permit cold joints to occur.
M. Saw cut joints within 12 hours after placing. Use 3/16-inch-thick blade, cut into 1/4 depth of slab thickness.
N. Screed slabs on grade level, maintaining surface flatness of maximum 1/8 inch in 10 ft.

3.6 CONCRETE FINISHING

A. Finish curb and gutters smooth by floating, troweling, and edging before brushing surface to secure final surface. Use standard ten (10) foot straight-edge test and correct irregularities over ¼ of an inch.
B. Finish walks and flatwork by floating, steel troweling, scoring, edging, and broom finishing or exposing aggregate by washing where applicable. All walks shall be free from surface defects, leaf fossils imprints of any type. Replace all defects at no additional expense to the owner.
C. Construct straight, well-defined score lines (control joints) five (5) feet on center in all work at right angles to walk, extending to 1½ inches depth of the concrete and 1/8 to ¼ of an inch wide. See Concrete Details for special scoring requirements.
    1. Score Lines/Control Joints
        a. Weakened plane control joints for curb and sidewalk shall be constructed at right angles to curb line, with spacing in 5-foot multiples, not to exceed 5 foot for sidewalk and 10 foot for curb.
        b. Control joints may be hand formed with joint depth to be a minimum of ¼” the total depth of the section. No sawed joints will be permitted.
    2. Expansion Joints – provide in the following locations
        a. Wherever walks abut vertical surfaces
        b. Curb. Expansions joints shall be constructed at right angles to the curb line with spacing in multiples of 10 feet not to exceed 30 feet. Expansion joints shall also be placed at interface at straight curb and short radius curved sections, interface of new curb with old curb, and both sides of driveway cuts.
    3. Walks
        a. Expansion joints shall be constructed at right angles to the curb line with spacing not to exceed 30 feet.
        b. Expansion joints shall also be placed at interface with straight walk and short radius curved sections, interface of new walk with old walk and both sides of driveway approaches.

c. Locations as indicated or necessary to prevent shrinkage from cracking concrete.

D. Remove forms carefully to avoid damaging corners and edges of exposed concrete within 24 hours after the concrete has been placed.

E. Broom finish surfaces carefully straight continuous strokes at right angles to direction of traffic, while the concrete is still green. The edges shall be rounded with approved finishing tools having the radii shown on the drawings.

F. Ramp Texture: Wheel chair ramps, where shown, shall be finished with heavier brooming transverse to slope of ramp. Texture must conform to Americans With Disabilities Act guidelines.

3.7 CURING AND PROTECTION

A. Immediately after placement, protect concrete from premature drying, excessively hot or cold temperatures, and mechanical injury.
   1. Protect concrete footings from freezing for minimum 5 days.

B. Cure all concrete for not less than seven (7) days after placement.

C. Protect all concrete surfaces from sun with water-saturated coverings, white polyethylene sheets or approved membrane curing compounds sprayed on the surface.

D. Concrete pours shall be protected by the Contractor from graffiti or vandalism. Each day's pour shall be guarded until the concrete has obtained sufficient hardness to prohibit malicious damage.

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

F. Cure concrete in accordance with ACI 308.1

3.8 FIELD QUALITY CONTROL

A. Section 01400 - Quality Requirements: Field inspecting, testing, adjusting, and balancing.

B. Field inspection and testing will be performed by Owner’s testing laboratory in accordance with ACI 318.

C. Provide free access to Work and cooperate with appointed firm.

D. Submit proposed mix design of each class of concrete to inspection and testing firm for review prior to commencement of Work.

E. Concrete Inspections:
   1. Continuous Placement Inspection: Inspect for proper installation procedures.
   2. Periodic Curing Inspection: Inspect for specified curing temperature and procedures.

F. Strength Test Samples:
   1. The Contractor shall provide empty test cylinders for this project.
   2. A total of two (2) test cylinders shall be drawn from the same truck load for every 50 cubic yards of concrete, or two (2) cylinders per each day's pour if less than 50 cubic yards.
   3. Test cylinders shall be clearly marked with a date and load ticket number. The Contractor shall protect cylinders and store safely until picked up by testing laboratory.
   4. Testing expenses shall be paid for by the Owner.

G. Sampling Procedures:
   1. Comply with ASTM C172.
   2. Cylinder Molding and Curing Procedures: ASTM C31/C31M, cylinder specimens, field cured.
   3. Sample concrete and make one set of two cylinders for every 50 cu yds or less of each class of concrete placed each day and for every 5,000 sf of surface area for slabs and walls.
   4. When volume of concrete for any class of concrete would provide less than 5 sets of cylinders, take samples from five randomly selected batches, or from every batch when less than 5 batches are used.
   5. Make one additional cylinder during cold weather concreting, and field cure.

H. Field Testing:
   1. Slump Test Method: ASTM C143/C143M.
   2. Air Content Test Method: ASTM C173/C173M.

3. Temperature Test Method: ASTM C1064/C1064M.
4. Measure slump and temperature for each compressive strength concrete sample.
5. Measure air content in air entrained concrete for each compressive strength concrete sample.

I. Cylinder Compressive Strength Testing:
1. Test Method: ASTM C39/C39M.
2. Test Acceptance: In accordance with ACI 318.
3. Test one cylinder at 7 days.
4. Test one cylinder at 28 days.
5. Dispose remaining cylinders when testing is not required.

J. Core Compressive Strength Testing:
1. Sampling and Testing Procedures: ASTM C42/C42M.
2. Test Acceptance: In accordance with ACI 318.

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

3.9 PATCHING

A. Allow Landscape Architect to inspect concrete surfaces immediately upon removal of forms.
B. Excessive honeycomb or embedded debris in concrete is not acceptable. Notify Landscape Architect upon discovery.
C. Patch imperfections in accordance with ACI 301.
D. Immediately after stripping and before concrete is thoroughly dry, patch minor defects, form-tie holes, honeycombed areas, etc., with patching mortar. Patch shall match finish of adjacent surface unless noted. No patching is allowed on concrete surfaces to be sandblast finished.

3.10 DEFECTIVE CONCRETE

A. Where concrete is under strength, out of line, level, or plumb, or shows objectionable cracks, honeycombing, rock pockets, voids, spalling, exposed reinforcing or is otherwise defective, and in the Landscape Architect's judgment, these defects impair proper strength or appearance of the work, the Landscape Architect will require its removal and replacement at the Contractor's expense.
B. Defective Concrete: Concrete not conforming to required lines, details, dimensions, tolerances or specified requirements.
C. Repair or replacement of defective concrete will be determined by Landscape Architect.
D. Do not patch, fill, touch-up, repair, or replace exposed concrete except upon express direction of Landscape Architect for each individual area.
E. Stained or discolored concrete shall be cleaned as directed and approved by the Landscape Architect.
F. Stains or other defects which cannot be removed are subject to correction by removal and replacement at no cost to owner.

END OF SECTION

SECTION 03365

CEMENTITIOUS STAMPABLE OVERLAY

PART 1 – GENERAL

1.1 SUMMARY
A. Section Includes:
   1. Cementitious stampable overlays for concrete pavement
B. Related Sections:
   1. Division 32 Section Concrete Paving for cast-in-place concrete pavement with cementitious stampable overlays.

1.2 SUBMITTALS
A. Submit according to Conditions of the Contract and Division 1 Specification Sections.
B. Product Data: For each product indicated.
C. Samples for Initial Selection: Manufacturer's color charts.
D. Sample Panels: 2 by 2 feet, to demonstrate finish, color, and texture of cementitious stampable overlay.
E. Qualification Data: For Installer and manufacturer specified in Quality Assurance Article, including names and addresses of completed projects, architects, and owners.

1.3 QUALITY ASSURANCE
A. Installer Qualifications: Two years' experience with projects of similar scope and quality.
B. Manufacturer's Qualifications: Three years' experience manufacturing products required.
C. Source Limitations: Obtain products from same source throughout Project.
D. Field Samples: Locate at site and obtain approval before start of final work. Field samples shall be minimum 4 by 4 feet.
   1. Demonstrate range of finishes and workmanship, including sealing procedures.
   2. Approved field samples set quality standards for comparison with remaining work.
   3. Remove field samples when directed.

1.4 DELIVERY, STORAGE AND HANDLING
A. Deliver materials in original packaging with labels intact.
B. Store in clean, dry and protected location, according to manufacturer's requirements.

1.5 PROJECT CONDITIONS
A. Environmental Requirements: Comply with cementitious stampable overlay manufacturer's instructions.
   1. Do not apply overlay cementitious topping if air temperature and concrete substrate temperature are not between 45 to 85 deg F before and during installation.
   2. In hot weather, install cementitious stampable overlay in early morning or when surfaces are shaded.
   3. Keep bagged products out of sunlight. Use cool water; do not use water from hot watering hoses.
   4. Protect cementitious stampable overlay from rain for 24 hours.
   5. In windy weather, protect adjacent construction from over-spray during application of sealers.

PART 2 – PRODUCTS

2.1 CEMENTITIOUS STAMPABLE OVERLAY MATERIALS
A. Cementitious Stampable Overlay: Polymer-modified cementitious overlay designed for texturing stable, non-moving concrete pavements.
   1. Product: Butterfield Color® T1000™ Stampable Overlay.
B. Primer: Butterfield Color® T1000™ Primer.
C. Water: Potable.

2.2 INTEGRALLY-COLORED OVERLAY MATERIALS

A. Integral Concrete Colorant: ASTM C 979, factory-measured powdered mix, consisting of nonfading finely ground synthetic mineral-oxide coloring pigments and water reducing wetting agent.
   1. Product: Butterfield Color® T1000™ Color Pack.
   2. Colors: As selected by Landscape Architect.

2.3 IMPRINTING TOOLS

A. Stamp Mats: Semi-rigid polyurethane mats with projected texture and ridged underside capable of imprinting texture and joint patterns to plastic cementitious stampable overlay. Include texture skins matching stamp mat textures for texturing areas that cannot be reached with stamping mats.
   1. Manufacturer: Butterfield Color®.
   2. Pattern: As selected by Landscape Architect
B. Accessory Stamp Tools: Aluminum detailing tools capable of imprinting joints and dressing stamped joints of plastic cementitious stampable overlay.
   1. Product: Butterfield Color® Stamp Tools.

2.4 RELEASE AGENTS

A. Liquid Release Agent: Clear, evaporating formulation that facilitates release of stamp mats and texture skins from cementitious stampable overlay.
   1. Product: Butterfield Color® Perma-Cast® Clear Liquid Release.
B. Pigmented-Powder Antiquing Release Agent: Factory-packaged, non-fading finely-ground, streak free, colored powder that facilitates release of stamps and texture skins from cementitious stampable overlay and imparts a secondary accent color.
   1. Product: Butterfield Color® Perma-Cast® Antiquing Release.
   2. Colors: As selected by Landscape Architect.

2.5 SEALING MATERIALS

A. Clear, Solvent-Borne, Membrane-Forming Sealing Compound: ASTM C 309, non-yellowing, VOC-compliant, high-gloss, clear liquid.
   1. Product: Butterfield Color® Clear-Guard™ Cure & Seal.

2.6 MIXING

A. Mixing Cementitious Stampable Overlay: Mix materials in accurate proportions and according to manufacturer's instructions.
   1. Bulk Mixing: For machine mixing of cementitious stampable overlay, use a paddle mortar mixer.
B. Add Butterfield Color® T1000™ Color Pack to water and then mix with cementitious stampable overlay according to manufacturer's instructions.

PART 3 – EXECUTION

3.1 EXAMINATION

A. Examine substrate for compliance with requirements.
B. Do not proceed with cementitious stampable overlay installation until unacceptable conditions are corrected.

3.2 SUBSTRATE PREPARATION

A. Map out locations of existing control joints before installation of cementitious stampable overlay.
B. Thoroughly clean substrate using high-pressure water or trisodium phosphate (TSP) and water with a scrub brush, then rinse thoroughly. Remove potential bond breakers, such as grease, oil, silicone, paint, sealant, curing and sealing compounds, drywall taping compound, etc.

C. For painted, sealed, or overly slick hard-troweled concrete substrates, mechanically abrade surfaces by sanding, scarifying, or shot blasting to allow for proper bonding.
D. Remove weak, delaminated, or unsound concrete substrates.

3.3 PRIMING SUBSTRATES

A. Apply an even coat of concrete primer from two directions, free of holidays, to prepared substrates using a paint roller or sprayer. Protect adjacent surfaces from overspray or splash.
B. Allow concrete primer to dry tack free prior to application of cementitious stampable overlay. If primed substrates become wet, reapply primer.
C. Prevent contamination of primed surfaces by dirt or other deleterious materials or conditions.
D. Apply cementitious stampable overlay within 24 hours of concrete primer application.

3.4 TROWEL-APPLIED CEMENTITIOUS STAMPABLE OVERLAY APPLICATION

A. Trowel Application: Distribute cementitious stampable overlay by trowel or gauge rake to a uniform thickness of 1/4 to 1/2 inch, as required to match depth of stamp mat grout lines]. Trowel to a smooth surface. For large areas, use a fresno. Do not over trowel.
B. Maintain a wet edge when installing cementitious stampable overlay to avoid cold joints.
C. Do not overwork material with trowel or fresno. Do not add water to surface once application has begun. Do not retemper cementitious stampable overlay.
D. Clean tools frequently to avoid build up of overlay materials.
E. When installation requires multiple pours over a common concrete substrate area, protect adjacent prepared concrete substrates from release agents.

3.5 STAMPING

A. Stamp overlay surfaces according to manufacturer's instructions. Plan stamp layout prior to application of stamps.
B. Liquid Release Agent Application: Apply a liberal coat of liquid release agent to cementitious stampable overlay when set sufficiently to achieve a clean impression.
C. Stamping:
    1. Stamp perimeter of pour using texture skins.
    2. Accurately align stamp mats in sequence and tamp into cementitious stampable overlay to produce imprint pattern, texture, and depth of imprint, according to manufacturer's instructions. Remove stamps from cementitious stampable overlay immediately.
    3. Stamp edges and surfaces unable to be imprinted with stamp mat with texture skins.
    4. Use stamp tools to imprint grout lines at edges and surfaces unable to be imprinted with stamp mats.

3.6 JOINTS

A. Recut existing control joints before cracking occurs, generally within 12 to 24 hours after placement at 70 deg F.

3.7 SEALING

A. Sealer Application: Apply uniformly in continuous operation by sprayer or short nap roller according to manufacturer's instructions. After initial application is dry and tack free, apply a second coat.
    1. Do not over apply or apply in a single heavy coat.

3.8 REPAIRS AND PROTECTION

A. Repair damaged cementitious stampable overlay according to manufacturer's instructions.
B. Clean spillage and soiling from adjacent construction according to manufacturer's instructions.
C. Protect cementitious stampable overlay from damage or deterioration until date of Substantial Completion.

END OF SECTION

SECTION 10350

GROUND-SET FLAGPOLES

PART 1 – GENERAL

1.1 SUMMARY
A. Provide aluminum flagpole(s) as shown on drawing and as specified herein, with components as needed for a complete installation.
B. Related Sections:
   1. Section 03300 – Cast-in-Place Concrete

1.2 REFERENCES
A. ASTM International:
   1. ASTM A53/A53M - Standard Specification for Pipe, Steel, Black and Hot-Dipped, Zinc-Coated, Welded and Seamless.
   2. ASTM A123/A123M - Standard Specification for Zinc (Hot-Dip Galvanized) Coatings on Iron and Steel Products.
   3. ASTM A312/A312M - Standard Specification for Seamless and Welded Austenitic Stainless Steel Pipes.
   4. ASTM B221 - Standard Specification for Aluminum and Aluminum-Alloy Extruded Bars, Rods, Wire, Profiles, and Tubes.
   5. ASTM B221M - Standard Specification for Aluminum and Aluminum-Alloy Extruded Bars, Rods, Wire, Profiles, and Tubes (Metric).
   6. ASTM B241/B241M - Standard Specification for Aluminum and Aluminum-Alloy Seamless Pipe and Seamless Extruded Tube.
B. Copper Development Association Inc.:
   1. CDA - Cooper Brass Bronze Design Handbook: Architectural Applications.
C. National Electrical Manufacturers Association:
   1. NEMA MG 1 - Motors and Generators.

1.3 SUBMITTALS
A. Only request submittals needed to verify compliance with Project requirements.
B. Shop Drawings: Indicate detailed dimensions, details, anchor requirements, and imposed loads.
C. Product Data: For each type of flagpole required, submit manufacturer's technical data and standard installation instructions.

1.4 QUALITY ASSURANCE
A. Source: Obtain each flagpole as a complete unit from Concord American Flagpole or approved equal, including fittings, accessories, bases, and anchorage devices.

1.5 QUALIFICATIONS
A. Design flagpole foundation under direct supervision of Professional Engineer experienced in design of this Work and licensed in the State of Illinois.

1.6 DELIVERY, STORAGE, AND HANDLING
A. General: Spiral wrap flagpoles with a heavy Kraft paper or other lightweight wrapping and enclose in a hard fiber tube or other protective means. Store bare flagpoles in a dry location, protected from the weather and moisture, as recommended by the manufacturer.
B. Shipping: Ship to project site in one piece or as specified. If more than one piece is necessary, provide snug fitting precision joints with self-aligning, internal splicing sleeve arrangements for weather tight, hairline field joints
C. Protect flagpole and accessories from damage or moisture.

PART 2 – PRODUCTS

2.1 MANUFACTURERS

A. Manufacturers: Concord American Flagpole, 4150 Kellway Circle, Addison, TX 75001; 1.800.527.3902 (telephone)
B. Manufacturers: Ameritex Flag and Flagpole, Inc. Bill Singleton O: 210-310-3524

2.2 FLAGPOLE TYPE AND CONSTRUCTION

A. Aluminum Flagpole Construction: Fabricate from seamless, extruded tubing complying with ASTM B 221, alloy 6063-T6, having a tensile strength not less than 30,000 psi with a yield point of 25,000 psi. Heat treat after fabrication to comply with ASTM B 597, temper T6.
   1. Provide cone-tapered flagpoles, per manufacturer's standard rate of taper.
B. Assembly Construction: Internal Revolving with Cam Cleat - Rope Halyard - Ground Set Foundation.
C. Concord American Flagpole Model #: #IRC30D62-ABL
D. See Specification Drawings for Mounting Height, Set Depth, Wall Thickness, Butt Diameter, Shaft Pieces, Maximum Wind Speeds, and Maximum Flag Size Specifications.

2.3 MOUNTING

A. Foundation Tube: Galvanized corrugated steel foundation tube, .0635"-16 Gauge (1.6 mm) minimum wall thickness, sized to suit flagpole and installation. Provide with 3/16" (4.8 mm) steel bottom plate and steel centering wedges. Furnish with 3/16" (4.8mm) support plate, ¾" (19 mm) diameter x 18" long steel ground lightning spike. Foundation tube will consist of all welded construction.

