AGENDA ITEM EXECUTIVE SUMMARY

Agenda Item:	Old Kirk Road Distribution General Construction
Presenter & Title:	Aaron Holton – Superintendent of Electric Services
Date:	January 16, 2024

Please Check Appropriate Box:

☒	Committee of the Whole Meeting	☐	Special Committee of the Whole Meeting
☒	City Council Meeting	☐	Special City Council Meeting
☐	Public Hearing	☐	Other -

Associated Strategic Plan Goal/Objective: EMS II

Estimated Cost: $2,247,206.00	Budgeted? ☒ Yes ☐ No	Other Funding? ☐ Yes ☒ No

If "Other Funding," please explain how the item will be funded:

Executive Summary:

Bids were advertised and opened on Monday, November 16, 2023 for the general construction of the Old Kirk Road Distribution project, consisting of construction of two underground feeders from Geneva Business Park to Kirk Rd and Fabyan area. 5 Bids were received, as shown below. After Stanley Consultant's review IHC was the low bidder. Staff recommends awarding the contract to IHC and authorizing the City Administrator to approved change orders not to exceed 10% of the contract price, or $224,721.00, for a total not-to-exceed amount of $2,471,927.00.

Bidder	Bid Opening Amount
IHC	$2,247,206.00
Intren	$2,924,345.00
Meade	$3,305,787.24
Michels	$5,230,806.79
Utility Dynamics	$5,870,000.00

Attachments: *(please list)*

- Recommendation and Supporting Documents from Stanley Consultants
- Resolution and Draft Conformed Contract

Voting Requirements:

This motion requires a simple majority of affirmative votes for passage. (City Council Only)

The Mayor may vote on three occasions: (a) when the vote of the alderpersons has resulted in a tie; (b) when one half of the alderpersons elected have voted in favor of an ordinance, resolution, or motion even though there is no tie vote; or (c) when a vote greater than a majority of the corporate authorities is required by state statute or local ordinance to adopt an ordinance, resolution, or motion.

Recommendation / Suggested Action: *(how the item should be listed on agenda)*

Recommend resolution awarding contract to IHC Construction Companies LLC for the Old Kirk Road Distribution General Construction in a total not-to-exceed amount of $2,471,927.00.

Stanley Consultants INC.

Stanley Building
225 Iowa Avenue
Muscatine, IA 52761

563.264.6600
stanleyconsultants.com

December 12, 2023

Aaron Holton
Electric Division Superintendent
City of Geneva
1800 South Street
Geneva, IL 60134

SUBJECT: Contract 23-07 Old Kirk Road Distribution General Construction – Letter of Recommendation

Dear Aaron:

On November 16, 2023, five (5) bids were received and opened at the City of Geneva (Geneva) in response to the request for proposal for the Old Kirk Road Distribution General Construction project. The bids were opened and read aloud by Geneva. The bids were then sent to Stanley Consultants to be reviewed in their office.

The apparent low bidder was IHC Construction Companies LLC (IHC). There were a few Exceptions that were provided with this bid. The one that affected bid price consisted of the following:

- Switch Vaults to be supplied by Owner.

The price of the switch vaults has been added to bid tab for reference. With this price added to IHC's bid IHC is still the apparent low bid.

After the bids were received, Geneva shared with Stanley Consultants a possibility of one of the circuits being removed from the contract. A question to the bidders was sent to ask what the price deduct would be if this was to happen after award of the bid. A price deduct was received from the two low bidders and can be seen in Attachment C and D. Were this deduction to happened after award, IHC would still provide the lowest price.

Stanley Consultants recommends the Contract 23-07 Old Kirk Road Distribution General Construction be awarded to IHC Construction Companies LLC for the bid price of $2,247,206.

A draft conformed contract between the City of Geneva and IHC has been provided in Attachment B. Please review and if Geneva agrees with the recommendation of awarding this contract to IHC please print and sign three originals of the Agreement Between Buyer and Seller page 5 and prepare a Notice-to-Proceed letter for IHC. Sent the Notice-to-Proceed letter with the signed signature pages to IHC with the direction to sign and date all three originals and send to me to be used in creating the conformed contract.

If you have any questions, please contact me at 563.264.6461.

Sincerely,

Philip E. Schulz
Project Manager
Stanley Consultants, Inc.

cc: Jennifer Hilkemann
Jose Ruiz
Files

Attachments: Attachment A – Bid Tabulation
Attachment B – Draft Conformed Contract
Attachment C – IHC Price Deduction
Attachment D – Intren Price Deduction