2.4 FITTINGS

A. Finial (Ornament): Finial sized as indicated or, if not indicated, to match pole butt diameter. See Specification Drawing for Type and Size of Finial Specified.
B. Internal Revolving Truck Assembly: Cast aluminum revolving truck with sealed stainless-steel bearing assemblies, aluminum spindle, cast brass exit bushing and removable hood.
C. Internal Halyard Cam Cleat System: Provide one (1) complete internal halyard cam cleat rope assembly with a plastic coated, dual attachment point counterweight and beaded sling assembly. A manually operated cam cleat mechanism will be installed inside the flagpole behind a reinforced handhole frame and flush access door having a cylinder lock.
D. Halyard Flag Snaps: Provide two (2) stainless steel swivel flagsnaps with neoprene covers.
E. Flash Collar: Provide Spun Aluminum Collar to match flagpole. See Specification Drawing for Collar Specification.

2.5 FINISHES

A. Metal Finishes, General: Comply with National Association of Architectural Manufacturers' (NAAMM) "Metal Finishes Manual for Architectural and Metal Products" for recommendations for applying and designating finishes.
B. Finish: See Specification Drawing for Finish Specification
C. Finish Specifications (Satin, Anodized, and Powder Paint Finishes): Aluminum Finish designations prefixed by AA conform to the system established by the Aluminum Association for designating aluminum finishes.
   1. Natural Satin Finish: Provide directional-sanded satin finish (AA-M33); buff complying with AAM20.
   2. Anodized Finishes: Provide Class 1 finish complying with AA M32-C22-A41 (Clear Anodized) or AA M32-C22-A42 (Color Anodized Finishes) in thicknesses ranging from 1 to 3 mils.
      a. Anodized - Clear (ACL)
      b. Anodized - Dark Bronze (ADB)
      c. Anodized - Black (ABL)

3. Powder Coated Finish: Thermo-set Polyester Powder Coated Finish, with a minimum thickness of 1-½ mils. Application shall be in a closed loop automated powder coating system to insure uniformity and quality of finish.
   a. Powder Paint – Clear (CLR)
   b. Powder Paint – Dark Bronze (BZT)
   c. Powder Paint – Black (BLK)
   d. Powder Paint – White (WHT)
   e. Powder Paint – Specify (XXX)

PART 3 – EXECUTION

3.1 PREPARATION

A. Excavation: For foundations, excavate to neat clean lines in undisturbed soil. Remove loose soil and foreign matter from excavation and moisten earth before placing concrete.

B. Foundation: Provide forms where required due to unstable soil conditions and for perimeter of flagpole base at grade. Secure forms and galvanized steel ground sleeve foundation tube in position, braced to prevent displacement during concreting. Place concrete immediately after mixing. Compact concrete in place using vibrators. Moist-cure exposed concrete for not less than 7 days or use a non-staining curing compound. Trowel exposed concrete surfaces to a smooth, dense finish, free of trowel marks and uniform in texture and appearance. Provide positive slope for water runoff to base perimeter.

3.2 FLAGPOLE INSTALLATION

A. General: Install flagpoles where shown and according to shop drawings and manufacturer's written instructions.

B. Foundation Tube Installation: Install flagpole in foundation tube, seated on bottom plate between steel centering wedges. Plumb flagpole and install hardwood wedges to secure flagpole in place. Place and compact sand in foundation tube to within 2" of the top of tube. Remove hardwood wedges and seal top of foundation tube with a 2-inch (50 mm) layer of elastometric sealant or cement and cover with flashing collar.

END OF SECTION

SECTION 13810

LIGHTING CONTROL DEVICES

PART 1 – GENERAL

1.1 SECTION INCLUDES
A. Occupancy sensors.
B. Time switches.
C. Outdoor photo controls.
D. Accessories.

1.2 RELATED REQUIREMENTS
A. Section 16060 - Grounding and Bonding for Electrical Systems.
B. Section 16071 – Fastenings and Supports.
C. Section 16152 – Cable Splice and Junction Boxes.
D. Section 16155 - Identification for Electrical Systems: Identification products and requirements.
E. Section 16141 - Wiring Devices: Devices for manual control of lighting, including wall switches, wall dimmers, and fan speed controllers.
   1. Includes finish requirements for wall controls specified in this section.
   2. Includes accessory receptacles, switches, dimmers and wall plates, to match lighting controls specified in this section.
F. Section 16510 - Exterior Lighting.

1.3 REFERENCE STANDARDS
A. 47 CFR 15 - Radio Frequency Devices; current edition.
B. NECA 1 - Standard for Good Workmanship in Electrical Construction; 2015.
C. NECA 130 - Standard for Installing and Maintaining Wiring Devices; 2010.
D. NEMA 250 - Enclosures for Electrical Equipment (1000 Volts Maximum); 2018.
E. NFPA 70 - National Electrical Code; Most Recent Edition Adopted by Authority Having Jurisdiction, Including All Applicable Amendments and Supplements.
F. UL 916 - Energy Management Equipment; Current Edition, Including All Revisions.
G. UL 917 - Clock-Operated Switches; Current Edition, Including All Revisions.

1.4 ADMINISTRATIVE REQUIREMENTS
A. Coordination:
   1. Coordinate the placement of lighting control devices with millwork, furniture, equipment, etc. installed under other sections or by others.
   2. Coordinate the placement of wall switch occupancy sensors with actual installed door swings.
   3. Coordinate the placement of occupancy sensors with millwork, furniture, equipment or other potential obstructions to motion detection coverage installed under other sections or by others.
   4. Notify Architect of any conflicts or deviations from Contract Documents to obtain direction prior to proceeding with work.
B. Sequencing:
   1. Do not install lighting control devices until final surface finishes and painting are complete.

1.5 SUBMITTALS
A. See Section 01300 - Administrative Requirements, for submittal procedures.
B. Product Data: Include ratings, configurations, standard wiring diagrams, dimensions, colors, service condition requirements, and installed features.
   1. Occupancy Sensors: Include detailed motion detection coverage range diagrams.
C. Field Quality Control Reports.
D. Manufacturer's Installation Instructions: Include application conditions and limitations of use stipulated by product testing agency. Include instructions for storage, handling, protection, examination, preparation, and installation of product.
E. Operation and Maintenance Data: Include detailed information on device programming and setup.

F. Project Record Documents: Record actual installed locations and settings for lighting control devices.

1.6 QUALITY ASSURANCE

A. Comply with requirements of NFPA 70.
B. Product Listing Organization Qualifications: An organization recognized by OSHA as a Nationally Recognized Testing Laboratory (NRTL) and acceptable to authorities having jurisdiction.

1.7 DELIVERY, STORAGE, AND PROTECTION

A. Store products in a clean, dry space in original manufacturer's packaging in accordance with manufacturer's written instructions until ready for installation.

1.8 FIELD CONDITIONS

A. Maintain field conditions within manufacturer's required service conditions during and after installation.

1.9 WARRANTY

A. See Section 01780 - Closeout Submittals, for additional warranty requirements.
B. Provide five year manufacturer warranty for all occupancy sensors.

PART 2 – PRODUCTS

2.1 LIGHTING CONTROL DEVICES - GENERAL REQUIREMENTS

A. Provide products listed, classified, and labeled as suitable for the purpose intended.
B. Unless specifically indicated to be excluded, provide all required conduit, wiring, connectors, hardware, components, accessories, etc. as required for a complete operating system.

2.2 TIME SWITCHES

A. Manufacturers:
   1. Intermatic, Inc; _____: www.intermatic.com/#sle.
   2. Tork, a division of NSI Industries LLC; _____: www.tork.com/#sle.
   3. Substitutions: See Section 01600 - Product Requirements.
B. Digital Electronic Time Switches:
   1. Description: Factory-assembled solid state programmable controller with LCD display, listed and labeled as complying with UL 916 or UL 917.
   2. Program Capability:
      a. 24-Hour Time Switches: Single channel, with same schedule for each day of the week and skip-a-day feature to omit selected days.
      b. 7-Day Time Switches: Single channel, capable of different schedule for each day of the week with additional holiday schedule available to override normal schedule for selected days.
      c. Astronomic Time Switches: Single channel, capable of different schedule for each day of the week with additional holiday schedule available to override normal schedule for selected days and field-configurable astronomic feature to automatically adjust for seasonal changes in sunrise and sunset times.
   3. Schedule Capacity: Not less than 16 programmable on/off operations.
   4. Provide automatic daylight savings time and leap year compensation.
   5. Provide power outage backup to retain programming and maintain clock.
   6. Manual override: Capable of overriding current schedule both permanently and temporarily until next scheduled event.
   7. Input Supply Voltage: As indicated on the drawings.
   8. Output Switch Contact Ratings: As required to control the load indicated on drawings.

9. Provide lockable enclosure; environmental type per NEMA 250 as specified for the following installation locations:
    a. Indoor clean, dry locations: Type 1.

C. Electromechanical Time Switches:
1. Description: Factory-assembled controller with motor-operated timing dial mechanism and adjustable trippers for setting on/off operations, listed and labeled as complying with UL 917.
2. Program Capability:
    a. 24-Hour Time Switches: With same schedule for each day of the week and skip-a-day feature to omit selected days.
    b. 7-Day Time Switches: Capable of different schedule for each day of the week.
    c. Astronomic Time Switches: With same schedule for each day of the week and skip-a-day feature to omit selected days with automatic adjustment for seasonal changes in sunrise and sunset times.
3. Schedule Capacity:
    a. 24-Hour Time Switches: Accommodating not less than 12 pairs of selected on/off operations per day.
    b. 7-Day Time Switches: Accommodating not less than two pairs of selected on/off operations per day.
    c. Astronomic Time Switches: Capable of turning load on at sunset and off at either sunrise or selected fixed time.
4. Provide spring reserve backup to maintain clock during power outage.
5. Manual override: Capable of overriding current schedule both permanently and temporarily until next scheduled event.
6. Input Supply Voltage: As indicated on the drawings.
7. Output Switch Contact Ratings: As required to control the load indicated on drawings.
8. Provide lockable enclosure; environmental type per NEMA 250 as specified for the following installation locations:
    a. Indoor clean, dry locations: Type 1.

PART 3 – EXECUTION

3.1 EXAMINATION

A. Verify that field measurements are as indicated.
B. Verify that outlet boxes are installed in proper locations and at proper mounting heights and are properly sized to accommodate devices and conductors in accordance with NFPA 70.
C. Verify that openings for outlet boxes are neatly cut and will be completely covered by devices or wall plates.
D. Verify that final surface finishes are complete, including painting.
E. Verify that branch circuit wiring installation is completed, tested, and ready for connection to lighting control devices.
F. Verify that the service voltage and ratings of lighting control devices are appropriate for the service voltage and load requirements at the location to be installed.
G. Verify that conditions are satisfactory for installation prior to starting work.

3.2 PREPARATION

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

3.3 INSTALLATION

A. Install lighting control devices in accordance with NECA 1 (general workmanship) and, where applicable, NECA 130, including mounting heights specified in those standards unless otherwise indicated.
B. Coordinate locations of outlet boxes provided under Section 16152 as required for installation of lighting control devices provided under this section.

1. Mounting Heights: Unless otherwise indicated, as follows:
   a. Wall Switch Occupancy Sensors: 48 inches (1.2 m) above finished floor.
2. Orient outlet boxes for vertical installation of lighting control devices unless otherwise indicated.
3. Locate wall switch occupancy sensors on strike side of door with edge of wall plate 3 inches (80 mm) from edge of door frame. Where locations are indicated otherwise, notify Architect to obtain direction prior to proceeding with work.

C. Install lighting control devices in accordance with manufacturer's instructions.
D. Unless otherwise indicated, connect lighting control device grounding terminal or conductor to branch circuit equipment grounding conductor and to outlet box with bonding jumper.
E. Install lighting control devices plumb and level, and held securely in place.
F. Where required and not furnished with lighting control device, provide wall plate in accordance with Section 16141.
G. Provide required supports in accordance with Section 16071.
H. Where applicable, install lighting control devices and associated wall plates to fit completely flush to mounting surface with no gaps and rough opening completely covered without strain on wall plate. Repair or reinstall improperly installed outlet boxes or improperly sized rough openings. Do not use oversized wall plates in lieu of meeting this requirement.
I. Occupancy Sensor Locations:
   1. Locate ultrasonic and dual technology passive infrared/ultrasonic occupancy sensors a minimum of 4 feet (1.2 m) from air supply ducts or other sources of heavy air flow and as per manufacturer's recommendations, in order to minimize false triggers.

3.4 FIELD QUALITY CONTROL

A. See Section 01400 - Quality Requirements, for additional requirements.
B. Inspect each lighting control device for damage and defects.
C. Test occupancy sensors to verify proper operation, including time delays and ambient light thresholds where applicable. Verify optimal coverage for entire room or area. Record test results in written report to be included with submittals.
D. Test time switches to verify proper operation.
E. Correct wiring deficiencies and replace damaged or defective lighting control devices.

3.5 ADJUSTING

A. Adjust devices and wall plates to be flush and level.
B. Adjust occupancy sensor settings to minimize undesired activations while optimizing energy savings, and to achieve desired function as indicated or as directed by Architect.
C. Where indicated or as directed by Architect, install factory masking material or adjust integral blinders on passive infrared (PIR) and dual technology occupancy sensor lenses to block undesired motion detection.
D. Adjust time switch settings to achieve desired operation schedule as indicated or as directed by Architect. Record settings in written report to be included with submittals.

3.6 CLEANING

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

3.7 COMMISSIONING

A. See Section 01810 - General Commissioning Requirements for commissioning requirements.

3.8 CLOSEOUT ACTIVITIES

A. See Section 01780 - Closeout Submittals, for closeout submittals.
B. Demonstration: Demonstrate proper operation of lighting control devices to Architect, and correct deficiencies or make adjustments as directed.

C. Training: Train Owner's personnel on operation, adjustment, programming, and maintenance of lighting control devices.
   1. Use operation and maintenance manual as training reference, supplemented with additional training materials as required.

END OF SECTION

SECTION 16014

SELECTIVE DEMOLITION FOR ELECTRICAL

PART 1 – GENERAL

1.1 SECTION INCLUDES
A. Electrical demolition.

1.2 RELATED REQUIREMENTS
A. Section 01700 - Execution and Closeout Requirements: Additional requirements for alterations work.

1.3 SUBMITTALS
A. See Section 01300 - Administrative Requirements, for submittal procedures.

PART 2 – PRODUCTS

2.1 MATERIALS AND EQUIPMENT
A. Materials and equipment for patching and extending work: As specified in individual sections.

PART 3 – EXECUTION

3.1 EXAMINATION
A. Verify that abandoned wiring and equipment serve only abandoned facilities.
B. Beginning of demolition means installer accepts existing conditions.

3.2 PREPARATION
A. Disconnect electrical systems in walls, floors, and ceilings to be removed.
B. Coordinate utility service outages with utility company.

3.3 DEMOLITION AND EXTENSION OF EXISTING ELECTRICAL WORK
A. Remove, relocate, and extend existing installations to accommodate new construction.
B. Remove abandoned wiring to source of supply.
C. Remove exposed abandoned conduit.

END OF SECTION

SECTION 16060

GROUNDING AND BONDING FOR ELECTRICAL SYSTEMS

PART 1 – GENERAL

1.1 SECTION INCLUDES

A. Grounding and bonding requirements.
B. Conductors for grounding and bonding.
C. Connectors for grounding and bonding.
D. Ground bars.
E. Ground rod electrodes.

1.2 RELATED REQUIREMENTS

A. Section 16120 - Low-Voltage Electrical Power Conductors and Cables: Additional requirements for conductors for grounding and bonding, including conductor color coding.
B. Section 16155 - Identification for Electrical Systems: Identification products and requirements.
C. Section 16510 - Exterior Lighting: Additional grounding and bonding requirements for pole-mounted luminaires.

1.3 REFERENCE STANDARDS

A. IEEE 81 - IEEE Guide for Measuring Earth Resistivity, Ground Impedance, and Earth Surface Potentials of a Grounding System; 2012.
B. NECA 1 - Standard for Good Workmanship in Electrical Construction; 2015.
C. NEMA GR 1 - Grounding Rod Electrodes and Grounding Rod Electrode Couplings; 2017.
D. NETA ATS - Acceptance Testing Specifications for Electrical Power Equipment and Systems; 2017.
E. NFPA 70 - National Electrical Code; Most Recent Edition Adopted by Authority Having Jurisdiction, Including All Applicable Amendments and Supplements.
F. UL 467 - Grounding and Bonding Equipment; Current Edition, Including All Revisions.

1.4 ADMINISTRATIVE REQUIREMENTS

A. Coordination:
   1. Verify exact locations of underground metal water service pipe entrances to building.
   2. Coordinate the work with other trades to provide steel reinforcement complying with specified requirements for concrete-encased electrode.
   3. Notify Architect of any conflicts with or deviations from Contract Documents. Obtain direction before proceeding with work.
B. Sequencing:
   1. Do not install ground rod electrodes until final backfill and compaction is complete.

1.5 SUBMITTALS

A. See Section 01300 - Administrative Requirements for submittals procedures.
B. Shop Drawings:
   1. Indicate proposed arrangement for signal reference grids. Include locations of items to be bonded and methods of connection.
C. Field quality control test reports.
D. Project Record Documents: Record actual locations of grounding electrode system components and connections.

1.6 QUALITY ASSURANCE

A. Comply with requirements of NFPA 70.
B. Product Listing Organization Qualifications: An organization recognized by OSHA as a Nationally Recognized Testing Laboratory (NRTL) and acceptable to authorities having jurisdiction.