City of Geneva

Old Kirk Road Distribution Construction Rebid

Manufacturer	Intren	Meade	Utility Dynamics	Michles	IHC
Bid Document is Signed	Y	Y	Y	Y	Y
Bid Bond	Y	Y	Y	Y	Y
Warranty	N	N	N	N	Sample
Acknowledgement of Addendums	NO. 1	NO. 1	NO. 1	N	NO. 1
Clarifications	Y	N	N	Y	Y
Completion Date	Y	Y	Y	Y	Y
Liquidated Damages	Y	Y	Y	Y	Y
Unit Adjustment Prices					
Concrete (cubic yard)	$ 500.00	$ 300.00	$ 240.00	$ 288.89	$ 300.00
Cut (cubic yard)	$ 100.00	$ 225.00	$ 100.00	$ 300.17	$ 90.00
Fill (cubic yard)	$ 100.00	$ 220.00	$ 100.00	$ 100.06	$ 45.00
Directional Bore (feet)	$ 50.00	$ 75.00	$ 55.00	$ 75.23	$ 70.00
Site Service Engineer (per day)	NA	$ 3,500.00	NA	NA	NA
Transportation Travel Service Engineer (round trip)	NA	$ 4,000.00	NA	NA	NA
Total Bid Price	$ 2,924,345.00	$ 3,305,787.24	$ 5,870,000.00	$ 5,230,806.79	$ 2,247,206.00
Switch Vault Pricing	Included	Included	Included	Included	$ 33,352.85
Bid Price with Vaults Added	$ 2,924,345.00	$ 3,305,787.24	$ 5,870,000.00	$ 5,230,806.79	$ 2,280,558.85
Deduct For Removing Ckt 53 Cable install	$ 127,058.00	NOT PROVIDED	NOT PROVIDED	NOT PROVIDED	$ 29,231.00
Bid Price with Ckt 53 Deducted	$ 2,797,287.00	$ 3,305,787.24	$ 5,870,000.00	$ 5,230,806.79	$ 2,251,327.85
Comments	Exception to working in rock; City of Geneva to supply permits; Includes only 1 OT outage; includes only one mobilization; Contaminated or hazardous fill is the City's responsibility; burial depth limitations; 4 day RFI turnaround required; excludes major traffic control				10.01 - (K,N,O,P,Q,R) - N/A or materials stored on site

CONSTRUCTION
COMPANIES
L L C.

385 Airport Rd., Suite 100
Elgin, IL 60123
Phone 847-742-1516
Fax 847-289-3650

December 6, 2023

Old Kirk Rd Distribution Construction
Bid Proposal No. 23-07
Geneva, IL

Attn: Phil Schulz

Re: Circuit 53 Cable Installation and Connections Removal

Mr. Schulz:

IHC's price deduction for the possible change to the scope of work for Circuit 53 as per the email dated Tuesday, November 28, 2023 @ 1:58 pm is $29,231.00.

Respectfully submitted,
IHC Construction Companies, LLC
Mark Carson
Mark Carson
Project Manager/Estimator

LEADING CHANGE

12/6/2023

Attn: Jennifer Hilkemann
City of Geneva

INTREN, LLC, A MINORITY-CONTROLLED COMPANY,
RESPECTFULLY SUBMITS ITS PROPOSAL FOR THE FOLLOWING PROJECT:

"Old Kirk Road Distribution Construction, Conduit, Bore & Vault Installation – BP No. 23-05"

Revision #1 Pricing Request of 12/6/23 for Circuit 53 Cable & Connections

Total Lump Sum Pricing for the below described scope of work:

Rebid

$ See Pricing Below

I. SCOPE OF WORK: Civil – Open Cut

- Conduit Installation 4-6" + 1-4": 2616 LF
- Conduit Installation 2-6": 1958 LF
- Install Pull Vaults: 45 EA
- Install Switch Vaults: 8 EA
- Install Fiber Handholes: 3 EA
- Remove/Adjust Existing Vaults: 3 EA
- Asphalt Patch: 615 SF
- Landscape: 75900 SF
- Manhours: 2144

II. SCOPE of Work: UGE

- Install Approx. 73,413ft of 1000 kcmil 15kv AL 1/C
- Install Approx. 2,091ft of 1/0 AWG 15kv AL 1/C
- Install (123) 1000 kcmil AL Splices
- Install (3) 1000 AL – 750 CU Separable Splices
- Install (6) 1/0 AWG AL Splices
- Install (63) 1000 kcmil AL T-Body Connectors
- Install (3) 750 kcmil CU T-Body Connectors
- Install (15) 1/0 AL -AL Elbow Terminations
- Install (3) FP AIS-9 Switch Gears
- Install (2) FP AIS-11 Switch Gears

- Manhours: 2360

III. SCOPE of Work: Bore

- Install 2-6” Poly: 4521 LF
- Install 1-6” Poly: 1688 LF
- Install Pull Rope: 10730 LF
- Install Tracer Wire: 6209 LF
- Hydro Vac – Utilities: 1 LS
- Bores: 16 EA
- Bore Pits: 22 EA
- Underground Connections: 33 EA
- Manhours: 1517

Pricing breakdown: 40 Hours

• Civil:	$	1,972,755.00
• UGE:	$	405,212.00
• OVHD	$	486,729 .00
• Payment & Performance Bond:	$	15,044.00
• Testing Engineering	$	44,605.00
Total Pricing: 40 Hours	**$**	**2,924,345.00**

IV. SCOPE of Work: Revision #1 Pricing Deduct of Circuit 53 Cable and Connections

Total Deduct Pricing: (-$127,058.00) @ (-19) Hours

Pricing deduct removed:

- (81) 1000 AL Splice
- (30) 1000 AL T-Bodies
- (3) 1000 AL 750 Sep Splices
- 1/0 AL Elbow
- SWGR

V. EXCLUSIONS & CLARIFICATIONS

- See Attached INTREN Old Kirk Road Civil Exceptions to Requirement Doc
- See Attached INTREN Old Kirk Road UGE Proposal
- See Attached INTREN Old Kirk Road Bore Proposal
- See Attached INTREN Old Kirk Road Bid Form
- See Attached INTREN Old Kirk Road Supplier Diversity Template
- Proposal Pricing is based upon the following Engineering Drawings:
    1. Old Kirk Road Distribution: Stanley Consultants ***IFB*** Drawing Set dated 8-31-23 with Revision A dated 8-24-23, Revision B dated 8-31-23, Revision C dated 9-15-23 and Revision d dated 9-25-23.
    2. If updated plans are provided, Intren reserves the right to review said plans and provided revised pricing, if necessary.