1.7 DELIVERY, STORAGE, AND HANDLING

A. Receive, inspect, handle, and store products in accordance with manufacturer's instructions.

PART 2 – PRODUCTS

2.1 GROUNDING AND BONDING REQUIREMENTS

A. Do not use products for applications other than as permitted by NFPA 70 and product listing.
B. Unless specifically indicated to be excluded, provide all required components, conductors, connectors, conduit, boxes, fittings, supports, accessories, etc. as necessary for a complete grounding and bonding system.
C. Where conductor size is not indicated, size to comply with NFPA 70 but not less than applicable minimum size requirements specified.
D. Grounding System Resistance:
    1. Achieve specified grounding system resistance under normally dry conditions unless otherwise approved by Architect. Precipitation within the previous 48 hours does not constitute normally dry conditions.
    2. Grounding Electrode System: Not greater than 5 ohms to ground, when tested according to IEEE 81 using "fall-of-potential" method.
    3. Between Grounding Electrode System and Major Electrical Equipment Frames, System Neutral, and Derived Neutral Points: Not greater than 0.5 ohms, when tested using "point-to-point" methods.
E. Grounding Electrode System:
    1. Provide connection to required and supplemental grounding electrodes indicated to form grounding electrode system.
        a. Provide continuous grounding electrode conductors without splice or joint.
        b. Install grounding electrode conductors in raceway where exposed to physical damage. Bond grounding electrode conductor to metallic raceways at each end with bonding jumper.
    2. Metal In-Ground Support Structure:
        a. Provide connection to metal in-ground support structure that is in direct contact with earth in accordance with NFPA 70.
    3. Ground Rod Electrode(s):
        a. Provide three electrodes in an equilateral triangle configuration unless otherwise indicated or required.
        b. Space electrodes not less than 10 feet (3.0 m) from each other and any other ground electrode.
    4. Provide additional ground electrode(s) as required to achieve specified grounding electrode system resistance.
    5. Ground Bar: Provide ground bar, separate from service equipment enclosure, for common connection point of grounding electrode system bonding jumpers as permitted in NFPA 70. Connect grounding electrode conductor provided for service-supplied system grounding to this ground bar.
        a. Ground Bar Size: 1/4 by 2 by 12 inches (6 by 50 by 300 mm) unless otherwise indicated or required.
        b. Where ground bar location is not indicated, locate in accessible location as near as possible to service disconnect enclosure.
        c. Ground Bar Mounting Height: 18 inches (450 mm) above finished floor unless otherwise indicated.
F. Bonding and Equipment Grounding:
    1. Provide bonding for equipment grounding conductors, equipment ground busses, metallic equipment enclosures, metallic raceways and boxes, device grounding terminals, and other normally non-current-carrying conductive materials enclosing electrical conductors/equipment or likely to become energized as indicated and in accordance with NFPA 70.
    2. Raceways may be used as sole equipment grounding conductor where permitted by NFPA 70. Provide insulated equipment grounding conductor where indicated or required, including but not limited to:
        a. In each nonmetallic feeder and branch circuit raceway.
        b. In each flexible conduit.

3. Where circuit conductor sizes are increased for voltage drop, increase size of equipment grounding conductor proportionally in accordance with NFPA 70.
4. Unless otherwise indicated, connect wiring device grounding terminal to branch circuit equipment grounding conductor and to outlet box with bonding jumper.
5. Terminate branch circuit equipment grounding conductors on solidly bonded equipment ground bus only. Do not terminate on neutral (grounded) or isolated/insulated ground bus.
6. Provide bonding jumper across expansion or expansion/deflection fittings provided to accommodate conduit movement.
7. Provide bonding for interior metal piping systems in accordance with NFPA 70. This includes, but is not limited to:
   a. Metal water piping where not already effectively bonded to metal underground water pipe used as grounding electrode.
   b. Metal gas piping.
   c. Metal process piping.
8. Provide bonding for metal building frame.

G. Pole-Mounted Luminaires: Also comply with Section 16510.

2.2 GROUNDING AND BONDING COMPONENTS

A. General Requirements:
   1. Provide products listed, classified, and labeled as suitable for the purpose intended.
   2. Provide products listed and labeled as complying with UL 467 where applicable.

B. Conductors for Grounding and Bonding, in Addition to Requirements of Section 16060:
   1. Use insulated copper conductors unless otherwise indicated.
      a. Exceptions:
         1) Use bare copper conductors where installed underground in direct contact with earth.
         2) Use bare copper conductors where directly encased in concrete (not in raceway).

C. Connectors for Grounding and Bonding:
   1. Description: Connectors appropriate for the application and suitable for the conductors and items to be connected; listed and labeled as complying with UL 467.
   2. Unless otherwise indicated, use exothermic welded connections for underground, concealed and other inaccessible connections.
   3. Unless otherwise indicated, use mechanical connectors, compression connectors, or exothermic welded connections for accessible connections.
      a. Exceptions:
         1) Use exothermic welded connections for connections to metal building frame.
   4. Manufacturers - Mechanical and Compression Connectors:
      a. Advanced Lightning Technology (ALT); _____: www.altfab.com/#sle.
      b. Burndy LLC; _____: www.burndy.com/#sle.
      c. Harger Lightning & Grounding; _____: www.harger.com/#sle.
      d. Thomas & Betts Corporation; _____: www.tnb.com/#sle.
      e. Substitutions: See Section 01600 - Product Requirements.
   5. Manufacturers - Exothermic Welded Connections:
      a. Burndy LLC; _____: www.burndy.com/#sle.
      b. Cadweld, a brand of Erico International Corporation; _____: www.erico.com/#sle.
      c. thermOweld, subsidiary of Continental Industries; division of Burndy LLC; _____: www.thermoweld.com/#sle.
      d. Substitutions: See Section 01600 - Product Requirements.

D. Ground Bars:
   1. Description: Copper rectangular ground bars with mounting brackets and insulators.
   2. Size: As indicated.
   3. Holes for Connections: As indicated or as required for connections to be made.
   4. Manufacturers:
      a. Advanced Lightning Technology (ALT); _____: www.altfab.com/#sle.
      b. Erico International Corporation; _____: www.erico.com/#sle.
      c. Harger Lightning & Grounding; _____: www.harger.com/#sle.

d. thermOweld, subsidiary of Continental Industries; division of Burndy LLC; _____: www.thermoweld.com/#sle.
e. Substitutions: See Section 01600 - Product Requirements.

E. Ground Rod Electrodes:
1. Comply with NEMA GR 1.
2. Material: Copper-bonded (copper-clad) steel.
3. Size: 3/4 inch (19 mm) diameter by 10 feet (3.0 m) length, unless otherwise indicated.
4. Manufacturers:
a. Advanced Lightning Technology (ALT); _____: www.altfab.com/#sle.
b. Erico International Corporation; _____: www.erico.com/#sle.
c. Galvan Industries, Inc; _____: www.galvanelectrical.com/#sle.
d. Harger Lightning & Grounding; _____: www.harger.com/#sle.
e. Substitutions: See Section 01600 - Product Requirements.

F. Ground Access Wells:
1. Description: Open bottom round or rectangular well with access cover for testing and inspection; suitable for the expected load at the installed location.
a. Areas Exposed to Vehicular Traffic: Rated for not less than 40,000 pounds (178 kN) vertical design load.
2. Size: As required to provide adequate access for testing and inspection, but not less than minimum size requirements specified.
a. Round Wells: Not less than 8 inches (200 mm) in diameter.
b. Rectangular Wells: Not less than 12 by 12 inches (300 by 300 mm).
3. Depth: As required to extend below frost line to prevent frost upheaval, but not less than 10 inches (250 mm).
4. Cover: Factory-identified by permanent means with word "GROUND".
5. Manufacturers:
a. Advanced Lightning Technology (ALT); _____: www.altfab.com/#sle.
b. Erico International Corporation; _____: www.erico.com/#sle.
c. Harger Lightning & Grounding; _____: www.harger.com/#sle.
d. thermOweld, subsidiary of Continental Industries; division of Burndy LLC; _____: www.thermoweld.com/#sle.
e. Substitutions: See Section 01600 - Product Requirements.

PART 3 – EXECUTION

3.1 EXAMINATION

A. Verify that work likely to damage grounding and bonding system components has been completed.
B. Verify that field measurements are as indicated.
C. Verify that conditions are satisfactory for installation prior to starting work.

3.2 INSTALLATION

A. Install products in accordance with manufacturer's instructions.
B. Perform work in accordance with NECA 1 (general workmanship).
C. Ground Rod Electrodes: Unless otherwise indicated, install ground rod electrodes vertically. Where encountered rock prohibits vertical installation, install at 45 degree angle or bury horizontally in trench at least 30 inches (750 mm) deep in accordance with NFPA 70 or provide ground plates.
1. Outdoor Installations: Unless otherwise indicated, install with top of rod 6 inches (150 mm) below finished grade.
D. Make grounding and bonding connections using specified connectors.
1. Remove appropriate amount of conductor insulation for making connections without cutting, nicking or damaging conductors. Do not remove conductor strands to facilitate insertion into connector.

2. Remove nonconductive paint, enamel, or similar coating at threads, contact points, and contact surfaces.
3. Exothermic Welds: Make connections using molds and weld material suitable for the items to be connected in accordance with manufacturer's recommendations.
4. Mechanical Connectors: Secure connections according to manufacturer's recommended torque settings.
5. Compression Connectors: Secure connections using manufacturer's recommended tools and dies.

E. Identify grounding and bonding system components in accordance with Section 260553.

3.3 FIELD QUALITY CONTROL

A. See Section 014000 - Quality Requirements, for additional requirements.
B. Inspect and test in accordance with NETA ATS except Section 4.
C. Perform inspections and tests listed in NETA ATS, Section 7.13.
D. Perform ground electrode resistance tests under normally dry conditions. Precipitation within the previous 48 hours does not constitute normally dry conditions.
E. Investigate and correct deficiencies where measured ground resistances do not comply with specified requirements.
F. Submit detailed reports indicating inspection and testing results and corrective actions taken.

END OF SECTION

SECTION 16071

FASTENINGS AND SUPPORTS

PART 1 – GENERAL

1.1 SECTION INCLUDES
A. Support and attachment requirements and components for equipment, conduit, cable, boxes, and other electrical work.

1.2 RELATED REQUIREMENTS
A. Section 03300 - Cast-in-Place Concrete: Concrete equipment pads.
B. Section 16133 - Conduit for Electrical Systems: Additional support and attachment requirements for conduits.
C. Section 16152 - Boxes for Electrical Systems: Additional support and attachment requirements for boxes.
D. Section 16510 - Exterior Lighting: Additional support and attachment requirements for exterior luminaires.

1.3 REFERENCE STANDARDS
A. ASTM A123/A123M - Standard Specification for Zinc (Hot-Dip Galvanized) Coatings on Iron and Steel Products; 2017.
B. ASTM A153/A153M - Standard Specification for Zinc Coating (Hot-Dip) on Iron and Steel Hardware; 2016a.
C. ASTM B633 - Standard Specification for Electrodeposited Coatings of Zinc on Iron and Steel; 2019.
D. MFMA-4 - Metal Framing Standards Publication; 2004.
E. NECA 1 - Standard for Good Workmanship in Electrical Construction; 2015.
F. NFPA 70 - National Electrical Code; Most Recent Edition Adopted by Authority Having Jurisdiction, Including All Applicable Amendments and Supplements.

1.4 ADMINISTRATIVE REQUIREMENTS
A. Coordination:
   1. Coordinate sizes and arrangement of supports and bases with the actual equipment and components to be installed.
   2. Coordinate compatibility of support and attachment components with mounting surfaces at the installed locations.
   3. Notify Architect of any conflicts with or deviations from Contract Documents. Obtain direction before proceeding with work.
B. Sequencing:
   1. Do not install products on or provide attachment to concrete surfaces until concrete has fully cured in accordance with Section 03300.

1.5 QUALITY ASSURANCE
A. Comply with NFPA 70.
B. Comply with applicable building code.

1.6 DELIVERY, STORAGE, AND HANDLING
A. Receive, inspect, handle, and store products in accordance with manufacturer's instructions.

PART 2 – PRODUCTS

2.1 SUPPORT AND ATTACHMENT COMPONENTS
A. General Requirements:
   1. Provide all required hangers, supports, anchors, fasteners, fittings, accessories, and hardware as necessary for the complete installation of electrical work.
   2. Provide products listed, classified, and labeled as suitable for the purpose intended, where applicable.

3. Where support and attachment component types and sizes are not indicated, select in accordance with manufacturer's application criteria as required for the load to be supported with a minimum safety factor of 5 times the applied force. Include consideration for vibration, equipment operation, and shock loads where applicable.
4. Do not use products for applications other than as permitted by NFPA 70 and product listing.
5. Do not use wire, chain, perforated pipe strap, or wood for permanent supports unless specifically indicated or permitted.
6. Steel Components: Use corrosion resistant materials suitable for the environment where installed.
    a. Outdoor and Damp or Wet Indoor Locations: Use galvanized steel, stainless steel, or approved equivalent unless otherwise indicated.
    b. Galvanized Steel: Hot-dip galvanized after fabrication in accordance with ASTM A123/A123M or ASTM A153/A153M.

B. Conduit and Cable Supports: Straps, clamps, etc. suitable for the conduit or cable to be supported.
1. Conduit Straps: One-hole or two-hole type; steel or malleable iron.
2. Conduit Clamps: Bolted type unless otherwise indicated.
3. Manufacturers:
    a. Cooper Crouse-Hinds, a division of Eaton Corporation; _____: www.cooperindustries.com/#sle.
    b. Erico International Corporation; _____: www.erico.com/#sle.
    c. HoldRite, a brand of Reliance Worldwide Corporation; _____: www.holdrite.com/#sle.
    d. O-Z/Gedney, a brand of Emerson Electric Co; _____: www.emerson.com/#sle.
    e. Substitutions: See Section 01600 - Product Requirements.

C. Outlet Box Supports: Hangers, brackets, etc. suitable for the boxes to be supported.
1. Manufacturers:
    a. Cooper Crouse-Hinds, a division of Eaton Corporation; _____: www.cooperindustries.com/#sle.
    b. Erico International Corporation; _____: www.erico.com/#sle.
    c. HoldRite, a brand of Reliance Worldwide Corporation; _____: www.holdrite.com/#sle.
    d. O-Z/Gedney, a brand of Emerson Electric Co; _____: www.emerson.com/#sle.
    e. Thomas & Betts Corporation; _____: www.tnb.com/#sle.
    f. Substitutions: See Section 01600 - Product Requirements.

D. Anchors and Fasteners:
1. Unless otherwise indicated and where not otherwise restricted, use the anchor and fastener types indicated for the specified applications.
2. Concrete: Use preset concrete inserts, expansion anchors, or screw anchors.
3. Solid or Grout-Filled Masonry: Use expansion anchors or screw anchors.
4. Hollow Masonry: Use toggle bolts.
5. Hollow Stud Walls: Use toggle bolts.
6. Steel: Use beam clamps, machine bolts, or welded threaded studs.
7. Sheet Metal: Use sheet metal screws.
8. Wood: Use wood screws.
9. Plastic and lead anchors are not permitted.
10. Powder-actuated fasteners are not permitted.
11. Hammer-driven anchors and fasteners are not permitted.
12. Preset Concrete Inserts: Continuous metal channel (strut) and spot inserts specifically designed to be cast in concrete ceilings, walls, and floors.
    a. Comply with MFMA-4.
    b. Channel Material: Use galvanized steel.
    c. Manufacturer: Same as manufacturer of metal channel (strut) framing system.
13. Post-Installed Concrete and Masonry Anchors: Evaluated and recognized by ICC Evaluation Service, LLC (ICC-ES) for compliance with applicable building code.
14. Manufacturers - Mechanical Anchors:
    a. Hilti, Inc; _____: www.us.hilti.com/#sle.

b. ITW Red Head, a division of Illinois Tool Works, Inc; _____: www.itwredhead.com/#sle.
c. Powers Fasteners, Inc; _____: www.powers.com/#sle.
d. Simpson Strong-Tie Company Inc; _____: www.strongtie.com/#sle.
e. Substitutions: See Section 01600 - Product Requirements.

PART 3 – EXECUTION

3.1 EXAMINATION

A. Verify that field measurements are as indicated.
B. Verify that mounting surfaces are ready to receive support and attachment components.
C. Verify that conditions are satisfactory for installation prior to starting work.

3.2 INSTALLATION

A. Install products in accordance with manufacturer's instructions.
B. Perform work in accordance with NECA 1 (general workmanship).
C. Install anchors and fasteners in accordance with ICC Evaluation Services, LLC (ICC-ES) evaluation report conditions of use where applicable.
D. Do not penetrate or otherwise notch or cut structural members without approval of Structural Engineer.
E. Equipment Support and Attachment:
   1. Use metal channel (strut) to support surface-mounted equipment in wet or damp locations to provide space between equipment and mounting surface.
   2. Unless otherwise indicated, mount floor-mounted equipment on properly sized 4 inch (100 mm) high concrete pad constructed in accordance with Section 03300.
   3. Securely fasten floor-mounted equipment. Do not install equipment such that it relies on its own weight for support.
F. Conduit Support and Attachment: Also comply with Section 16071.
G. Box Support and Attachment: Also comply with Section 16152.
H. Exterior Luminaire Support and Attachment: Also comply with Section 16510.
I. Preset Concrete Inserts: Use manufacturer provided closure strips to inhibit concrete seepage during concrete pour.
J. Secure fasteners according to manufacturer's recommended torque settings.
K. Remove temporary supports.

3.3 FIELD QUALITY CONTROL

A. See Section 01400 - Quality Requirements, for additional requirements.
B. Inspect support and attachment components for damage and defects.
C. Repair cuts and abrasions in galvanized finishes using zinc-rich paint recommended by manufacturer. Replace components that exhibit signs of corrosion.
D. Correct deficiencies and replace damaged or defective support and attachment components.

END OF SECTION

SECTION 16120

LOW-VOLTAGE ELECTRICAL POWER CONDUCTORS AND CABLES

PART 1 – GENERAL

1.1 SECTION INCLUDES

A. Single conductor building wire.
B. Underground feeder and branch-circuit cable.
C. Service entrance cable.
D. Wiring connectors.
E. Electrical tape.
F. Heat shrink tubing.
G. Wire pulling lubricant.
H. Cable ties.

1.2 RELATED REQUIREMENTS

A. Section 16014 - Selective Demolition for Electrical: Disconnection, removal, and/or extension of existing electrical conductors and cables.
B. Section 16060 - Grounding and Bonding for Electrical Systems: Additional requirements for grounding conductors and grounding connectors.
C. Section 16155 - Identification for Electrical Systems: Identification products and requirements.
D. Section 02315 - Excavating, trenching, and backfilling.

1.3 REFERENCE STANDARDS

A. ASTM B3 - Standard Specification for Soft or Annealed Copper Wire; 2013 (Reapproved 2018).
B. ASTM B8 - Standard Specification for Concentric-Lay-Stranded Copper Conductors, Hard, Medium-Hard, or Soft; 2011 (Reapproved 2017).
C. ASTM B33 - Standard Specification for Tin-Coated Soft or Annealed Copper Wire for Electrical Purposes; 2010, with Editorial Revision (2020).
D. ASTM B787/B787M - Standard Specification for 19 Wire Combination Unilay-Stranded Copper Conductors for Subsequent Insulation; 2004 (Reapproved 2020).
E. ASTM D3005 - Standard Specification for Low-Temperature Resistant Vinyl Chloride Plastic Pressure-Sensitive Electrical Insulating Tape; 2017.
F. ASTM D4388 - Standard Specification for Nonmetallic Semi-Conducting and Electrically Insulating Rubber Tapes; 2013.
G. NECA 1 - Standard for Good Workmanship in Electrical Construction; 2015.
H. NEMA WC 70 - Power Cables Rated 2000 Volts or Less for the Distribution of Electrical Energy; 2009.
I. NETA ATS - Acceptance Testing Specifications for Electrical Power Equipment and Systems; 2017.
J. NFPA 70 - National Electrical Code; Most Recent Edition Adopted by Authority Having Jurisdiction, Including All Applicable Amendments and Supplements.
K. UL 44 - Thermoset-Insulated Wires and Cables; Current Edition, Including All Revisions.
L. UL 83 - Thermoplastic-Insulated Wires and Cables; Current Edition, Including All Revisions.
M. UL 486A-486B - Wire Connectors; Current Edition, Including All Revisions.
N. UL 486C - Splicing Wire Connectors; Current Edition, Including All Revisions.
O. UL 486D - Sealed Wire Connector Systems; Current Edition, Including All Revisions.
P. UL 510 - Polyvinyl Chloride, Polyethylene, and Rubber Insulating Tape; Current Edition, Including All Revisions.
Q. UL 854 - Service-Entrance Cables; Current Edition, Including All Revisions.

1.4 ADMINISTRATIVE REQUIREMENTS

A. Coordination:
   1. Coordinate sizes of raceways, boxes, and equipment enclosures installed under other sections with the actual conductors to be installed, including adjustments for conductor sizes increased for voltage drop.
   2. Coordinate the installation of direct burial cable with other trades to avoid conflicts with piping or other potential conflicts.

3. Coordinate with electrical equipment installed under other sections to provide terminations suitable for use with the conductors to be installed.
4. Notify Architect of any conflicts with or deviations from Contract Documents. Obtain direction before proceeding with work.

1.5 QUALITY ASSURANCE

A. Comply with requirements of NFPA 70.

1.6 DELIVERY, STORAGE, AND HANDLING

A. Receive, inspect, handle, and store conductors and cables in accordance with manufacturer's instructions.

1.7 FIELD CONDITIONS

A. Do not install or otherwise handle thermoplastic-insulated conductors at temperatures lower than 14 degrees F (-10 degrees C), unless otherwise permitted by manufacturer's instructions. When installation below this temperature is unavoidable, notify Architect and obtain direction before proceeding with work.

PART 2 – PRODUCTS

2.1 CONDUCTOR AND CABLE APPLICATIONS

A. Do not use conductors and cables for applications other than as permitted by NFPA 70 and product listing.
B. Provide single conductor building wire installed in suitable raceway unless otherwise indicated, permitted, or required.

2.2 CONDUCTOR AND CABLE GENERAL REQUIREMENTS

A. Provide products that comply with requirements of NFPA 70.
B. Provide products listed, classified, and labeled as suitable for the purpose intended.
C. Unless specifically indicated to be excluded, provide all required conduit, boxes, wiring, connectors, etc. as required for a complete operating system.
D. Comply with NEMA WC 70.
E. Thermoplastic-Insulated Conductors and Cables: Listed and labeled as complying with UL 83.
F. Thermoset-Insulated Conductors and Cables: Listed and labeled as complying with UL 44.
G. Conductors for Grounding and Bonding: Also comply with Section 16060.
H. Conductor Material:
   1. Provide copper conductors only. Aluminum conductors are not acceptable for this project. Conductor sizes indicated are based on copper.
   2. Copper Conductors: Soft drawn annealed, 98 percent conductivity, uncoated copper conductors complying with ASTM B3, ASTM B8, or ASTM B787/B787M unless otherwise indicated.
   3. Tinned Copper Conductors: Comply with ASTM B33.
I. Conductor Color Coding:
   1. Color code conductors as indicated unless otherwise required by the authority having jurisdiction. Maintain consistent color coding throughout project.
   2. Color Coding Method: Integrally colored insulation.
   3. Color Code:
      a. 208Y/120 V, 3 Phase, 4 Wire System:
         1) Phase A: Black.
         2) Phase B: Red.
         3) Phase C: Blue.
         4) Neutral/Grounded: White.
      b. Equipment Ground, All Systems: Green.

2.3 SINGLE CONDUCTOR BUILDING WIRE

A. Manufacturers:
   1. Copper Building Wire:
      a. Cerro Wire LLC: www.cerrowire.com/#sle.
      b. Encore Wire Corporation: www.encorewire.com/#sle.
      c. General Cable Technologies Corporation; _____: www.generalcable.com/#sle.
      d. Southwire Company: www.southwire.com/#sle.
      e. Substitutions: See Section 01600 - Product Requirements.

B. Description: Single conductor insulated wire.

C. Conductor Stranding:
   1. Feeders and Branch Circuits:
      a. Size 10 AWG and Smaller: Solid.
      b. Size 8 AWG and Larger: Stranded.
   2. Control Circuits: Stranded.

D. Insulation Voltage Rating: 600 V.

E. Insulation:
   1. Copper Building Wire: Type THHN/THWN or THHN/THWN-2, except as indicated below.
      a. Size 4 AWG and Larger: Type XHHW-2.
      b. Installed Underground: Type XHHW-2.

2.4 WIRING CONNECTORS

A. Description: Wiring connectors appropriate for the application, suitable for use with the conductors to be connected, and listed as complying with UL 486A-486B or UL 486C as applicable.

B. Connectors for Grounding and Bonding: Comply with Section 16060.

C. Wiring Connectors for Splices and Taps:
   1. Copper Conductors Size 8 AWG and Smaller: Use twist-on insulated spring connectors.
   2. Copper Conductors Size 6 AWG and Larger: Use mechanical connectors or compression connectors.

D. Wiring Connectors for Terminations:
   1. Provide terminal lugs for connecting conductors to equipment furnished with terminations designed for terminal lugs.
   2. Provide compression adapters for connecting conductors to equipment furnished with mechanical lugs when only compression connectors are specified.
   3. Where over-sized conductors are larger than the equipment terminations can accommodate, provide connectors suitable for reducing to appropriate size, but not less than required for the rating of the overcurrent protective device.
   4. Copper Conductors Size 8 AWG and Larger: Use mechanical connectors or compression connectors where connectors are required.
   5. Stranded Conductors Size 10 AWG and Smaller: Use crimped terminals for connections to terminal screws.
   6. Conductors for Control Circuits: Use crimped terminals for all connections.

E. Do not use insulation-piercing or insulation-displacement connectors designed for use with conductors without stripping insulation.

F. Do not use push-in wire connectors as a substitute for twist-on insulated spring connectors.

G. Twist-on Insulated Spring Connectors: Rated 600 V, 221 degrees F (105 degrees C) for standard applications and 302 degrees F (150 degrees C) for high temperature applications; pre-filled with sealant and listed as complying with UL 486D for damp and wet locations.
   1. Manufacturers:
      a. 3M: www.3m.com/#sle.
      b. Ideal Industries, Inc: www.idealindustries.com/#sle.
      c. NSI Industries LLC: www.nsiindustries.com/#sle.
      d. Substitutions: See Section 01600 - Product Requirements.

H. Mechanical Connectors: Provide bolted type or set-screw type.
   1. Manufacturers:
      a. Burndy LLC; _____: www.burndy.com/#sle.
      b. Ilsco: www.ilsco.com/#sle.
      c. Thomas & Betts Corporation: www.tnb.com/#sle.
      d. Substitutions: See Section 01600 - Product Requirements.

I. Compression Connectors: Provide circumferential type or hex type crimp configuration.
   1. Manufacturers:
      a. Burndy LLC; _____: www.burndy.com/#sle.
      b. Ilsco: www.ilsco.com/#sle.
      c. Thomas & Betts Corporation: www.tnb.com/#sle.
      d. Substitutions: See Section 01600 - Product Requirements.

J. Crimped Terminals: Nylon-insulated, with insulation grip and terminal configuration suitable for connection to be made.
   1. Manufacturers:
      a. Burndy LLC; _____: www.burndy.com/#sle.
      b. Ilsco: www.ilsco.com/#sle.
      c. Thomas & Betts Corporation: www.tnb.com/#sle.
      d. Substitutions: See Section 01600 - Product Requirements.

2.5 ACCESSORIES

A. Electrical Tape:
   1. Manufacturers:
      a. 3M: www.3m.com/#sle.
      b. Plymouth Rubber Europa: www.plymouthrubber.com/#sle.
      c. Substitutions: See Section 01600 - Product Requirements.
   2. Vinyl Insulating Electrical Tape: Complying with ASTM D3005 and listed as complying with UL 510; minimum thickness of 7 mil (0.18 mm); resistant to abrasion, corrosion, and sunlight; conformable for application down to 0 degrees F (-18 degrees C) and suitable for continuous temperature environment up to 221 degrees F (105 degrees C).
   3. Rubber Splicing Electrical Tape: Ethylene Propylene Rubber (EPR) tape, complying with ASTM D4388; minimum thickness of 30 mil (0.76 mm); suitable for continuous temperature environment up to 194 degrees F (90 degrees C) and short-term 266 degrees F (130 degrees C) overload service.
   4. Electrical Filler Tape: Rubber-based insulating moldable putty, minimum thickness of 125 mil (3.2 mm); suitable for continuous temperature environment up to 176 degrees F (80 degrees C).
   5. Varnished Cambric Electrical Tape: Cotton cambric fabric tape, with or without adhesive, oil-primed and coated with high-grade insulating varnish; minimum thickness of 7 mil (0.18 mm); suitable for continuous temperature environment up to 221 degrees F (105 degrees C).
   6. Moisture Sealing Electrical Tape: Insulating mastic compound laminated to flexible, all-weather vinyl backing; minimum thickness of 90 mil (2.3 mm).

B. Heat Shrink Tubing: Heavy-wall, split-resistant, with factory-applied adhesive; rated 600 V; suitable for direct burial applications; listed as complying with UL 486D.
   1. Manufacturers:
      a. 3M: www.3m.com/#sle.
      b. Burndy LLC; _____: www.burndy.com/#sle.
      c. Thomas & Betts Corporation: www.tnb.com/#sle.
      d. Substitutions: See Section 01600 - Product Requirements.

C. Wire Pulling Lubricant: Listed; suitable for use with the conductors or cables to be installed and suitable for use at the installation temperature.
   1. Manufacturers:
      a. 3M: www.3m.com/#sle.
      b. American Polywater Corporation: www.polywater.com/#sle.
      c. Ideal Industries, Inc: www.idealindustries.com/#sle.
      d. Substitutions: See Section 01600 - Product Requirements.
D. Cable Ties: Material and tensile strength rating suitable for application.
   1. Manufacturers:
      a. Burndy LLC; _____: www.burndy.com/#sle.
      b. Substitutions: See Section 01600 - Product Requirements.

PART 3 – EXECUTION

3.1 EXAMINATION

A. Verify that interior of building has been protected from weather.
B. Verify that work likely to damage wire and cable has been completed.
C. Verify that raceways, boxes, and equipment enclosures are installed and are properly sized to accommodate conductors and cables in accordance with NFPA 70.
D. Verify that field measurements are as indicated.
E. Verify that conditions are satisfactory for installation prior to starting work.

3.2 PREPARATION

A. Clean raceways thoroughly to remove foreign materials before installing conductors and cables.

3.3 INSTALLATION

A. Circuiting Requirements:
   1. Unless dimensioned, circuit routing indicated is diagrammatic.
   2. When circuit destination is indicated without specific routing, determine exact routing required.
   3. Arrange circuiting to minimize splices.
   4. Maintain separation of Class 1, Class 2, and Class 3 remote-control, signaling, and power-limited circuits in accordance with NFPA 70.
   5. Common Neutrals: Unless otherwise indicated, sharing of neutral/grounded conductors among up to three single phase branch circuits of different phases installed in the same raceway is not permitted. Provide dedicated neutral/grounded conductor for each individual branch circuit.
B. Install products in accordance with manufacturer's instructions.
C. Perform work in accordance with NECA 1 (general workmanship).
D. Installation in Raceway:
   1. Tape ends of conductors and cables to prevent infiltration of moisture and other contaminants.
   2. Pull all conductors and cables together into raceway at same time.
   3. Do not damage conductors and cables or exceed manufacturer's recommended maximum pulling tension and sidewall pressure.
   4. Use suitable wire pulling lubricant where necessary, except when lubricant is not recommended by the manufacturer.
E. Direct Burial Cable Installation:
   1. Provide trenching and backfilling in accordance with Section 02315 - Trenching.
   2. Install cable with minimum cover of 24 inches (610 mm) unless otherwise indicated or required.
   3. Protect cables from damage in accordance with NFPA 70.
   4. Provide underground warning tape in accordance with Section 16155 along entire cable length.

F. Paralleled Conductors: Install conductors of the same length and terminate in the same manner.
G. Secure and support conductors and cables in accordance with NFPA 70 using suitable supports and methods approved by the authority having jurisdiction. Provide independent support from building structure. Do not provide support from raceways, piping, ductwork, or other systems.
H. Install conductors with a minimum of 12 inches (300 mm) of slack at each outlet.
I. Neatly train and bundle conductors inside boxes, wireways, panelboards and other equipment enclosures.
J. Group or otherwise identify neutral/grounded conductors with associated ungrounded conductors inside enclosures in accordance with NFPA 70.
K. Make wiring connections using specified wiring connectors.
    1. Make splices and taps only in accessible boxes. Do not pull splices into raceways or make splices in conduit bodies or wiring gutters.
    2. Remove appropriate amount of conductor insulation for making connections without cutting, nicking or damaging conductors.
    3. Do not remove conductor strands to facilitate insertion into connector.
    4. Clean contact surfaces on conductors and connectors to suitable remove corrosion, oxides, and other contaminates. Do not use wire brush on plated connector surfaces.
    5. Mechanical Connectors: Secure connections according to manufacturer's recommended torque settings.
    6. Compression Connectors: Secure connections using manufacturer's recommended tools and dies.
L. Insulate splices and taps that are made with uninsulated connectors using methods suitable for the application, with insulation and mechanical strength at least equivalent to unspliced conductors.
    1. Damp Locations: Use insulating covers specifically designed for the connectors, electrical tape, or heat shrink tubing.
        a. For connections with insulating covers, apply outer covering of moisture sealing electrical tape.
        b. For taped connections, follow same procedure as for dry locations but apply outer covering of moisture sealing electrical tape.
    2. Wet Locations: Use heat shrink tubing.
M. Insulate ends of spare conductors using vinyl insulating electrical tape.
N. Unless specifically indicated to be excluded, provide final connections to all equipment and devices, including those furnished by others, as required for a complete operating system.

3.4 FIELD QUALITY CONTROL

A. See Section 01400 - Quality Requirements, for additional requirements.
B. Inspect and test in accordance with NETA ATS, except Section 4.
C. Perform inspections and tests listed in NETA ATS, Section 7.3.2. The insulation resistance test is required for all conductors. The resistance test for parallel conductors listed as optional is not required.
D. Correct deficiencies and replace damaged or defective conductors and cables.

END OF SECTION

SECTION 16133

CONDUIT, CONDUIT FASTENINGS AND CONDUIT FITTINGS

PART 1 – GENERAL

1.1 SECTION INCLUDES

A. Galvanized steel rigid metal conduit (RMC).
B. Intermediate metal conduit (IMC).
C. PVC-coated galvanized steel rigid metal conduit (RMC).
D. Rigid polyvinyl chloride (PVC) conduit.
E. Reinforced thermosetting resin conduit (RTRC).
F. Conduit fittings.
G. Accessories.

1.2 RELATED REQUIREMENTS

A. Section 02315 – Excavation, Trenching and Filling.
B. Section 02581 – Concrete Encased Ductbanks, and Manholes.
C. Section 02582 – Direct Buried Underground Cable Ducts.
D. Section 16120 - Low-Voltage Electrical Power Conductors and Cables.
E. Section 16060 - Grounding and Bonding for Electrical Systems.
   1. Includes additional requirements for fittings for grounding and bonding.
F. Section 16071 - Fastenings and Supports.
G. Section 16152 - Cable Splice and Junction Boxes.
H. Section 16155 - Identification for Electrical Systems: Identification products and requirements.

1.3 REFERENCE STANDARDS

A. ANSI C80.1 - American National Standard for Electrical Rigid Steel Conduit (ERSC); 2015.
B. ANSI C80.6 - American National Standard for Electrical Intermediate Metal Conduit (EIMC); 2005.
C. NECA 1 - Standard for Good Workmanship in Electrical Construction; 2015.
D. NECA 101 - Standard for Installing Steel Conduits (Rigid, IMC, EMT); 2013.
E. NECA 111 - Standard for Installing Nonmetallic Raceways (RNC, ENT, LFNC); 2003.
F. NEMA FB 1 - Fittings, Cast Metal Boxes, and Conduit Bodies for Conduit, Electrical Metallic Tubing, and Cable; 2014.
G. NEMA RN 1 - Polyvinyl-Chloride (PVC) Externally Coated Galvanized Rigid Steel Conduit and Intermediate Metal Conduit; 2018.
H. NEMA TC 2 - Electrical Polyvinyl Chloride (PVC) Conduit; 2013.
I. NEMA TC 3 - Polyvinyl Chloride (PVC) Fittings for Use with Rigid PVC Conduit and Tubing; 2016.
J. NEMA TC 14 (SERIES) - Reinforced Thermosetting Resin Conduit and Fittings Series; 2015.
K. NEMA TC 14.AG - Aboveground Reinforced Thermosetting Resin Conduit (RTRC) and Fittings; 2015.
L. NEMA TC 14.BG - Belowground Reinforced Thermosetting Resin Conduit (RTRC) and Fittings; 2015.
M. NEMA TC 14.XW - Extra Heavy Wall Aboveground Reinforced Thermosetting Resin Conduit (RTRC) and Fittings; 2015.
N. NFPA 70 - National Electrical Code; Most Recent Edition Adopted by Authority Having Jurisdiction, Including All Applicable Amendments and Supplements.
O. UL 6 - Electrical Rigid Metal Conduit-Steel; Current Edition, Including All Revisions.
P. UL 514B - Conduit, Tubing, and Cable Fittings; Current Edition, Including All Revisions.
Q. UL 651 - Schedule 40, 80, Type EB and A Rigid PVC Conduit and Fittings; Current Edition, Including All Revisions.
R. UL 1242 - Electrical Intermediate Metal Conduit-Steel; Current Edition, Including All Revisions.
S. UL 2420 - Belowground Reinforced Thermosetting Resin Conduit (RTRC) and Fittings; Current Edition, Including All Revisions.
T. UL 2515 - Aboveground Reinforced Thermosetting Resin Conduit (RTRC) and Fittings; Current Edition, Including All Revisions.
U. UL 2515A - Standard for Supplemental Requirements for Extra Heavy Wall Reinforced Thermosetting Resin Conduit (RTRC) and Fittings; Current Edition, Including All Revisions.

1.4 ADMINISTRATIVE REQUIREMENTS

A. Coordination:
   1. Coordinate minimum sizes of conduits with the actual conductors to be installed, including adjustments for conductor sizes increased for voltage drop.
   2. Coordinate the arrangement of conduits with structural members, ductwork, piping, equipment and other potential conflicts installed under other sections or by others.
   3. Verify exact conduit termination locations required for boxes, enclosures, and equipment installed under other sections or by others.
   4. Coordinate the work with other trades to provide roof penetrations that preserve the integrity of the roofing system and do not void the roof warranty.
   5. Notify Architect of any conflicts with or deviations from Contract Documents. Obtain direction before proceeding with work.

B. Sequencing:
   1. Do not begin installation of conductors and cables until installation of conduit is complete between outlet, junction and splicing points.