Sincerely,
INTREN, LLC

Frank Williams
Project Manager
Cell (815) 333-9927
Email: fwilliams@intren.com

RESOLUTION NO. 2024-02

RESOLUTION AWARDING CONTRACT TO IHC CONSTRUCTION COMPANIES LLC FOR THE OLD KIRK ROAD DISTRIBUTION GENERAL CONSTRUCTION

BE IT RESOLVED BY THE CITY COUNCIL OF THE CITY OF GENEVA, KANE COUNTY, ILLINOIS, as follows:

SECTION 1: That the City Administrator is hereby authorized to execute, on behalf of the City of Geneva, a contract (in substantial compliance to Exhibit A) to IHC Construction Companies LLC for the Old Kirk Road Distribution General Construction in a total not-to-exceed amount of $2,471,927.00.

SECTION 2: This Resolution shall become effective from and after its passage as in accordance with law.

PASSED by the City Council of the City of Geneva, Kane County, Illinois, this 16th day of January, 2024

AYES: __ NAYS: __ ABSENT: __ ABSTAINING: __ HOLDING OFFICE: __

Approved by me this 16th day of January, 2024.

_____
Mayor

ATTEST:

_____
City Clerk

Exhibit A

Draft Conformed Contract

for

Bid Proposal No. 23-07
Old Kirk Road Distribution
General Construction

between

City of Geneva
Geneva, Illinois

and

IHC Construction Company LLC
Elgin, Il 60123

December 2023

Stanley Consultants INC.

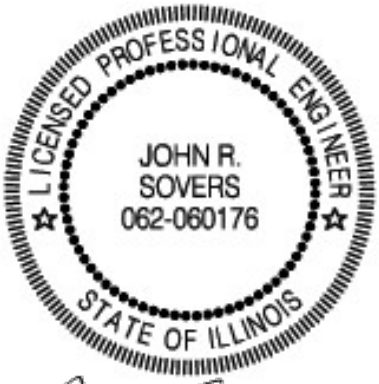
A Stanley Group Company
Engineering, Environmental and Construction Services - Worldwide

Project Manual

for

Bid Proposal No. 23-07
Old Kirk Road Distribution
General Construction

City of Geneva
Geneva, Illinois



Signature

10/19/2023
Date

License Expiration Date: 11-30-2023
Illinois Firm Registration No. 184-001533

Signature

10/19/2023
Date

License Expiration Date: 11-30-2024

Stanley Consultants INC.

A Stanley Group Company
Engineering, Environmental and Construction Services - Worldwide

Signature

10/19/2023
Date

License Expiration Date: 11-30-2023
Illinois Firm Registration No. 184-001533

Stanley Consultants INC.

A Stanley Group Company
Engineering, Environmental and Construction Services - Worldwide

BID PROPOSAL NO. 23-07
OLD KIRK ROAD DISTRIBUTION
GENERAL CONSTRUCTION

FOR

CITY OF GENEVA
GENEVA, ILLINOIS

PROCUREMENT AND CONTRACTING REQUIREMENTS GROUP

DIVISION 00 PROCUREMENT AND CONTRACTING REQUIREMENTS

SPECIFICATIONS GROUP

GENERAL REQUIREMENTS SUBGROUP

FACILITY CONSTRUCTION SUBGROUP

FACILITY SERVICES SUBGROUP

Drawing No.	Title	Rev. No.
GG01	Coversheet and Drawing Index	0
EU01-EU05	Electrical Distribution - Plan and Profiles	0
EU06	Electrical Distribution - Plan and Profiles	0
EU07	Electrical Distribution - Plan and Profiles	0
EU08-EU22	Electrical Distribution - Plan and Profiles	0
EU23	Electrical Distribution Power Cable Sections & Details	0
EU24	Electrical Distribution Fiber Optic Sections & Details	0
EU25	Distribution Switchgear Connection Details	0

THIS AGREEMENT is by and between City of Geneva (Owner) and IHC Construction Companies LLC (Contractor). Owner and Contractor hereby agree as follows:

ARTICLE 1 - WORK

1.1 Contractor shall complete all Work as specified or indicated in the Contract Documents. The Work is generally procurement and construction of Old Kirk Road Distribution.

ARTICLE 2 - THE PROJECT

2.1 The Project for which Work under the Contract Documents may be the whole or only a part is generally described as Old Kirk Road Distribution.

ARTICLE 3 - ENGINEER

3.1 The Project has been designed by Stanley Consultants, Inc.

3.2 The Owner has retained Stanley Consultants, Inc. (Engineer) to act as Owner's representative, assume all duties and responsibilities, and have the rights and authority assigned to Engineer in the Contract Documents in connection with the completion of the Work in accordance with the Contract Documents.

ARTICLE 4 - CONTRACT TIMES

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

4.2 *Contract Times: Dates.* The Work will be substantially completed on or before October 1, 2024, and completed and ready for final payment in accordance with paragraph 15.06 of the General Conditions on or before November 1, 2024.

4.3 *Milestones.* Equipment procurement may start within 21 days after Notice to Proceed.

4.4 The City shall be notified 48 hours prior to any shipment of materials or equipment. Please contact Mr. Jose Ruiz at (630) 232-1503 during the hours of 7:00 am to 3:00 pm Monday through Friday.

4.5 Deliveries shall be made during City of Geneva Electric Utility business hours of 7:00 am to 11:30 am and 12:30 pm to 3:00 pm Monday through Friday.

4.4 *Liquidated Damages*. Contractor and Owner recognize that time is of the essence as stated in Paragraph 4.1 above and that Owner will suffer financial and other losses if the Work is not completed and Milestones not achieved within the times specified in Paragraph 4.2 above, plus any extensions thereof allowed in accordance with the Contract. The parties also recognize the delays, expense, and difficulties involved in proving in a legal or arbitration proceeding the actual loss suffered by Owner if the Work is not completed on time. Accordingly, instead of requiring any such proof, Owner and Contractor agree that as liquidated damages for delay (but not as a penalty):

A. Substantial Completion: Contractor shall pay Owner $750 for each day that expires after the time (as duly adjusted pursuant to the Contract) specified in Paragraph 4.2 above for Substantial Completion until the Work is substantially complete.

B. Completion of Remaining Work: After Substantial Completion, if Contractor shall neglect, refuse, or fail to complete the remaining Work within the Contract Time (as duly adjusted pursuant to the Contract) for completion and readiness for final payment, Contractor shall pay Owner $750 for each day that expires after such time until the Work is completed and ready for final payment.

C. Liquidated damages for failing to timely attain Substantial Completion and final completion are not additive and will not be imposed concurrently.

4.6 *Special Damages.* In addition to the amount provided for liquidated damages, Contractor shall reimburse Owner (1) for any fines or penalties imposed on Owner as a direct result of the Contractor's failure to attain Substantial Completion according to the Contract Times, and (2) for the actual costs reasonably incurred by Owner for engineering, construction observation, inspection, and administrative services needed after the time specified in

Paragraph 4.02 for Substantial Completion (as duly adjusted pursuant to the Contract), until the Work is substantially complete.

4.7 After Contractor achieves Substantial Completion, if Contractor shall neglect, refuse, or fail to complete the remaining Work within the Contract Times, Contractor shall reimburse Owner for the actual costs reasonably incurred by Owner for engineering, construction observation, inspection, and administrative services needed after the time specified in Paragraph 4.02 for Work to be completed and ready for final payment (as duly adjusted pursuant to the Contract), until the Work is completed and ready for final payment.

ARTICLE 5 - CONTRACT PRICE

5.1 Owner shall pay Contractor for furnishing the Goods and Special Services and for completion of the Work in accordance with the Contract Documents the amounts that follow, subject to adjustment under the Contract:

A. For all Work, other than Unit Price Work, a Lump Sum of:

Two Million Two Hundred Forty-Seven Thousand Two Hundred Six Dollars and Zero Cents ($2,247,206.00)
(words) (figures)

B. *Unit Adjustment Prices*. To adjust Lump Sum for changes from quantities required by Contract Documents.

Item No.	Description	Unit	Unit Adjustment Price
1.	Concrete	cubic yard	$300.00
2.	Cut	cubic yard	$90.00
3.	Fill	cubic yard	$45.00
4.	Directional Bore	feet	$70.00
5.	Site services of Service Engineer	per day	$0.00
6.	Transportation, travel time, and out-of-pocket expenses for travel of Service Engineer to Site	per round trip	$0.00

ARTICLE 6 - PAYMENT PROCEDURES

6.1 *Submittal and Processing of Payments.* Contractor shall submit Applications for Payment in accordance with Article 15 of the General Conditions. Applications for Payment will be processed by Engineer as provided in the General Conditions.

6.2 *Progress Payments; Retainage***.** Owner shall make progress payments on account of the Contract Price on the basis of Contractor's Applications for Payment on or about the last day of each month during performance of the Work as provided in Paragraph 6.2.A.1 below, provided that such Applications for Payment have been submitted in a timely manner and otherwise meet the requirements of the Contract. All such payments will be measured by the Schedule of Values established as provided in the General Conditions (and in the case of Unit Price Work based on the number of units completed) or, in the event there is no Schedule of Values, as provided elsewhere in the Contract.

A. Prior to Substantial Completion, progress payments will be made in an amount equal to the percentage indicated below, but, in each case, less the aggregate of payments previously made and less such amounts as Owner may withhold, including but not limited to liquidated damages, in accordance with the Contract:

1. 90% percent of Work completed (with the balance being retainage). If the Work has been 50 percent completed as determined by Engineer, and if the character and progress of the Work have been satisfactory to Owner and Engineer, then as long as the character and progress of the Work remain satisfactory to Owner and Engineer, there will be no additional retainage; and

2. 90% of cost of materials and equipment not incorporated in the Work (with the balance being retainage).