1.5 SUBMITTALS

A. See Section 01300 - Administrative Requirements for submittals procedures.

B. Shop Drawings:
   1. Indicate proposed arrangement for conduits to be installed within structural concrete slabs, where permitted.
   2. Include proposed locations of roof penetrations and proposed methods for sealing.

C. Project Record Documents: Record actual routing for conduits installed underground, conduits embedded within concrete slabs, and conduits 2 inch (53 mm) trade size and larger.

1.6 QUALITY ASSURANCE

A. Comply with requirements of NFPA 70.

B. Product Listing Organization Qualifications: An organization recognized by OSHA as a Nationally Recognized Testing Laboratory (NRTL) and acceptable to authorities having jurisdiction.

1.7 DELIVERY, STORAGE, AND HANDLING

A. Receive, inspect, handle, and store conduit and fittings in accordance with manufacturer's instructions.

PART 2 – PRODUCTS

2.1 CONDUIT APPLICATIONS

A. Do not use conduit and associated fittings for applications other than as permitted by NFPA 70 and product listing.

B. Unless otherwise indicated and where not otherwise restricted, use the conduit types indicated for the specified applications. Where more than one listed application applies, comply with the most restrictive requirements. Where conduit type for a particular application is not specified, use galvanized steel rigid metal conduit.

C. Underground:
   1. Exterior, Direct-Buried: Use galvanized steel rigid metal conduit, intermediate metallic conduit (IMC), PVC-coated galvanized steel rigid metal conduit, rigid PVC conduit, or reinforced thermosetting resin conduit (RTRC).
   2. Exterior, Embedded Within Concrete: Use galvanized steel rigid metal conduit, intermediate metallic conduit (IMC), PVC-coated galvanized steel rigid metal conduit, rigid PVC conduit, or reinforced thermosetting resin conduit (RTRC).
   3. Where rigid polyvinyl (PVC) conduit is provided, transition to galvanized steel rigid metal conduit where emerging from underground.

4. Where rigid polyvinyl (PVC) conduit larger than 2 inch (53 mm) trade size is provided, use galvanized steel rigid metal conduit elbows for bends.
5. Where steel conduit is installed in direct contact with earth where soil has a resistivity of less than 2000 ohm-centimeters or is characterized as severely corrosive based on soils report or local experience, use corrosion protection tape to provide supplementary corrosion protection or use PVC-coated galvanized steel rigid metal conduit.
6. Where steel conduit emerges from concrete into soil, use corrosion protection tape to provide supplementary corrosion protection for a minimum of 4 inches (100 mm) on either side of where conduit emerges or use PVC-coated galvanized steel rigid metal conduit.

D. Exposed, Exterior: Use galvanized steel rigid metal conduit, intermediate metal conduit (IMC), or PVC-coated galvanized steel rigid metal conduit.

2.2 CONDUIT REQUIREMENTS

A. Fittings for Grounding and Bonding: Also comply with Section 16060.
B. Provide all conduit, fittings, supports, and accessories required for a complete raceway system.
C. Provide products listed, classified, and labeled as suitable for the purpose intended.
D. Minimum Conduit Size, Unless Otherwise Indicated:
   1. Branch Circuits: 1/2 inch (16 mm) trade size.
   2. Branch Circuit Homeruns: 3/4 inch (21 mm) trade size.
   3. Control Circuits: 1/2 inch (16 mm) trade size.
   4. Flexible Connections to Luminaires: 3/8 inch (12 mm) trade size.
   5. Underground, Exterior: 1 inch (27 mm) trade size.
E. Where conduit size is not indicated, size to comply with NFPA 70 but not less than applicable minimum size requirements specified.

2.3 GALVANIZED STEEL RIGID METAL CONDUIT (RMC)

A. Manufacturers:
   1. Allied Tube & Conduit: www.alliedeg.com/#sle.
   2. Republic Conduit: www.republic-conduit.com/#sle.
   3. Wheatland Tube, a Division of Zekelman Industries: www.wheatland.com/#sle.
   4. Substitutions: See Section 01600 - Product Requirements.
B. Description: NFPA 70, Type RMC galvanized steel rigid metal conduit complying with ANSI C80.1 and listed and labeled as complying with UL 6.
C. Fittings:
   1. Manufacturers:
      a. Bridgeport Fittings Inc: www.bptfittings.com/#sle.
      b. O-Z/Gedney, a brand of Emerson Electric Co: www.emerson.com/#sle.
      c. Thomas & Betts Corporation: www.tnb.com/#sle.
      d. Substitutions: See Section 01600 - Product Requirements.
   2. Non-Hazardous Locations: Use fittings complying with NEMA FB 1 and listed and labeled as complying with UL 514B.
   3. Material: Use steel or malleable iron.
   4. Connectors and Couplings: Use threaded type fittings only. Threadless set screw and compression (gland) type fittings are not permitted.

2.4 INTERMEDIATE METAL CONDUIT (IMC)

A. Manufacturers:
   1. Allied Tube & Conduit: www.alliedeg.com/#sle.
   2. Republic Conduit: www.republic-conduit.com/#sle.
   3. Wheatland Tube, a Division of Zekelman Industries: www.wheatland.com/#sle.
   4. Substitutions: See Section 01600 - Product Requirements.
B. Description: NFPA 70, Type IMC galvanized steel intermediate metal conduit complying with ANSI C80.6 and listed and labeled as complying with UL 1242.

C. Fittings:
   1. Manufacturers:
      a. Bridgeport Fittings Inc: www.bptfittings.com/#sle.
      b. O-Z/Gedney, a brand of Emerson Electric Co: www.emerson.com/#sle.
      c. Thomas & Betts Corporation: www.tnb.com/#sle.
      d. Substitutions: See Section 01600 - Product Requirements.
   2. Non-Hazardous Locations: Use fittings complying with NEMA FB 1 and listed and labeled as complying with UL 514B.
   3. Material: Use steel or malleable iron.
   4. Connectors and Couplings: Use threaded type fittings only. Threadless set screw and compression (gland) type fittings are not permitted.

2.5 PVC-COATED GALVANIZED STEEL RIGID METAL CONDUIT (RMC)

A. Manufacturers:
   1. Thomas & Betts Corporation; _____: www.tnb.com/#sle.
   2. Robroy Industries; _____: www.robroy.com/#sle.
   3. Substitutions: See Section 01600 - Product Requirements.
B. Description: NFPA 70, Type RMC galvanized steel rigid metal conduit with external polyvinyl chloride (PVC) coating complying with NEMA RN 1 and listed and labeled as complying with UL 6.
C. Exterior Coating: Polyvinyl chloride (PVC), nominal thickness of 40 mil (1.02 mm).
D. PVC-Coated Fittings:
   1. Manufacturer: Same as manufacturer of PVC-coated conduit to be installed.
   2. Non-Hazardous Locations: Use fittings listed and labeled as complying with UL 514B.
   3. Material: Use steel or malleable iron.
   4. Exterior Coating: Polyvinyl chloride (PVC), minimum thickness of 40 mil (1.02 mm).
E. PVC-Coated Supports: Furnish with exterior coating of polyvinyl chloride (PVC), minimum thickness of 15 mil (0.38 mm).

2.6 RIGID POLYVINYL CHLORIDE (PVC) CONDUIT

A. Manufacturers:
   1. Cantex Inc: www.cantexinc.com/#sle.
   2. Carlon, a brand of Thomas & Betts Corporation: www.carlon.com/#sle.
   3. JM Eagle: www.jmeagle.com/#sle.
   4. Substitutions: See Section 01600 - Product Requirements.
B. Description: NFPA 70, Type PVC rigid polyvinyl chloride conduit complying with NEMA TC 2 and listed and labeled as complying with UL 651; Schedule 40 where not subject to physical damage and Schedule 80 where crossing under vehicular traffic areas; rated for use with conductors rated 90 degrees C.
C. Fittings:
   1. Manufacturer: Same as manufacturer of conduit to be connected.
   2. Description: Fittings complying with NEMA TC 3 and listed and labeled as complying with UL 651; material to match conduit.

2.7 REINFORCED THERMOSETTING RESIN CONDUIT (RTRC)

A. Manufacturers:
   1. Champion Fiberglass, Inc; _____: www.championfiberglass.com.
   2. FRE Composites; _____: www.frecompositesinc.com
   3. United Fiberglass of America, Inc; _____: www.unitedfiberglass.com
   4. Substitutions: See Section 01600 - Product Requirements.
B. Applications:
   1. Above Ground, Not Subject to Physical Damage: Use aboveground (AG), SW (Standard Wall), HW (Heavy Wall), or XW (Extra Heavy Wall) RTRC.
   2. Above Ground, Subject to Physical Damage: Use aboveground (AG), XW (Extra Heavy Wall) RTRC.

3. Underground, Direct-Buried: Use belowground (BG), DB (direct burial) RTRC or aboveground (AG) RTRC.

C. Description: NFPA 70, Type RTRC reinforced thermosetting resin conduit complying with NEMA TC 14 (SERIES).
   1. Aboveground (AG) RTRC: Comply with NEMA TC 14.AG and list and label as complying with UL 2515.
   2. Aboveground (AG), XW (Extra Heavy Wall) RTRC: Comply with NEMA TC 14.XW and list and label as complying with UL 2515A.
   3. Belowground (BG) RTRC: Comply with NEMA TC 14.BG and list and label as complying with UL 2420.

D. Supports: Per manufacturer's recommendations.

E. Fittings: Same type and manufacturer as conduit to be connected.

2.8 ACCESSORIES

A. Corrosion Protection Tape: PVC-based, minimum thickness of 20 mil (0.51 mm).

B. Conduit Joint Compound: Corrosion-resistant, electrically conductive; suitable for use with the conduit to be installed.

C. Solvent Cement for PVC Conduit and Fittings: As recommended by manufacturer of conduit and fittings to be installed.

D. Epoxy Adhesive for RTRC Conduit and Fittings: As recommended by manufacturer of conduit and fittings to be installed.

E. Pull Strings: Use nylon cord with average breaking strength of not less than 200 pound-force (890 N).

F. Sealing Compound for Sealing Fittings: Listed for use with the particular fittings to be installed.

G. Flashing Panels for Exterior Wall Penetrations: Premanufactured components and accessories as required to preserve integrity of building envelope; suitable for conduits and facade materials to be installed.

H. Firestop Sleeves: Listed; provide as required to preserve fire resistance rating of building elements.

PART 3 – EXECUTION

3.1 EXAMINATION

A. Verify that field measurements are as indicated.

B. Verify that mounting surfaces are ready to receive conduits.

C. Verify that conditions are satisfactory for installation prior to starting work.

3.2 INSTALLATION

A. Install products in accordance with manufacturer's instructions.

B. Perform work in accordance with NECA 1 (general workmanship).

C. Install galvanized steel rigid metal conduit (RMC) in accordance with NECA 101.

D. Install intermediate metal conduit (IMC) in accordance with NECA 101.

E. Install PVC-coated galvanized steel rigid metal conduit (RMC) using only tools approved by the manufacturer.

F. Install rigid polyvinyl chloride (PVC) conduit in accordance with NECA 111.

G. Conduit Support:
   1. Secure and support conduits in accordance with NFPA 70 and Section 260529 using suitable supports and methods approved by the authority having jurisdiction.
   2. Provide independent support from building structure. Do not provide support from piping, ductwork, or other systems.

H. Connections and Terminations:
   1. Use approved zinc-rich paint or conduit joint compound on field-cut threads of galvanized steel conduits prior to making connections.
   2. Where two threaded conduits must be joined and neither can be rotated, use three-piece couplings or split couplings. Do not use running threads.
   3. Use suitable adapters where required to transition from one type of conduit to another.
   4. Terminate threaded conduits in boxes and enclosures using threaded hubs or double lock nuts for dry locations and raintight hubs for wet locations.
   5. Provide insulating bushings or insulated throats at all conduit terminations to protect conductors.
   6. Secure joints and connections to provide maximum mechanical strength and electrical continuity.

I. Penetrations:
   1. Do not penetrate or otherwise notch or cut structural members, including footings and grade beams, without approval of Structural Engineer.
   2. Make penetrations perpendicular to surfaces unless otherwise indicated.
   3. Provide sleeves for penetrations as indicated or as required to facilitate installation. Set sleeves flush with exposed surfaces unless otherwise indicated or required.
   4. Conceal bends for conduit risers emerging above ground.
   5. Seal interior of conduits entering the building from underground at first accessible point to prevent entry of moisture and gases.
   6. Where conduits penetrate waterproof membrane, seal as required to maintain integrity of membrane.
   7. Make penetrations for roof-mounted equipment within associated equipment openings and curbs where possible to minimize roofing system penetrations. Where penetrations are necessary, seal as indicated or as required to preserve integrity of roofing system and maintain roof warranty. Include proposed locations of penetrations and methods for sealing with submittals.
   8. Install firestopping to preserve fire resistance rating of partitions and other elements, using materials and methods specified in Section 07840.

J. Underground Installation:
   1. Provide trenching and backfilling in accordance with Section 02315.
   2. Minimum Cover, Unless Otherwise Indicated or Required:
      a. Underground, Exterior: 24 inches (610 mm).
   3. Provide underground warning tape in accordance with Section 16155 along entire conduit length for service entrance where not concrete-encased.

K. Conduit Movement Provisions: Where conduits are subject to movement, provide expansion and expansion/deflection fittings to prevent damage to enclosed conductors or connected equipment. This includes, but is not limited to:
   1. Where conduits cross structural joints intended for expansion, contraction, or deflection.
   2. Where calculated in accordance with NFPA 70 for rigid polyvinyl chloride (PVC) conduit installed above ground to compensate for thermal expansion and contraction.
   3. Where calculated in accordance with NFPA 70 for reinforced thermosetting resin conduit (RTRC) conduit installed above ground to compensate for thermal expansion and contraction.
   4. Where conduits are subject to earth movement by settlement or frost.

L. Condensation Prevention: Where conduits cross barriers between areas of potential substantial temperature differential, provide sealing fitting or approved sealing compound at an accessible point near the penetration to prevent condensation. This includes, but is not limited to:
   1. Where conduits pass from outdoors into conditioned interior spaces.
   2. Where conduits pass from unconditioned interior spaces into conditioned interior spaces.

M. Provide pull string in all empty conduits and in conduits where conductors and cables are to be installed by others. Leave minimum slack of 12 inches (300 mm) at each end.

N. Provide grounding and bonding in accordance with Section 16060.

3.3 FIELD QUALITY CONTROL

A. See Section 01400 - Quality Requirements, for additional requirements.
B. Repair cuts and abrasions in galvanized finishes using zinc-rich paint recommended by manufacturer. Replace components that exhibit signs of corrosion.
C. Where coating of PVC-coated galvanized steel rigid metal conduit (RMC) contains cuts or abrasions, repair in accordance with manufacturer's instructions.
D. Correct deficiencies and replace damaged or defective conduits.

3.4 CLEANING

A. Clean interior of conduits to remove moisture and foreign matter.

3.5 PROTECTION

A. Immediately after installation of conduit, use suitable manufactured plugs to provide protection from entry of moisture and foreign material and do not remove until ready for installation of conductors.

END OF SECTION

SECTION 16141

WIRING DEVICES

PART 1 – GENERAL

1.1 SECTION INCLUDES
A. Wall switches.
B. Wall plates.

1.2 RELATED REQUIREMENTS
A. Section 16060 - Grounding and Bonding for Electrical Systems.
B. Section 16152 – Cable Splice and Junction Boxes.
C. Section 16155 - Identification for Electrical Systems: Identification products and requirements.
D. Section 13810 - Lighting Control Devices: Devices for automatic control of lighting, including occupancy sensors and in-wall time switches.

1.3 REFERENCE STANDARDS
A. FS W-C-596 - Connector, Electrical, Power, General Specification for; 2017h.
B. FS W-S-896 - Switches, Toggle (Toggle and Lock), Flush-mounted (General Specification); 2017g.
C. NECA 1 - Standard for Good Workmanship in Electrical Construction; 2015.
D. NECA 130 - Standard for Installing and Maintaining Wiring Devices; 2010.
E. NEMA WD 1 - General Color Requirements for Wiring Devices; 1999 (Reaffirmed 2015).
F. NEMA WD 6 - Wiring Devices - Dimensional Specifications; 2016.
G. NFPA 70 - National Electrical Code; Most Recent Edition Adopted by Authority Having Jurisdiction, Including All Applicable Amendments and Supplements.
H. UL 20 - General-Use Snap Switches; Current Edition, Including All Revisions.
I. UL 514D - Cover Plates for Flush-Mounted Wiring Devices; Current Edition, Including All Revisions.

1.4 ADMINISTRATIVE REQUIREMENTS
A. Coordination:
   1. Coordinate the placement of outlet boxes with millwork, furniture, equipment, etc. installed under other sections or by others.
   2. Coordinate wiring device ratings and configurations with the electrical requirements of actual equipment to be installed.
   3. Coordinate the placement of outlet boxes for wall switches with actual installed door swings.
   4. Coordinate the installation and preparation of uneven surfaces, such as split face block, to provide suitable surface for installation of wiring devices.
   5. Notify Architect of any conflicts or deviations from Contract Documents to obtain direction prior to proceeding with work.
B. Sequencing:
   1. Do not install wiring devices until final surface finishes and painting are complete.

1.5 SUBMITTALS
A. See Section 01300 - Administrative Requirements, for submittal procedures.
B. Product Data: Provide manufacturer's catalog information showing dimensions, colors, and configurations.
C. Manufacturer's Installation Instructions: Indicate application conditions and limitations of use stipulated by product testing agency. Include instructions for storage, handling, protection, examination, preparation, and installation of product.
D. Operation and Maintenance Data:
   1. GFCI Receptacles: Include information on status indicators.
E. Maintenance Materials: Furnish the following for Owner's use in maintenance of project.
   1. See Section 01600 - Product Requirements, for additional provisions.
   2. Extra Wall Plates: One of each style, size, and finish.
   3. Extra Keys for Locking Switch Covers: Two of each type.

1.6 QUALITY ASSURANCE

A. Comply with requirements of NFPA 70.
B. Products: Listed, classified, and labeled as suitable for the purpose intended.

1.7 DELIVERY, STORAGE, AND PROTECTION

A. Store in a clean, dry space in original manufacturer's packaging until ready for installation.

PART 2 – PRODUCTS

2.1 WIRING DEVICE APPLICATIONS

A. Provide wiring devices suitable for intended use and with ratings adequate for load served.
B. For single receptacles installed on an individual branch circuit, provide receptacle with ampere rating not less than that of the branch circuit.

2.2 WIRING DEVICE FINISHES

A. Provide wiring device finishes as described below unless otherwise indicated.
B. Wiring Devices Installed in Unfinished Spaces: Gray with galvanized steel wall plate.
C. Exterior wiring devices: Gray watertight enclosure.