B. Upon Substantial Completion, Owner shall pay an amount sufficient to increase total payments to Contractor to 90% of the Work completed, less such amounts set off by Owner pursuant to paragraph 15.01. E. of the General Conditions and less 10% of Engineer's estimate of the value of Work to be completed or corrected as shown on the punch list of items to be completed or corrected prior to final payment.

6.3 *Final Payment.* Upon final completion and acceptance of the Work in accordance with paragraph 15.06 of the General Conditions, Owner shall pay the remainder of the Contract Price as recommended by Engineer as provided in said paragraph 15.06.

ARTICLE 7 - INTEREST

7.1 All amounts not paid when due shall bear interest at the rate of 4% per annum.

ARTICLE 8 - CONTRACTOR'S REPRESENTATIONS

8.1 In order to induce Owner to enter into this Contract, Contractor makes the following representations:

A. Contractor has examined and carefully studied the Contract Documents, and any data and reference items identified in the Contract Documents.

B. Contractor has visited the Site, conducted a thorough, alert visual examination of the Site and adjacent areas, and become familiar with and is satisfied as to the general, local, and Site conditions that may affect cost, progress, and performance of the Work.

C. Contractor is familiar with and is satisfied as to all Laws and Regulations that may affect cost, progress, and performance of the Work.

D. No site related reports are available for this project.

ARTICLE 9 - CONTRACT DOCUMENTS

9.1 *Contents:* The Contract Documents consist of the following:

A. This Agreement (pages 1 to 5, inclusive).

B. Performance Bond (pages 1 to 3, inclusive).

C. Payment Bond (pages 1 to 3, inclusive).

D. General Conditions (pages 1 to 38, inclusive).

E. Supplementary Conditions (pages 1 to 12, inclusive).

F. Specifications as listed in Project Manual table of contents.

G. Drawings as listed on the Drawing List.

H. Addenda number 1, inclusive.

I. The following which may be delivered or issued on or after the Effective Date of the Agreement and are not attached hereto:

1. Notice to Proceed.

2. Instructions to Contractors.

3. Change Orders.

4. Field Orders.

9.2 The documents listed in paragraph 9.1 are attached to this Agreement (except as expressly noted otherwise above).

9.3 There are no Contract Documents other than those listed above in this Article 9.

9.4 The Contract Documents may only be amended, modified, or supplemented as provided in the General Conditions.

ARTICLE 10 - MISCELLANEOUS

10.1 *Terms***.** Terms used in this Agreement will have the meanings indicated in the General Conditions and the Supplementary Conditions.

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

10.3 *Successors and Assigns.* Owner and Contractor each binds itself, its successors, assigns, and legal representatives to the other party hereto, its successors, assigns, and legal representatives in respect to all covenants, agreements, and obligations contained in the Contract Documents.

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

10.5 *Contractor's Certification.* Contractor certifies that it has not engaged in corrupt, fraudulent, collusive, or coercive practices in competing for or in executing the Contract. For the purposes of this Paragraph 10.5:

A. "corrupt practice" means the offering, giving, receiving, or soliciting of anything of value likely to influence the action of a public official in the bidding process or in the Contract execution;

B. "fraudulent practice" means an intentional misrepresentation of facts made (a) to influence the bidding process or the execution of the Contract to the detriment of Owner, (b) to establish Bid or Contract prices at artificial non-competitive levels, or (c) to deprive Owner of the benefits of free and open competition;

C. "collusive practice" means a scheme or arrangement between two or more Bidders, with or without the knowledge of Owner, a purpose of which is to establish Bid prices at artificial, non-competitive levels; and

D. "coercive practice" means harming or threatening to harm, directly or indirectly, persons or their property to influence their participation in the bidding process or affect the execution of the Contract.

10.6 *Other Provisions.* Owner stipulates that the General Conditions that are made a part of this Contract are based on EJCDC® C-700, Standard General Conditions for the Construction Contract, published by the Engineers Joint Contract Documents Committee®, and Owner is the party that has furnished said General Conditions, and has plainly shown all modifications to the standard wording of such published document to the Contractor in the Supplementary Conditions.

IN WITNESS WHEREOF, Owner and Contractor have signed this Agreement. This Agreement will be effective on _____, 20___ (which is the Effective Date of the Agreement).

OWNER:	**CONTRACTOR:**
_____	_____
By: _____	By: _____
Title: _____	Title: _____ *(If Contractor is a corporation, a partnership, or a joint venture, attach evidence of authority to sign.)*
Attest _____	Attest _____
Title: _____	Title: _____
Address for giving notices:	Address for giving notices:
_____	_____
_____	_____
(If Owner is a corporation, attach evidence of authority to sign. If Owner is a public body, attach evidence of authority to sign and resolution or other documents authorizing execution of Owner-Contractor Agreement.)	License No. _____ *(Where applicable)*

END OF DOCUMENT

PROJECT AND CONTRACT IDENTIFICATION

THIS BID pertains to Old Kirk Road Distribution General Construction for the City of Geneva, Illinois (Owner).

ARTICLE 1 - SUBMITTAL OF BID; BID RECIPIENT; BID SECURITY

1.01 Submit Bids on or before 10:00 a.m., local time, November 13, 2023. Bids received after this date and time, or not submitted at the correct location or in the designated manner, will not be accepted and will be returned to the Bidder unopened.

1.02 This Bid is submitted to: CITY ADMINISTRATOR
CITY OF GENEVA, ILLINOIS
22 SOUTH FIRST STREET
GENEVA, ILLINOIS 60134

1.03 Prepare three original unbound hard copies and one PDF of Bid on Bid Form provided in Project Manual A Bid shall be enclosed in a plainly marked package with the Project title (and, if applicable, the designated portion of the Project for which the Bid is submitted), the name and address of Bidder, and shall be accompanied by the Bid security made payable to Owner in an amount of 10% of Bidder's maximum Bid price (determined by adding the base bid and all alternates) and in the form of a certified check, bank money order, or a Bid bond (on the form included in the Bidding Documents) issued by a surety meeting the requirements of Paragraphs 6.01 and 6.02 of the General Conditions, and other required documents.

1.04 If a Bid is sent by mail or other delivery system, the sealed envelope containing the Bid shall be enclosed in a separate package plainly marked on the outside with the notation "BID ENCLOSED."

1.05 Oral, telephonic, telegraphic, facsimile or other electronically transmitted Bids will not be considered.

1.06 The undersigned Bidder proposes and agrees, if this Bid is accepted, to enter into a Contract with Owner in the form included in the Bidding Documents to perform all Work as specified or indicated in the Bidding Documents for the prices and within the times indicated in this Bid and in accordance with the other terms and conditions of the Bidding Documents.

ARTICLE 2 - OPENING OF BIDS

2.01 Bids will be opened at the time and place indicated and, unless obviously nonresponsive, read aloud publicly. An abstract of the amounts of the base Bids and major alternates, if any, will be made available to Bidders after the opening of Bids.

ARTICLE 3 - BIDS TO REMAIN SUBJECT TO ACCEPTANCE

3.01 This Bid will remain subject to acceptance for 90 days after the Bid opening, or for such longer period of time that Bidder may agree to in writing upon request of Owner.

3.02 The Bid security of the apparent Successful Bidder will be retained until Owner awards the contract to such Bidder, and such Bidder has executed the Contract Documents, furnished the required contract security, and met the other conditions of the Notice of Award, whereupon the Bid security will be released. If the Successful Bidder fails to execute and deliver the Contract Documents and furnish the required contract security within 15 days after the Notice of Award, Owner may consider Bidder to be in default, annul the Notice of Award, and the Bid security of that Bidder will be forfeited. Such forfeiture shall be Owner's exclusive remedy if Bidder defaults.

3.03 The Bid security of other Bidders whom Owner believes to have a reasonable chance of receiving the award may be retained by Owner until the earlier of 7 days after the Effective Date of the Contract or 46 days after the Bid opening.

3.04 Bid security of other Bidders whom Owner believes do not have a reasonable chance of receiving the award will be returned within 7 days after the Bid opening.

ARTICLE 4 - BIDDER'S REPRESENTATIONS

4.01 In submitting this Bid, Bidder represents that:

A. Bidder has examined and carefully studied the Bidding Documents, and any data and reference items identified in the Bidding Documents, and hereby acknowledges receipt of the following Addenda:

Addendum No.	Addendum Date
1	10/31/2023

B. Bidder has visited the Site, conducted a thorough, alert visual examination of the Site and adjacent areas, and become familiar with and satisfy itself as to the general, local, and Site conditions that may affect cost, progress, and performance of the Work.

C. Bidder is familiar with and is satisfied as to all Laws and Regulations that may affect cost, progress and performance of the Work.

D. Bidder has carefully studied all: (1) reports of explorations and tests of subsurface conditions at or adjacent to the Site and all drawings of physical conditions relating to existing surface or subsurface structures at the Site that have been identified in the Contract, especially with respect to Technical Data in such reports and drawings, and (2) reports and drawings relating to Hazardous Environmental Conditions, if any, at or adjacent to the Site that have been identified in the Contract, especially with respect to Technical Data in such reports and drawings.

E. Bidder has considered the information known to Bidder itself; information commonly known to contractors doing business in the locality of the Site; information and observations obtained from visits to the Site; the Bidding Documents; and any Site-related reports and drawings identified in the Bidding Documents, with respect to the effect of such information, observations, and documents on (1) the cost, progress, and performance of the Work; (2) the means, methods, techniques, sequences, and procedures of construction to be employed by Bidder; and (3) Bidder's safety precautions and programs.

F. Bidder agrees, based on the information and observations referred to in the preceding paragraph, that no further examinations, investigations, explorations, tests, studies, or data are necessary for the determination of this Bid for performance of the Work at the price bid and within the times required, and in accordance with the other terms and conditions of the Bidding Documents.

G. Bidder is aware of the general nature of work to be performed by Owner and others at the Site that relates to the Work as indicated in the Bidding Documents.