2.3 WALL SWITCHES

A. Manufacturers:
   1. Hubbell Incorporated; _____: www.hubbell.com/#sle.
   2. Leviton Manufacturing Company, Inc; _____: www.leviton.com/#sle.
   3. Pass & Seymour, a brand of Legrand North America, Inc; _____: www.legrand.us/#sle.
   4. Substitutions: See Section 01600 - Product Requirements.
B. Wall Switches - General Requirements: AC only, quiet operating, general-use snap switches with silver alloy contacts, complying with NEMA WD 1 and NEMA WD 6, and listed as complying with UL 20 and where applicable, FS W-S-896; types as indicated on the drawings.
   1. Wiring Provisions: Terminal screws for side wiring and screw actuated binding clamp for back wiring with separate ground terminal screw.

2.4 WALL PLATES

A. Manufacturers:
   1. Hubbell Incorporated; _____: www.hubbell-wiring.com/#sle.
   2. Leviton Manufacturing Company, Inc; _____: www.leviton.com/#sle.
   3. Lutron Electronics Company, Inc; _____: www.lutron.com/#sle.
   4. Pass & Seymour, a brand of Legrand North America, Inc; _____: www.legrand.us/#sle.
   5. Substitutions: See Section 01600 - Product Requirements.
   6. Source Limitations: Where wall controls are furnished as part of lighting control system, provide accessory matching receptacles and wallplates by the same manufacturer in locations indicated.
B. Wall Plates: Comply with UL 514D.
   1. Configuration: One piece cover as required for quantity and types of corresponding wiring devices.
   2. Size: Standard; _____.
   3. Screws: Metal with slotted heads finished to match wall plate finish.
C. Galvanized Steel Wall Plates: Rounded corners and edges, with corrosion resistant screws.
   1. Weatherproof Covers for Wet Locations: Gasketed, cast aluminum with hinged lockage cover and corrosion-resistant screws; listed as suitable for use in wet locations.

PART 3 – EXECUTION

3.1 EXAMINATION

A. Verify that field measurements are as indicated.
B. Verify that outlet boxes are installed in proper locations and at proper mounting heights and are properly sized to accommodate devices and conductors in accordance with NFPA 70.
C. Verify that wall openings are neatly cut and will be completely covered by wall plates.
D. Verify that final surface finishes are complete, including painting.
E. Verify that branch circuit wiring installation is completed, tested, and ready for connection to wiring devices.
F. Verify that conditions are satisfactory for installation prior to starting work.

3.2 PREPARATION

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

3.3 INSTALLATION

A. Perform work in accordance with NECA 1 (general workmanship) and, where applicable, NECA 130, including mounting heights specified in those standards unless otherwise indicated.
B. Coordinate locations of outlet boxes provided under Section 16152 as required for installation of wiring devices provided under this section.
    1. Mounting Heights: Unless otherwise indicated, as follows:
        a. Wall Switches: 48 inches (1200 mm) above finished floor.
        b. Receptacles: 18 inches (450 mm) above finished floor or 6 inches (150 mm) above counter.
    2. Orient outlet boxes for vertical installation of wiring devices unless otherwise indicated.
    3. Locate wall switches on strike side of door with edge of wall plate 3 inches (80 mm) from edge of door frame. Where locations are indicated otherwise, notify Architect to obtain direction prior to proceeding with work.
C. Install wiring devices in accordance with manufacturer's instructions.
D. Install permanent barrier between ganged wiring devices when voltage between adjacent devices exceeds 300 V.
E. Where required, connect wiring devices using pigtails not less than 6 inches (150 mm) long. Do not connect more than one conductor to wiring device terminals.
F. Connect wiring devices by wrapping conductor clockwise 3/4 turn around screw terminal and tightening to proper torque specified by the manufacturer. Where present, do not use push-in pressure terminals that do not rely on screw-actuated binding.
G. Unless otherwise indicated, connect wiring device grounding terminal to branch circuit equipment grounding conductor and to outlet box with bonding jumper.
H. Provide GFCI receptacles with integral GFCI protection at each location indicated. Do not use feed-through wiring to protect downstream devices.
I. Install wiring devices plumb and level with mounting yoke held rigidly in place.
J. Install wall switches with OFF position down.
K. Install vertically mounted receptacles with grounding pole on top and horizontally mounted receptacles with grounding pole on left.
L. Install wall plates to fit completely flush to wall with no gaps and rough opening completely covered without strain on wall plate. Repair or reinstall improperly installed outlet boxes or improperly sized rough openings. Do not use oversized wall plates in lieu of meeting this requirement.
M. Install blank wall plates on junction boxes and on outlet boxes with no wiring devices installed or designated for future use.

3.4 FIELD QUALITY CONTROL

A. See Section 01400 - Quality Requirements, for additional requirements.
B. Inspect each wiring device for damage and defects.
C. Operate each wall switch with circuit energized to verify proper operation.
D. Test each receptacle to verify operation and proper polarity.
E. Test each GFCI receptacle for proper tripping operation according to manufacturer's instructions.
F. Correct wiring deficiencies and replace damaged or defective wiring devices.

3.5 ADJUSTING

A. Adjust devices and wall plates to be flush and level.
B. Adjust presets for wall dimmers according to manufacturer's instructions as directed by Architect.

3.6 CLEANING

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

END OF SECTION

SECTION 16152

CABLE SPLICE AND JUNCTION BOXES

PART 1 – GENERAL

1.1 SECTION INCLUDES

A. Outlet and device boxes up to 100 cubic inches (1,650 cu cm), including those used as junction and pull boxes.
B. Cabinets and enclosures, including junction and pull boxes larger than 100 cubic inches (1,650 cu cm).
C. Underground boxes/enclosures.
D. Accessories.

1.2 RELATED REQUIREMENTS

A. Section 02581 – Concrete Encased Ductbanks, and Manholes.
B. Section 02582 – Direct Buried Underground Cable Ducts.
C. Section 03300 - Cast-in-Place Concrete.
D. Section 08310 - Access Doors and Panels: Panels for maintaining access to concealed boxes.
E. Section 16071 – Fasteners and Supports.
F. Section 16133 – Conduits, Conduit Fastenings and Conduit Fittings:
    1. Conduit bodies and other fittings.
    2. Additional requirements for locating boxes to limit conduit length and/or number of bends between pulling points.
G. Section 16141 - Wiring Devices:
    1. Wall plates.
    2. Additional requirements for locating boxes for wiring devices.

1.3 REFERENCE STANDARDS

A. NECA 1 - Standard for Good Workmanship in Electrical Construction; 2015.
B. NECA 130 - Standard for Installing and Maintaining Wiring Devices; 2010.
C. NEMA FB 1 - Fittings, Cast Metal Boxes, and Conduit Bodies for Conduit, Electrical Metallic Tubing, and Cable; 2014.
D. NEMA OS 1 - Sheet-Steel Outlet Boxes, Device Boxes, Covers, and Box Supports; 2013.
E. NEMA OS 2 - Nonmetallic Outlet Boxes, Device Boxes, Covers and Box Supports; 2013.
F. NEMA 250 - Enclosures for Electrical Equipment (1000 Volts Maximum); 2018.
G. NFPA 70 - National Electrical Code; Most Recent Edition Adopted by Authority Having Jurisdiction, Including All Applicable Amendments and Supplements.
H. SCTE 77 - Specification for Underground Enclosure Integrity; 2017.
I. UL 50 - Enclosures for Electrical Equipment, Non-Environmental Considerations; Current Edition, Including All Revisions.
J. UL 50E - Enclosures for Electrical Equipment, Environmental Considerations; Current Edition, Including All Revisions.
K. UL 508A - UL Standard for Safety Industrial Control Panels; 2018.
L. UL 514A - Metallic Outlet Boxes; Current Edition, Including All Revisions.
M. UL 514C - Nonmetallic Outlet Boxes, Flush-Device Boxes, and Covers; Current Edition, Including All Revisions.

1.4 ADMINISTRATIVE REQUIREMENTS

A. Coordination:
    1. Coordinate the work with other trades to avoid placement of ductwork, piping, equipment, or other potential obstructions within the dedicated equipment spaces and working clearances for electrical equipment required by NFPA 70.
    2. Coordinate arrangement of electrical equipment with the dimensions and clearance requirements of the actual equipment to be installed.
    3. Coordinate minimum sizes of boxes with the actual installed arrangement of conductors, clamps, support fittings, and devices, calculated according to NFPA 70.
    4. Coordinate minimum sizes of pull boxes with the actual installed arrangement of connected conduits, calculated according to NFPA 70.

5. Coordinate the placement of boxes with millwork, furniture, devices, equipment, etc. installed under other sections or by others.
6. Coordinate the work with other trades to preserve insulation integrity.
7. Coordinate the work with other trades to provide walls suitable for installation of flush-mounted boxes where indicated.
8. Notify Architect of any conflicts with or deviations from Contract Documents. Obtain direction before proceeding with work.

1.5 SUBMITTALS

A. See Section 01300 - Administrative Requirements, for submittal procedures.
B. Project Record Documents: Record actual locations for outlet and device boxes, pull boxes, cabinets and enclosures, floor boxes, and underground boxes/enclosures.
C. Maintenance Materials: Furnish the following for Owner's use in maintenance of project.
   a. See Section 01600- Product Requirements, for additional provisions.
   b. Keys for Lockable Enclosures: Two of each different key.

1.6 QUALITY ASSURANCE

A. Comply with requirements of NFPA 70.
B. Product Listing Organization Qualifications: An organization recognized by OSHA as a Nationally Recognized Testing Laboratory (NRTL) and acceptable to authorities having jurisdiction.

1.7 DELIVERY, STORAGE, AND HANDLING

A. Receive, inspect, handle, and store products in accordance with manufacturer's instructions.

PART 2 – PRODUCTS

2.1 BOXES

A. General Requirements:
   1. Do not use boxes and associated accessories for applications other than as permitted by NFPA 70 and product listing.
   2. Provide all boxes, fittings, supports, and accessories required for a complete raceway system and to accommodate devices and equipment to be installed.
   3. Provide products listed, classified, and labeled as suitable for the purpose intended.
   4. Where box size is not indicated, size to comply with NFPA 70 but not less than applicable minimum size requirements specified.
   5. Provide grounding terminals within boxes where equipment grounding conductors terminate.
B. Outlet and Device Boxes Up to 100 cubic inches (1,650 cu cm), Including Those Used as Junction and Pull Boxes:
   1. Use sheet-steel boxes for dry locations unless otherwise indicated or required.
   2. Use cast iron boxes or cast aluminum boxes for damp or wet locations unless otherwise indicated or required; furnish with compatible weatherproof gasketed covers.
   3. Use nonmetallic boxes where exposed rigid PVC conduit is used.
   4. Use suitable concrete type boxes where flush-mounted in concrete.
   5. Use suitable masonry type boxes where flush-mounted in masonry walls.
   6. Use raised covers suitable for the type of wall construction and device configuration where required.
   7. Use shallow boxes where required by the type of wall construction.
   8. Do not use "through-wall" boxes designed for access from both sides of wall.
   9. Sheet-Steel Boxes: Comply with NEMA OS 1, and list and label as complying with UL 514A.
   10. Cast Metal Boxes: Comply with NEMA FB 1, and list and label as complying with UL 514A; furnish with threaded hubs.
   11. Nonmetallic Boxes: Comply with NEMA OS 2, and list and label as complying with UL 514C.
   12. Minimum Box Size, Unless Otherwise Indicated:

a. Wiring Devices (Other Than Communications Systems Outlets): 4 inch square by 1-1/2 inch deep (100 by 38 mm) trade size.

13. Wall Plates: Comply with Section 16141.
14. Manufacturers:
    a. Cooper Crouse-Hinds, a division of Eaton Corporation; _____: www.cooperindustries.com/#sle.
    b. Hubbell Incorporated; Bell Products; _____: www.hubbell-rtb.com/#sle.
    c. Hubbell Incorporated; RACO Products; _____: www.hubbell-rtb.com/#sle.
    d. O-Z/Gedney, a brand of Emerson Electric Co; _____: www.emerson.com/#sle.
    e. Thomas & Betts Corporation; _____: www.tnb.com/#sle.
    f. Substitutions: See Section 01600 - Product Requirements.

C. Cabinets and Enclosures, Including Junction and Pull Boxes Larger Than 100 cubic inches (1,650 cu cm):
1. Comply with NEMA 250, and list and label as complying with UL 50 and UL 50E, or UL 508A.
2. NEMA 250 Environment Type, Unless Otherwise Indicated:
    a. Indoor Clean, Dry Locations: Type 1, painted steel.
    b. Outdoor Locations: Type 3R, painted steel.
3. Junction and Pull Boxes Larger Than 100 cubic inches (1,650 cu cm):
    a. Provide screw-cover or hinged-cover enclosures unless otherwise indicated.
4. Cabinets and Hinged-Cover Enclosures, Other Than Junction and Pull Boxes:
    a. Provide lockable hinged covers, all locks keyed alike unless otherwise indicated.

D. Underground Boxes/Enclosures:
1. Description: In-ground, open bottom boxes furnished with flush, non-skid covers with legend indicating type of service and stainless steel tamper resistant cover bolts.
2. Size: 12" by 12" unless otherwise indicated.
3. Depth: As required to extend below frost line to prevent frost upheaval, but not less than 12 inches (300 mm).
4. Provide logo on cover to indicate type of service.
5. Applications:
    a. Sidewalks and Landscaped Areas Subject Only to Occasional Nondeliberate Vehicular Traffic: Use polymer concrete enclosures, with minimum SCTE 77, Tier 8 load rating.
    b. Do not use polymer concrete enclosures in areas subject to deliberate vehicular traffic.
6. Polymer Concrete Underground Boxes/Enclosures: Comply with SCTE 77.
    a. Manufacturers:
        1) Hubbell Incorporated; Quazite Products; _____: www.hubbellpowersystems.com/#sle.
        2) MacLean Highline; _____: www.macleanhighline.com/#sle.
        3) Oldcastle Precast, Inc; _____: www.oldcastleprecast.com/#sle.
        4) Substitutions: See Section 01600 - Product Requirements.
    b. Combination fiberglass/polymer concrete boxes/enclosures are acceptable.
    c. Product(s):
        1) MacLean Highline PHA Series: Straight wall, all-polymer concrete splice box/pull box; available Tier 8, Tier 15, and Tier 22 load ratings.
        2) MacLean Highline CHA Series: Fiberglass/polymer concrete splice box/pull box; available Tier 8 and Tier 15 load ratings.
        3) MacLean Highline CVA Series: Fiberglass/polymer concrete splice vault; available Tier 8, Tier 15, and Tier 22 load ratings.

2.2 ACCESSORIES

A. Flashing Panels for Exterior Wall Penetrations: Premanufactured components and accessories as required to preserve integrity of building envelope; suitable for boxes and facade materials to be installed.

PART 3 – EXECUTION

3.1 EXAMINATION

A. Verify that field measurements are as indicated.
B. Verify that mounting surfaces are ready to receive boxes.
C. Verify that conditions are satisfactory for installation prior to starting work.

3.2 INSTALLATION

A. Install products in accordance with manufacturer's instructions.
B. Install boxes in accordance with NECA 1 (general workmanship) and, where applicable, NECA 130, including mounting heights specified in those standards where mounting heights are not indicated.
C. Arrange equipment to provide minimum clearances in accordance with manufacturer's instructions and NFPA 70.
D. Unless otherwise indicated, boxes may be surface-mounted where exposed conduits are indicated or permitted.
E. Box Locations:
   1. Locate boxes to be accessible. Provide access panels in accordance with Section 08310 as required where approved by the Architect.
   2. Locate boxes as required for devices installed under other sections or by others.
      a. Switches, Receptacles, and Other Wiring Devices: Comply with Section 16141.
   3. Locate junction and pull boxes as indicated, as required to facilitate installation of conductors, and to limit conduit length and/or number of bends between pulling points in accordance with Section 16133.
F. Box Supports:
   1. Secure and support boxes in accordance with NFPA 70 and Section 16071 using suitable supports and methods approved by the authority having jurisdiction.
   2. Provide independent support from building structure except for cast metal boxes (other than boxes used for fixture support) supported by threaded conduit connections in accordance with NFPA 70. Do not provide support from piping, ductwork, or other systems.
G. Install boxes plumb and level.
H. Flush-Mounted Boxes:
   1. Install boxes in noncombustible materials such as concrete, tile, gypsum, plaster, etc. so that front edge of box or associated raised cover is not set back from finished surface more than 1/4 inch (6 mm) or does not project beyond finished surface.
   2. Install boxes in combustible materials such as wood so that front edge of box or associated raised cover is flush with finished surface.
   3. Repair rough openings around boxes in noncombustible materials such as concrete, tile, gypsum, plaster, etc. so that there are no gaps or open spaces greater than 1/8 inch (3 mm) at the edge of the box.
I. Install boxes as required to preserve insulation integrity.
J. Underground Boxes/Enclosures:
   1. Install enclosure on gravel base, minimum 6 inches (150 mm) deep.
   2. Flush-mount enclosures located in concrete or paved areas.
   3. Mount enclosures located in landscaped areas with top at 1 inch (25 mm) above finished grade.
   4. Provide cast-in-place concrete collar constructed in accordance with Section 03300, minimum 10 inches wide by 12 inches deep (250 mm wide by 300 mm deep), around enclosures that are not located in concrete areas.
   5. Install additional bracing inside enclosures in accordance with manufacturer's instructions to minimize box sidewall deflections during backfilling. Backfill with cover bolted in place.
K. Close unused box openings.
L. Provide grounding and bonding in accordance with Section 16060.

3.3 CLEANING

A. Clean interior of boxes to remove dirt, debris, plaster and other foreign material.

3.4 PROTECTION

A. Immediately after installation, protect boxes from entry of moisture and foreign material until ready for installation of conductors.

END OF SECTION

SECTION 16155

IDENTIFICATION FOR ELECTRICAL SYSTEMS

PART 1 – GENERAL

1.1 SECTION INCLUDES
A. Electrical identification requirements.
B. Identification nameplates and labels.
C. Wire and cable markers.
D. Voltage markers.
E. Underground warning tape.
F. Floor marking tape.
G. Warning signs and labels.

1.2 RELATED REQUIREMENTS
A. Section 09912 - Exterior Painting.
B. Section 16120 - Low-Voltage Electrical Power Conductors and Cables: Color coding for power conductors and cables 600 V and less; vinyl color coding electrical tape.

1.3 REFERENCE STANDARDS
A. NFPA 70 - National Electrical Code; Most Recent Edition Adopted by Authority Having Jurisdiction, Including All Applicable Amendments and Supplements.
B. UL 969 - Marking and Labeling Systems; Current Edition, Including All Revisions.

1.4 ADMINISTRATIVE REQUIREMENTS
A. Coordination:
   1. Verify final designations for equipment, systems, and components to be identified prior to fabrication of identification products.
B. Sequencing:
   1. Do not conceal items to be identified, in locations such as above suspended ceilings, until identification products have been installed.
   2. Do not install identification products until final surface finishes and painting are complete.