H. Bidder has given Engineer written notice of all conflicts, errors, ambiguities, or discrepancies that Bidder has discovered in the Bidding Documents, and confirms that the written resolution thereof by Engineer is acceptable to Bidder.

I. Bidding Documents are generally sufficient to indicate and convey understanding of all terms and conditions for the performance and furnishing of the Work.

J. Submission of this Bid constitutes an incontrovertible representation by Bidder that Bidder has complied with every requirement of this Article, and that without exception the Bid and all prices in the Bid are premised upon performing and furnishing the Work required by the Bidding Documents.

ARTICLE 5 - BIDDER'S CERTIFICATION

5.01 Bidder certifies that:

A. This Bid is genuine and not made in the interest of or on behalf of any undisclosed individual or entity and is not submitted in conformity with any Contract or rules of any group, association, organization or corporation;

B. Bidder has not directly or indirectly induced or solicited any other Bidder to submit a false or sham Bid;

C. Bidder has not solicited or induced any individual or entity to refrain from bidding; and

D. Bidder has not engaged in corrupt, fraudulent, collusive, or coercive practices in competing for the Contract. For the purposes of this Paragraph 4.01.D:

1. "corrupt practice" means the offering, giving, receiving, or soliciting of anything of value likely to influence the action of a public official in the bidding process;

2. "fraudulent practice" means an intentional misrepresentation of facts made (a) to influence the bidding process to the detriment of Owner, (b) to establish bid prices at artificial non-competitive levels, or (c) to deprive Owner of the benefits of free and open competition;

3. "collusive practice" means a scheme or arrangement between two or more Bidders, with or without the knowledge of Owner, a purpose of which is to establish bid prices at artificial, noncompetitive levels; and

4. "coercive practice" means harming or threatening to harm, directly or indirectly, persons or their property to influence their participation in the bidding process or affect the execution of the Contract.

ARTICLE 6 - PREPARATION OF BID

6.01 All blanks shall be completed in ink and the Bid signed in ink. Erasures or alterations shall be initialed in ink by the person signing the Bid. A Bid price shall be indicated for each section, Bid item, alternate, unit adjustment price item, and unit price item listed.

6.02 If the Form expressly indicates that submitting pricing on a specific alternate item is optional, and Bidder elects to not furnish pricing for such optional alternate item, then Bidder may enter the words "No Bid" or "Not Applicable."

ARTICLE 7 - BASIS OF BID

7.01 Bidder will complete the Work in accordance with the Contract Documents for the following price(s):

A. Lump Sum Bid Price:

Two Million Two Hundred Forty Seven Thousand Two Hundred Six Dollars and Zero Cents
(words)

($2,247,206.00).
(figures)

B. Unit Adjustment Prices: Required Base Bid quantities of the items listed below are set forth in the Contract Documents. If increases or decreases in these quantities occur, the Contract Price is to be adjusted by Change Order on the basis of the following. Adjustment prices are subject to acceptance by Owner, and rejection of one or more adjustment prices will not invalidate acceptance of this Bid.

Item No.	Item	Unit	Unit Adjustment Price
1.	Concrete	cubic yard	$300.00
2.	Cut	cubic yard	$90.00
3.	Fill	cubic yard	$45.00
4.	Directional Bore	feet	$70.00
5.	Site services of Service Engineer	per day	$0.00
6.	Transportation, travel time, and out-of-pocket expenses for travel of Service Engineer to Site	Per round trip	$0.00

1. Owner reserves right to change quantities to be furnished. Unit prices bid control, regardless of actual quantities required. Owner and Contractor may renegotiate the unit price for such items furnished under the Contract.

2. Contractor's compensation will be computed on basis of final quantities incorporated in completed Work.

3. Each Bid shall cover complete Work including costs incidental thereto. Bid shall include all costs of permits, fees, and similar expenses.

ARTICLE 8 - TIME OF COMPLETION

8.01 Bidder agrees that the Work will be substantially complete and will be completed and ready for final payment in accordance with the Contract on or before the dates or within the number of calendar days indicated in the Contract.

8.02 Bidder accepts the provisions of the Contract as to liquidated damages in the event of failure to complete the Work within the Contract Times.

ARTICLE 9 - EXCEPTIONS AND CLARIFICATIONS

9.01 Attach a separate sealed envelope labeled "Exceptions and Clarifications" to outside of sealed Bid, containing listing on Bidder's letterhead of all exceptions and clarifications to Contract Documents, referencing page number and paragraph of Contract Documents involved. If there are no exceptions or clarifications, include statement to such effect in Bid envelope. Excessive exceptions or clarifications may render Bid unresponsive. Bidder agrees to all provisions contained in Contract Documents unless specifically listed as an exception or clarification. If Bidder submits drawings, printed forms, standard statements, or other revisions which conflict with Contract Documents, the Contract Documents will prevail.

ARTICLE 10 - ATTACHMENTS TO THIS BID

10.01 The following documents are attached to and made a condition of this Bid:

A. Statement of no Exceptions and Clarifications, if appropriate;

B. Exceptions and Clarifications to Contract Documents, if appropriate;

C. Required Bid security;

D. List of proposed Subcontractors;

E. List of proposed Suppliers;

F. Evidence of authority to do business in the state of the Project; or a written covenant to obtain such license within the time for acceptance of Bids;

G. Contractor's License No.: 0063312-7 .

H. Affidavit of Non-Collusion

I. Attachment A - Certification of Compliance.

J. Attachment B - List of Owner Furnished Materials.

K. Submittal schedule and complete equipment delivery schedule. **- N/A**

L. Special equipment, tools, and accessories.

M. List of proposed equipment including model numbers, description of breakers, current transformers, voltage transformers, fuses, relays, control switches, and other devices.