1.5 QUALITY ASSURANCE
A. Comply with requirements of NFPA 70.

1.6 FIELD CONDITIONS
A. Do not install adhesive products when ambient temperature is lower than recommended by manufacturer.

PART 2 – PRODUCTS

2.1 IDENTIFICATION REQUIREMENTS
A. Identification for Equipment:
   1. Use identification nameplate to identify each piece of electrical distribution and control equipment and associated sections, compartments, and components.
      a. Panelboards:
         1) Identify ampere rating.
         2) Identify voltage and phase.
         3) Identify power source and circuit number. Include location when not within sight of equipment.
         4) Identify main overcurrent protective device. Use identification label for panelboards with a door. For power distribution panelboards without a door, use identification nameplate.
         5) Use typewritten circuit directory to identify load(s) served for panelboards with a door. Identify spares and spaces using pencil.

6) For power panelboards without a door, use identification nameplate to identify load(s) served for each branch device. Do not identify spares and spaces.

b. Enclosed switches, circuit breakers, and motor controllers:
1) Identify voltage and phase.
2) Identify power source and circuit number. Include location when not within sight of equipment.
3) Identify load(s) served. Include location when not within sight of equipment.

c. Time Switches:
1) Identify load(s) served and associated circuits controlled. Include location.

d. Electricity Meters:
1) Identify load(s) metered.

2. Service Equipment:
a. Use identification nameplate to identify each service disconnecting means.

3. Use voltage marker to identify highest voltage present for each piece of electrical equipment.
4. Use identification nameplate to identify equipment utilizing series ratings, where permitted, in accordance with NFPA 70.
5. Use field-painted floor markings, floor marking tape, or warning labels to identify required equipment working clearances where indicated or where required by the authority having jurisdiction.
a. Field-Painted Floor Markings: Alternating black and white stripes, 3 inches (76 mm) wide, painted in accordance with Section 09912 and 09911.

6. Use warning signs to identify electrical hazards for entrances to all rooms and other guarded locations that contain exposed live parts operating at 600 V nominal or less with the word message "DANGER; Electrical hazard; Authorized personnel only" or approved equivalent.

B. Identification for Conductors and Cables:
1. Color Coding for Power Conductors 600 V and Less: Comply with Section 16120.
2. Use identification nameplate or identification label to identify color code for ungrounded and grounded power conductors inside door or enclosure at each piece of feeder or branch-circuit distribution equipment when premises has feeders or branch circuits served by more than one nominal voltage system.
3. Use wire and cable markers to identify circuit number or other designation indicated for power, control, and instrumentation conductors and cables at the following locations:
a. Within boxes when more than one circuit is present.
b. Within equipment enclosures when conductors and cables enter or leave the enclosure.

4. Use wire and cable markers to identify connected grounding electrode system components for grounding electrode conductors.
5. Use underground warning tape to identify direct buried cables.

C. Identification for Boxes:
1. Use voltage markers to identify highest voltage present.

2.2 IDENTIFICATION NAMEPLATES AND LABELS

A. Identification Nameplates:
1. Manufacturers:
a. Brimar Industries, Inc: www.brimar.com/#sle.
b. Kolbi Pipe Marker Co; _____: www.kolbipipemarkers.com/#sle.
c. Seton Identification Products; _____: www.seton.com/#sle.
d. Substitutions: See Section 01600 - Product Requirements.

2. Materials:
a. Indoor Clean, Dry Locations: Use plastic nameplates.
b. Outdoor Locations: Use plastic, stainless steel, or aluminum nameplates suitable for exterior use.

3. Plastic Nameplates: Two-layer or three-layer laminated acrylic or electrically non-conductive phenolic with beveled edges; minimum thickness of 1/16 inch (1.6 mm); engraved text.
4. Stainless Steel Nameplates: Minimum thickness of 1/32 inch (0.8 mm); engraved or laser-etched text.

5. Aluminum Nameplates: Anodized; minimum thickness of 1/32 inch (0.8 mm); engraved or laser-etched text.
6. Mounting Holes for Mechanical Fasteners: Two, centered on sides for sizes up to 1 inch (25 mm) high; Four, located at corners for larger sizes.

B. Identification Labels:
1. Manufacturers:
a. Brady Corporation; _____: www.bradyid.com/#sle.
b. Brother International Corporation: www.brother-usa.com/#sle.
c. Panduit Corp: www.panduit.com/#sle.
d. Substitutions: See Section 01600 - Product Requirements.
2. Materials: Use self-adhesive laminated plastic labels; UV, chemical, water, heat, and abrasion resistant.
a. Use only for indoor locations.
3. Text: Use factory pre-printed or machine-printed text. Do not use handwritten text unless otherwise indicated.

2.3 WIRE AND CABLE MARKERS

A. Manufacturers:
1. Brady Corporation; _____: www.bradyid.com/#sle.
2. HellermannTyton; _____: www.hellermanntyton.com/#sle.
3. Panduit Corp: www.panduit.com/#sle.
4. Substitutions: See Section 01600 - Product Requirements.

B. Markers for Conductors and Cables: Use wrap-around self-adhesive vinyl cloth, wrap-around self-adhesive vinyl self-laminating, heat-shrink sleeve, plastic sleeve, plastic clip-on, or vinyl split sleeve type markers suitable for the conductor or cable to be identified.

C. Markers for Conductor and Cable Bundles: Use plastic marker tags secured by nylon cable ties.

D. Legend: Power source and circuit number or other designation indicated.

E. Text: Use factory pre-printed or machine-printed text, all capitalized unless otherwise indicated.
1. Do not use handwritten text.

F. Minimum Text Height: 1/8 inch (3 mm).

G. Color: Black text on white background unless otherwise indicated.

2.4 VOLTAGE MARKERS

A. Manufacturers:
1. Brady Corporation; _____: www.bradyid.com/#sle.
2. Brimar Industries, Inc: www.brimar.com/#sle.
3. Seton Identification Products; _____: www.seton.com/#sle.
4. Substitutions: See Section 01600 - Product Requirements.

B. Markers for Conduits: Use factory pre-printed self-adhesive vinyl, self-adhesive vinyl cloth, or vinyl snap-around type markers.

C. Markers for Boxes and Equipment Enclosures: Use factory pre-printed self-adhesive vinyl or self-adhesive vinyl cloth type markers.

D. Minimum Size:
1. Markers for Equipment: 1 1/8 by 4 1/2 inches (29 by 110 mm).
2. Markers for Pull Boxes: 1 1/8 by 4 1/2 inches (29 by 110 mm).
3. Markers for Junction Boxes: 1/2 by 2 1/4 inches (13 by 57 mm).

E. Legend:
1. Markers for Voltage Identification: Highest voltage present.

F. Color: Black text on orange background unless otherwise indicated.

2.5 UNDERGROUND WARNING TAPE

A. Manufacturers:
1. Brady Corporation; _____: www.bradyid.com/#sle.
2. Brimar Industries, Inc: www.brimar.com/#sle.
3. Seton Identification Products; _____: www.seton.com/#sle.

4. Substitutions: See Section 01600 - Product Requirements.

B. Materials: Use non-detectable type polyethylene tape suitable for direct burial, unless otherwise indicated.
C. Non-detectable Type Tape: 6 inches (152 mm) wide, with minimum thickness of 4 mil (0.1 mm).
D. Legend: Type of service, continuously repeated over full length of tape.
E. Color:
   1. Tape for Buried Power Lines: Black text on red background.

2.6 WARNING SIGNS AND LABELS

A. Manufacturers:
   1. Brimar Industries, Inc: www.brimar.com/#sle.
   2. Clarion Safety Systems, LLC; _____: www.clarionsafety.com/#sle.
   3. Seton Identification Products; _____: www.seton.com/#sle.
   4. Substitutions: See Section 01600 - Product Requirements.
B. Comply with ANSI Z535.2 or ANSI Z535.4 as applicable.
C. Warning Signs:
   1. Materials:
      a. Outdoor Locations: Use factory pre-printed rigid aluminum signs.
   2. Rigid Signs: Provide four mounting holes at corners for mechanical fasteners.
   3. Minimum Size: 7 by 10 inches (178 by 254 mm) unless otherwise indicated.
D. Warning Labels:
   1. Materials: Use factory pre-printed or machine-printed self-adhesive polyester or self-adhesive vinyl labels; UV, chemical, water, heat, and abrasion resistant; produced using materials recognized to UL 969.
      a. Do not use labels designed to be completed using handwritten text.
   2. Machine-Printed Labels: Use thermal transfer process printing machines and accessories recommended by label manufacturer.
   3. Minimum Size: 2 by 4 inches (51 mm by 102 mm) unless otherwise indicated.

PART 3 – EXECUTION

3.1 PREPARATION

A. Clean surfaces to receive adhesive products according to manufacturer's instructions.

3.2 INSTALLATION

A. Install products in accordance with manufacturer's instructions.
B. Install identification products to be plainly visible for examination, adjustment, servicing, and maintenance. Unless otherwise indicated, locate products as follows:
   1. Surface-Mounted Equipment: Enclosure front.
   2. Flush-Mounted Equipment: Inside of equipment door.
   3. Free-Standing Equipment: Enclosure front; also enclosure rear for equipment with rear access.
   4. Boxes: Outside face of cover.
   5. Conductors and Cables: Legible from the point of access.
C. Install identification products centered, level, and parallel with lines of item being identified.
D. Secure nameplates to exterior surfaces of enclosures using stainless steel screws and to interior surfaces using self-adhesive backing or epoxy cement.
   1. Do not use adhesives on exterior surfaces except where substrate cannot be penetrated.
E. Install self-adhesive labels and markers to achieve maximum adhesion, with no bubbles or wrinkles and edges properly sealed.
F. Install underground warning tape above buried lines with one tape per trench at 3 inches (75 mm) below finished grade.
G. Secure rigid signs using stainless steel screws.
H. Mark all handwritten text, where permitted, to be neat and legible.

3.3 FIELD QUALITY CONTROL

A. See Section 01400 - Quality Requirements, for additional requirements.
B. Replace self-adhesive labels and markers that exhibit bubbles, wrinkles, curling or other signs of improper adhesion.

END OF SECTION

SECTION 16439

PANELBOARDS

PART 1 – GENERAL

1.1 SECTION INCLUDES
A. Lighting and appliance panelboards.
B. Overcurrent protective devices for panelboards.

1.2 RELATED REQUIREMENTS
A. Section 16060 - Grounding and Bonding for Electrical Systems.
B. Section 16071 – Fastenings and Supports.
C. Section 16155 - Identification for Electrical Systems: Identification products and requirements.

1.3 REFERENCE STANDARDS
A. FS W-C-375 - Circuit Breakers, Molded Case; Branch Circuit and Service; 2013e (Amended 2017).
B. NECA 1 - Standard for Good Workmanship in Electrical Construction; 2015.
C. NECA 407 - Standard for Installing and Maintaining Panelboards; 2015.
D. NEMA 250 - Enclosures for Electrical Equipment (1000 Volts Maximum); 2018.
E. NEMA PB 1 - Panelboards; 2011.
F. NEMA PB 1.1 - General Instructions for Proper Installation, Operation and Maintenance of Panelboards Rated 600 Volts or Less; 2013.
G. NFPA 70 - National Electrical Code; Most Recent Edition Adopted by Authority Having Jurisdiction, Including All Applicable Amendments and Supplements.
H. UL 50E - Enclosures for Electrical Equipment, Environmental Considerations; Current Edition, Including All Revisions.
I. UL 67 - Panelboards; Current Edition, Including All Revisions.
J. UL 489 - Molded-Case Circuit Breakers, Molded-Case Switches and Circuit Breaker Enclosures; Current Edition, Including All Revisions.
K. UL 869A - Reference Standard for Service Equipment; Current Edition, Including All Revisions.
L. UL 1053 - Ground-Fault Sensing and Relaying Equipment; Current Edition, Including All Revisions.

1.4 ADMINISTRATIVE REQUIREMENTS
A. Coordination:
   1. Coordinate arrangement of electrical equipment with the dimensions and clearance requirements of the actual equipment to be installed.
   2. Coordinate the work with other trades to provide walls suitable for installation of flush-mounted panelboards where indicated.
   3. Verify with manufacturer that conductor terminations are suitable for use with the conductors to be installed.
   4. Notify Architect of any conflicts with or deviations from Contract Documents. Obtain direction before proceeding with work.

1.5 SUBMITTALS
A. See Section 01300 - Administrative Requirements, for submittal procedures.
B. Product Data: Provide manufacturer's standard catalog pages and data sheets for panelboards, enclosures, overcurrent protective devices, and other installed components and accessories.
   1. Include characteristic trip curves for each type and rating of overcurrent protective device upon request.
C. Manufacturer's Installation Instructions: Indicate application conditions and limitations of use stipulated by product testing agency. Include instructions for storage, handling, protection, examination, preparation, and installation of product.
D. Project Record Documents: Record actual installed locations of panelboards and actual installed circuiting arrangements.
E. Maintenance Data: Include information on replacement parts and recommended maintenance procedures and intervals.

F. Maintenance Materials: Furnish the following for Owner's use in maintenance of project.
   1. See Section 01600 - Product Requirements, for additional provisions.
   2. Panelboard Keys: Two of each different key.

1.6 QUALITY ASSURANCE

A. Comply with requirements of NFPA 70.
B. Product Listing Organization Qualifications: An organization recognized by OSHA as a Nationally Recognized Testing Laboratory (NRTL) and acceptable to authorities having jurisdiction.

1.7 DELIVERY, STORAGE, AND HANDLING

A. Receive, inspect, handle, and store panelboards in accordance with manufacturer's instructions and NECA 407.
B. Store in a clean, dry space. Maintain factory wrapping or provide an additional heavy canvas or heavy plastic cover to protect units from dirt, water, construction debris, and traffic.
C. Handle carefully in accordance with manufacturer's written instructions to avoid damage to panelboard internal components, enclosure, and finish.

1.8 FIELD CONDITIONS

A. Maintain ambient temperature within the following limits during and after installation of panelboards:
   1. Panelboards Containing Circuit Breakers: Between 23 degrees F (-5 degrees C) and 104 degrees F (40 degrees C).

PART 2 – PRODUCTS

2.1 MANUFACTURERS

A. ABB/GE; _____: www.geindustrial.com/#sle.
B. Eaton Corporation; _____: www.eaton.com/#sle.
C. Schneider Electric; Square D Products; _____: www.schneider-electric.us/#sle.
D. Siemens Industry, Inc; _____: www.usa.siemens.com/#sle.
E. Substitutions: See Section 01600 - Product Requirements.
F. Source Limitations: Furnish panelboards and associated components produced by the same manufacturer as the other electrical distribution equipment used for this project and obtained from a single supplier.

2.2 PANELBOARDS - GENERAL REQUIREMENTS

A. Provide products listed, classified, and labeled as suitable for the purpose intended.
B. Unless otherwise indicated, provide products suitable for continuous operation under the following service conditions:
   1. Altitude: Less than 6,600 feet (2,000 m).
   2. Ambient Temperature:
      a. Panelboards Containing Circuit Breakers: Between 23 degrees F (-5 degrees C) and 104 degrees F (40 degrees C).
C. Short Circuit Current Rating:
   1. Provide panelboards with listed short circuit current rating not less than the available fault current at the installed location.
D. Mains: Configure for top or bottom incoming feed as indicated or as required for the installation.
E. Branch Overcurrent Protective Devices: Replaceable without disturbing adjacent devices.
F. Bussing: Sized in accordance with UL 67 temperature rise requirements.
   1. Provide fully rated neutral bus unless otherwise indicated, with a suitable lug for each feeder or branch circuit requiring a neutral connection.
   2. Provide solidly bonded equipment ground bus in each panelboard, with a suitable lug for each feeder and branch circuit equipment grounding conductor.
G. Conductor Terminations: Suitable for use with the conductors to be installed.

H. Enclosures: Comply with NEMA 250, and list and label as complying with UL 50 and UL 50E.
   1. Environment Type per NEMA 250: Unless otherwise indicated, as specified for the following installation locations:
      a. Outdoor Locations: Type 3R.
   2. Boxes: Galvanized steel unless otherwise indicated.
      a. Provide wiring gutters sized to accommodate the conductors to be installed.
      b. Provide painted steel boxes for surface-mounted panelboards where indicated, finish to match fronts.
   3. Fronts:
      a. Fronts for Surface-Mounted Enclosures: Same dimensions as boxes.
      b. Fronts for Flush-Mounted Enclosures: Overlap boxes on all sides to conceal rough opening.
      c. Finish for Painted Steel Fronts: Manufacturer's standard grey unless otherwise indicated.
   4. Lockable Doors: All locks keyed alike unless otherwise indicated.

I. Future Provisions: Prepare all unused spaces for future installation of devices including bussing, connectors, mounting hardware and all other required provisions.

J. Ground Fault Protection: Where ground-fault protection is indicated, provide system listed and labeled as complying with UL 1053.

2.3 LIGHTING AND APPLIANCE PANELBOARDS

A. Description: Panelboards complying with NEMA PB 1, lighting and appliance branch circuit type, circuit breaker type, and listed and labeled as complying with UL 67; ratings, configurations and features as indicated on the drawings.

B. Conductor Terminations:
   1. Main and Neutral Lug Material: Copper, suitable for terminating copper conductors only.
   2. Main and Neutral Lug Type: Mechanical.

C. Bussing:
   1. Phase Bus Connections: Arranged for sequential phasing of overcurrent protective devices.
   2. Phase and Neutral Bus Material: Copper.
   3. Ground Bus Material: Copper.

D. Circuit Breakers: Thermal magnetic bolt-on type unless otherwise indicated.

E. Enclosures:
   1. Provide surface-mounted or flush-mounted enclosures as indicated.
   2. Fronts: Provide lockable hinged door with concealed hinges for access to overcurrent protective device handles without exposing live parts.
   3. Provide clear plastic circuit directory holder mounted on inside of door.

2.4 OVERCURRENT PROTECTIVE DEVICES

A. Molded Case Circuit Breakers:
   1. Description: Quick-make, quick-break, over center toggle, trip-free, trip-indicating circuit breakers listed and labeled as complying with UL 489, and complying with FS W-C-375 where applicable; ratings, configurations, and features as indicated on the drawings.
   2. Interrupting Capacity:
      a. Provide circuit breakers with interrupting capacity as required to provide the short circuit current rating indicated, but not less than:
         1) 10,000 rms symmetrical amperes at 240 VAC or 208 VAC.
      b. Fully Rated Systems: Provide circuit breakers with interrupting capacity not less than the short circuit current rating indicated.
   3. Conductor Terminations:
      a. Provide mechanical lugs unless otherwise indicated.
      b. Lug Material: Copper, suitable for terminating copper conductors only.
   4. Thermal Magnetic Circuit Breakers: For each pole, furnish thermal inverse time tripping element for overload protection and magnetic instantaneous tripping element for short circuit protection.
   5. Multi-Pole Circuit Breakers: Furnish with common trip for all poles.

6. Do not use tandem circuit breakers.
7. Do not use handle ties in lieu of multi-pole circuit breakers.
8. Provide multi-pole circuit breakers for multi-wire branch circuits as required by NFPA 70.

2.5 SOURCE QUALITY CONTROL

A. See Section 01400 - Quality Requirements, for additional requirements.
B. Factory test panelboards according to NEMA PB 1.

PART 3 – EXECUTION

3.1 EXAMINATION

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

3.2 INSTALLATION

A. Perform work in accordance with NECA 1 (general workmanship).
B. Install products in accordance with manufacturer's instructions.
C. Install panelboards in accordance with NECA 407 and NEMA PB 1.1.
D. Arrange equipment to provide minimum clearances in accordance with manufacturer's instructions and NFPA 70.
E. Provide required support and attachment in accordance with Section 16071.
F. Install panelboards plumb.
G. Install flush-mounted panelboards so that trims fit completely flush to wall with no gaps and rough opening completely covered.
H. Mount panelboards such that the highest position of any operating handle for circuit breakers or switches does not exceed 79 inches (2000 mm) above the floor or working platform.
I. Provide grounding and bonding in accordance with Section 16060.
J. Install all field-installed branch devices, components, and accessories.
K. Set field-adjustable circuit breaker tripping function settings as determined by overcurrent protective device coordination study performed according to Section 16156.
L. Set field-adjustable ground fault protection pickup and time delay settings as indicated.
M. Provide filler plates to cover unused spaces in panelboards.

3.3 FIELD QUALITY CONTROL

A. See Section 01400 - Quality Requirements, for additional requirements.
B. Inspect and test in accordance with NETA ATS, except Section 4.
C. Molded Case Circuit Breakers: Perform inspections and tests listed in NETA ATS, Section 7.6.1.1 for all main circuit breakers and circuit breakers larger than 200 amperes. Tests listed as optional are not required.
D. Ground Fault Protection Systems: Test in accordance with manufacturer's instructions as required by NFPA 70.
E. Correct deficiencies and replace damaged or defective panelboards or associated components.

3.4 ADJUSTING

A. Adjust tightness of mechanical and electrical connections to manufacturer's recommended torque settings.
B. Adjust alignment of panelboard fronts.
C. Load Balancing: For each panelboard, rearrange circuits such that the difference between each measured steady state phase load does not exceed 10 percent and adjust circuit directories accordingly. Maintain proper phasing for multi-wire branch circuits.

3.5 CLEANING

A. Clean dirt and debris from panelboard enclosures and components according to manufacturer's instructions.
B. Repair scratched or marred exterior surfaces to match original factory finish.

END OF SECTION

SECTION 16440

ENCLOSED CIRCUIT BREAKERS

PART 1 – GENERAL

1.1 SECTION INCLUDES
A. Enclosed circuit breakers.

1.2 RELATED REQUIREMENTS
A. Section 16060 - Grounding and Bonding for Electrical Systems.
B. Section 16071 – Fastenings and Supports.
C. Section 16155 - Identification for Electrical Systems: Identification products and requirements.

1.3 REFERENCE STANDARDS
A. FS W-C-375 - Circuit Breakers, Molded Case; Branch Circuit and Service; 2013e (Amended 2017).
B. NECA 1 - Standard for Good Workmanship in Electrical Construction; 2015.
C. NEMA 250 - Enclosures for Electrical Equipment (1000 Volts Maximum); 2018.
D. NFPA 70 - National Electrical Code; Most Recent Edition Adopted by Authority Having Jurisdiction, Including All Applicable Amendments and Supplements.
E. UL 50E - Enclosures for Electrical Equipment, Environmental Considerations; Current Edition, Including All Revisions.
F. UL 489 - Molded-Case Circuit Breakers, Molded-Case Switches and Circuit Breaker Enclosures; Current Edition, Including All Revisions.
G. UL 869A - Reference Standard for Service Equipment; Current Edition, Including All Revisions.

1.4 ADMINISTRATIVE REQUIREMENTS
A. Coordination:
   1. Coordinate work with other trades. Avoid placement of ductwork, piping, equipment, or other potential obstructions within dedicated equipment spaces and within working clearances for electrical equipment required by NFPA 70.
   2. Coordinate arrangement of electrical equipment with the dimensions and clearance requirements of the actual equipment to be installed.
   3. Verify with manufacturer that conductor terminations are suitable for use with the conductors to be installed.
   4. Notify Architect of any conflicts with or deviations from Contract Documents. Obtain direction before proceeding with work.

1.5 SUBMITTALS
A. See Section 01300 - Administrative Requirements, for submittal procedures.
B. Product Data: Provide manufacturer's standard catalog pages and data sheets for circuit breakers, enclosures, and other installed components and accessories.
C. Manufacturer's Installation Instructions: Indicate application conditions and limitations of use stipulated by product testing agency. Include instructions for storage, handling, protection, examination, preparation, installation, and starting of product.
D. Project Record Documents: Record actual installed locations of enclosed circuit breakers.
E. Maintenance Data: Include information on replacement parts and recommended maintenance procedures and intervals.

1.6 QUALITY ASSURANCE
A. Comply with requirements of NFPA 70.
B. Product Listing Organization Qualifications: An organization recognized by OSHA as a Nationally Recognized Testing Laboratory (NRTL) and acceptable to authorities having jurisdiction.

SECTION 16440

ENCLOSED CIRCUIT BREAKERS

1.7 DELIVERY, STORAGE, AND HANDLING

A. Store in a clean, dry space. Maintain factory wrapping or provide an additional heavy canvas or heavy plastic cover to protect units from dirt, water, construction debris, and traffic.
B. Handle carefully in accordance with manufacturer's written instructions to avoid damage to enclosed circuit breaker internal components, enclosure, and finish.

1.8 FIELD CONDITIONS

A. Maintain ambient temperature between 23 degrees F (-5 degrees C) and 104 degrees F (40 degrees C) during and after installation of enclosed circuit breakers.

PART 2 – PRODUCTS

2.1 MANUFACTURERS

A. ABB/GE; _____: www.geindustrial.com/#sle.
B. Eaton Corporation; _____: www.eaton.com/#sle.
C. Schneider Electric; Square D Products; _____: www.schneider-electric.us/#sle.
D. Substitutions: See Section 01600 - Product Requirements.
E. Source Limitations: Furnish enclosed circuit breakers and associated components produced by the same manufacturer as the other electrical distribution equipment used for this project and obtained from a single supplier.

2.2 ENCLOSED CIRCUIT BREAKERS

A. Description: Units consisting of molded case circuit breakers individually mounted in enclosures.
B. Provide products listed, classified, and labeled as suitable for the purpose intended.
C. Unless otherwise indicated, provide products suitable for continuous operation under the following service conditions:
    1. Altitude: Less than 6,600 feet (2,000 m).
    2. Ambient Temperature: Between 23 degrees F (-5 degrees C) and 104 degrees F (40 degrees C).
D. Short Circuit Current Rating:
    1. Provide enclosed circuit breakers with listed short circuit current rating not less than the available fault current at the installed location.
E. Conductor Terminations: Suitable for use with the conductors to be installed.
F. Provide solidly bonded equipment ground bus in each enclosed circuit breaker, with a suitable lug for terminating each equipment grounding conductor.
G. Enclosures: Comply with NEMA 250, and list and label as complying with UL 50 and UL 50E.
    1. Environment Type per NEMA 250: Unless otherwise indicated, as specified for the following installation locations:
        a. Outdoor Locations: Type 3R.
    2. Finish for Painted Steel Enclosures: Manufacturer's standard, factory applied grey unless otherwise indicated.
    3. Provide surface-mounted enclosures unless otherwise indicated.
H. Provide externally operable handle with means for locking in the OFF position.

2.3 MOLDED CASE CIRCUIT BREAKERS

A. Description: Quick-make, quick-break, over center toggle, trip-free, trip-indicating circuit breakers listed and labeled as complying with UL 489, and complying with FS W-C-375 where applicable; ratings, configurations, and features as indicated on the drawings.
B. Interrupting Capacity:
    1. Provide circuit breakers with interrupting capacity as required to provide the short circuit current rating indicated, but not less than:
        a. 10,000 rms symmetrical amperes at 240 VAC or 208 VAC.
    2. Fully Rated Systems: Provide circuit breakers with interrupting capacity not less than the short circuit current rating indicated.

C. Conductor Terminations:
   1. Provide mechanical lugs unless otherwise indicated.
   2. Lug Material: Copper, suitable for terminating copper conductors only.
D. Multi-Pole Circuit Breakers: Furnish with common trip for all poles.

PART 3 – EXECUTION

3.1 EXAMINATION

A. Verify that field measurements are as indicated.
B. Verify that the ratings of the enclosed circuit breakers are consistent with the indicated requirements.
C. Verify that mounting surfaces are ready to receive enclosed circuit breakers.
D. Verify that conditions are satisfactory for installation prior to starting work.

3.2 INSTALLATION

A. Install products in accordance with manufacturer's instructions.
B. Perform work in accordance with NECA 1 (general workmanship).
C. Arrange equipment to provide minimum clearances in accordance with manufacturer's instructions and NFPA 70.
D. Provide required support and attachment in accordance with Section 16071.
E. Install enclosed circuit breakers plumb.
F. Except where indicated to be mounted adjacent to the equipment they supply, mount enclosed circuit breakers such that the highest position of the operating handle does not exceed 79 inches (2000 mm) above the floor or working platform.
G. Provide grounding and bonding in accordance with Section 16060.

3.3 FIELD QUALITY CONTROL

A. See Section 01400 - Quality Requirements, for additional requirements.
B. Inspect and test in accordance with manufacturer's instructions and NETA ATS, except Section 4.
C. Perform inspections and tests listed in NETA ATS, Section 7.6.1.1 for circuit breakers used for service entrance and for circuit breakers larger than 200 amperes. Tests listed as optional are not required.
D. Correct deficiencies and replace damaged or defective enclosed circuit breakers.

3.4 ADJUSTING

A. Adjust tightness of mechanical and electrical connections to manufacturer's recommended torque settings.

3.5 CLEANING

A. Clean dirt and debris from circuit breaker enclosures and components according to manufacturer's instructions.
B. Repair scratched or marred exterior surfaces to match original factory finish.

END OF SECTION

SECTION 16510

EXTERIOR LIGHTING

PART 1 – GENERAL

1.1 SECTION INCLUDES
A. Exterior luminaires.
B. Lamps.
C. Poles and accessories.
D. Luminaire accessories.

1.2 RELATED REQUIREMENTS
A. Section 03300 - Cast-in-Place Concrete: Materials and installation requirements for concrete bases for poles.
B. Section 13810 - Lighting Control Devices: Automatic controls for lighting including time switches.
C. Section 16060 - Grounding and Bonding for Electrical Systems.
D. Section 16071 – Fastenings and Supports.
E. Section 16152 – Cable Splice and Junction Boxes.

1.3 UNIT PRICES
A. See Section 01220 - Unit Prices, for additional unit price requirements.
B. Exterior Lighting Unit:
   1. Basis of Measurement: Each.
   2. Basis of Payment: Includes concrete foundation, pole, and luminaire(s) with lamps and accessories.

1.4 REFERENCE STANDARDS
A. IEEE C2 - National Electrical Safety Code; 2017.
B. IES LM-79 - Approved Method: Electrical and Photometric Measurements of Solid-State Lighting Products; 2008.
C. IES LM-80 - Approved Method: Measuring Luminous Flux and Color Maintenance of LED Packages, Arrays, and Modules; 2015, with Errata (2017).
D. NECA 1 - Standard for Good Workmanship in Electrical Construction; 2015.
E. NECA/IESNA 501 - Standard for Installing Exterior Lighting Systems; 2006.
F. NFPA 70 - National Electrical Code; Most Recent Edition Adopted by Authority Having Jurisdiction, Including All Applicable Amendments and Supplements.
G. UL 1598 - Luminaires; Current Edition, Including All Revisions.
H. UL 8750 - Light Emitting Diode (LED) Equipment for Use in Lighting Products; Current Edition, Including All Revisions.

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

1.6 SUBMITTALS
A. See Section 01300 - Administrative Requirements, for submittal procedures.
B. Shop Drawings:
   1. Provide photometric calculations where luminaires are proposed for substitution.
C. Product Data: Provide manufacturer's standard catalog pages and data sheets including detailed information on luminaire construction, dimensions, ratings, finishes, mounting requirements, listings, service conditions, photometric performance, weight, effective projected area (EPA), and installed accessories; include model number nomenclature clearly marked with all proposed features.

1. LED Luminaires:
   a. Include estimated useful life, calculated based on IES LM-80 test data.
2. Lamps: Include rated life and initial and mean lumen output.
3. Poles: Include information on maximum supported effective projected area (EPA) and weight for the design wind speed.

D. Field Quality Control Reports.
   1. Include test report indicating measured illumination levels.
E. Manufacturer's Installation Instructions: Indicate application conditions and limitations of use stipulated by product testing agency. Include instructions for storage, handling, protection, examination, preparation, installation, and starting of product.
F. Operation and Maintenance Data: Instructions for each product including information on replacement parts.
G. Maintenance Materials: Furnish the following for Owner's use in maintenance of project.
   1. See Section 01600 - Product Requirements, for additional provisions.
   2. Touch-Up Paint: 2 gallons (8 liters), to match color of pole finish.
H. Project Record Documents: Record actual connections and locations of pole foundations, luminaires, and any pull or junction boxes.

1.7 QUALITY ASSURANCE

A. Comply with requirements of NFPA 70.
B. Product Listing Organization Qualifications: An organization recognized by OSHA as a Nationally Recognized Testing Laboratory (NRTL) and acceptable to authorities having jurisdiction.

1.8 DELIVERY, STORAGE, AND HANDLING

A. Receive, handle, and store products according to NECA/IESNA 501 and manufacturer's written instructions.
B. Keep products in original manufacturer's packaging and protect from damage until ready for installation.

1.9 WARRANTY

A. See Section 01780 - Closeout Submittals, for additional warranty requirements.
B. Provide five year manufacturer warranty for all LED luminaires, including drivers.

PART 2 – PRODUCTS

2.1 LUMINAIRE TYPES

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

2.2 LUMINAIRES

A. Manufacturers:
   1. As per Lighting Fixture Schedule or suitable substitute approved by owner.
B. Provide products that comply with requirements of NFPA 70.
C. Provide products that are listed and labeled as complying with UL 1598, where applicable.
D. Provide products listed, classified, and labeled as suitable for the purpose intended.
E. Unless otherwise indicated, provide complete luminaires including lamp(s) and all sockets, ballasts, reflectors, lenses, housings and other components required to position, energize and protect the lamp and distribute the light.
F. Unless specifically indicated to be excluded, provide all required conduit, boxes, wiring, connectors, hardware, poles, foundations, supports, trims, accessories, etc. as necessary for a complete operating system.
G. Provide products suitable to withstand normal handling, installation, and service without any damage, distortion, corrosion, fading, discoloring, etc.
H. Provide luminaires listed and labeled as suitable for wet locations unless otherwise indicated.

I. LED Luminaires:
   1. Components: UL 8750 recognized or listed as applicable.
   2. Tested in accordance with IES LM-79 and IES LM-80.
   3. LED Estimated Useful Life: Minimum of 50,000 hours at 70 percent lumen maintenance, calculated based on IES LM-80 test data.

2.3 POLES

A. All Poles:
   1. Provide poles and associated support components suitable for the luminaire(s) and associated supports and accessories to be installed.
   2. Material: Steel, unless otherwise indicated.
   3. Mounting Height: 14' Pole, unless otherwise indicated.
   4. Mounting: Install on concrete foundation, height as indicated on the drawings, unless otherwise indicated.
   5. Unless otherwise indicated, provide with the following features/accessories:
      a. Top cap.
      b. Handhole.
      c. Anchor bolts with leveling nuts or leveling shims.
      d. Anchor base cover.
      e. Brackets: _____.
      f. Pole-top tenon, _____ inch.

B. Metal Poles: Provide ground lug, accessible from handhole or transformer base.

PART 3 – EXECUTION

3.1 EXAMINATION

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

3.2 PREPARATION

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

3.3 INSTALLATION

A. Coordinate locations of outlet boxes provided under Section 16152 as required for installation of luminaires provided under this section.
B. Perform work in accordance with NECA 1 (general workmanship).
C. Install products in accordance with manufacturer's instructions.
D. Install luminaires in accordance with NECA/IESNA 501.
E. Provide required support and attachment in accordance with Section 16071.
F. Install luminaires plumb and square and aligned with building lines and with adjacent luminaires.
G. Pole-Mounted Luminaires:
   1. Maintain the following minimum clearances:
      a. Comply with IEEE C2.
      b. Comply with utility company requirements.
   2. Foundation-Mounted Poles:
      a. Provide cast-in-place concrete foundations for poles as indicated, in accordance with Section 03300.
         1) Install anchor bolts plumb per template furnished by pole manufacturer.

2) Position conduits to enter pole shaft.
b. Install foundations plumb.
c. Install poles plumb, using leveling nuts or shims as required to adjust to plumb.
d. Tighten anchor bolt nuts to manufacturer's recommended torque.
e. Install anchor base covers or anchor bolt covers as indicated.
3. Grounding:
a. Bond luminaires, metal accessories, metal poles, and foundation reinforcement to branch circuit equipment grounding conductor.
b. Provide supplementary ground rod electrode as specified in Section 16060 at each pole bonded to grounding system as indicated.
4. Install separate service conductors, 12 AWG copper, from each luminaire down to handhole for connection to branch circuit conductors.

H. Install accessories furnished with each luminaire.
I. Bond products and metal accessories to branch circuit equipment grounding conductor.
J. Install lamps in each luminaire.

3.4 FIELD QUALITY CONTROL

A. See Section 01400 - Quality Requirements, for additional requirements.
B. Inspect each product for damage and defects.
C. Operate each luminaire after installation and connection to verify proper operation.
D. Correct wiring deficiencies and repair or replace damaged or defective products. Repair or replace excessively noisy ballasts as determined by Architect.
E. Measure illumination levels at night with calibrated meters to verify compliance with performance requirements. Record test results in written report to be included with submittals.

3.5 ADJUSTING

A. Aim and position adjustable luminaires to achieve desired illumination as indicated or as directed by Architect. Secure locking fittings in place.
B. Luminaires with Field-Rotatable Optics: Position optics according to manufacturer's instructions to achieve lighting distribution as indicated or as directed by Architect.

3.6 CLEANING

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

3.7 CLOSEOUT ACTIVITIES

A. See Section 01780 - Closeout Submittals, for closeout submittals.
B. See Section 01790 - Demonstration and Training, for additional requirements.
C. Demonstration: Demonstrate proper operation of luminaires to Architect, and correct deficiencies or make adjustments as directed.
D. Just prior to Substantial Completion, replace all lamps that have failed.

3.8 PROTECTION

A. Protect installed luminaires from subsequent construction operations.

END OF SECTION