N. Information as defined in ANSI C37.21. **-N/A**

O. List of items requiring field assembly. **-N/A**

P. Recommended spare parts list with pricing. **-N/A**

Q. Recommended long term and short-term storage requirements, and procedures. **All materials will be stored on site.**

R. Geographical location of manufacturing facilities. **-N/A**

S. Copy of warranty.

ARTICLE 11 - DEFINED TERMS

11.01 Terms used in this Bid have the meanings indicated in the Contract. Additional terms used in this Bid have the meanings indicated below:

A. Issuing Office – The office from which the Bidding Documents are to be issued and where the bidding procedures are to be administered.

ARTICLE 12 - COPIES OF BIDDING DOCUMENTS

12.01 Complete sets of the Bidding Documents may be obtained from the Issuing Office in the number and format stated in the Advertisement for Bids.

12.02 Complete sets of Bidding Documents shall be used in preparing Bids; neither Owner nor Engineer assumes any responsibility for errors or misinterpretations resulting from the use of incomplete sets of Bidding Documents.

12.03 Owner and Engineer, in making copies of Bidding Documents available on the above terms, do so only for the purpose of obtaining Bids for the Work and do not authorize or confer a license for any other use.

ARTICLE 13 - QUALIFICATIONS OF BIDDERS

13.01 To demonstrate Bidder's qualifications to perform the Work, after submitting its Bid and within five days of Owner's request, Bidder shall submit (a) written evidence establishing its qualifications such as financial data, previous experience, and present commitments, and (b) the following additional information:

A. Evidence of Bidder's authority to do business in the state where the Project is located.

B. Bidder's state or other contractor license number, if applicable.

C. Subcontractor and Supplier qualification information; coordinate with provisions of Article Subcontractors, Suppliers, and Others.

D. Other required information regarding qualifications.

13.02 Bidder's failure to submit required qualification information within the times indicated may disqualify Bidder from receiving an award of the Contract.

13.03 No requirement in this Article to submit information will prejudice the right of Owner to seek additional pertinent information regarding Bidder's qualifications.

13.04 Bidder is advised to carefully review those portions of the Bid Form requiring Bidder's representations and certifications.

ARTICLE 14 - SITE AND OTHER AREAS; EXISTING SITE CONDITIONS; EXAMINATION OF SITE; OWNER'S SAFETY PROGRAM; OTHER WORK AT THE SITE

14.01 The Site is identified in the Bidding Documents. By definition, the Site includes rights-of-way, easements, and other lands furnished by Owner for the use of the Contractor. Any additional lands required for temporary construction facilities, construction equipment, or storage of materials and equipment, and any access needed for such additional lands, are to be obtained and paid for by Contractor.

A. Existing site conditions:

1. Subsurface and Physical Conditions; Hazardous Environmental Conditions:

a. The Supplementary Conditions identify:
   1) those reports known to Owner of explorations and tests of subsurface conditions at or adjacent to the Site.
   2) those drawings known to Owner of physical conditions relating to existing surface or subsurface structures at the Site (except Underground Facilities).
   3) reports and drawings known to Owner relating to Hazardous Environmental Conditions that have been identified at or adjacent to the Site.
   4) Technical Data contained in such reports and drawings.

b. Owner will make copies of reports and drawings referenced above available to any Bidder on request. These reports and drawings are not part of the Contract Documents, but the Technical Data contained therein upon whose accuracy Bidder is entitled to rely, as provided in the General Conditions, has been identified and established in the Supplementary Conditions. Bidder is responsible for any interpretation or conclusion Bidder draws from any Technical Data or any other data, interpretations, opinions, or information contained in such reports or shown or indicated in such drawings.

c. If the Supplementary Conditions do not identify Technical Data, the default definition of Technical Data set forth in Article 1 of the General Conditions will apply.

2. Underground Facilities: Information and data shown or indicated in the Bidding Documents with respect to existing Underground Facilities at or contiguous to the Site are set forth in the Contract Documents and are based upon information and data furnished to Owner and Engineer by owners of such Underground Facilities, including Owner, or others.

3. Adequacy of Data: Provisions concerning responsibilities for the adequacy of data furnished to prospective Bidders with respect to subsurface conditions, other physical conditions, and Underground Facilities, and possible changes in the Bidding Documents due to differing or unanticipated subsurface or physical conditions appear in Paragraphs 5.03, 5.04, and 5.05 of the General Conditions. Provisions concerning responsibilities for the adequacy of data furnished to prospective Bidders with respect to a Hazardous Environmental Condition at the Site, if any, and possible changes in the Contract Documents due to any Hazardous Environmental Condition uncovered or revealed at the Site which was not shown or indicated in the Drawings or Specifications or identified in the Contract Documents to be within the scope of the Work, appear in Paragraph 5.06 of the General Conditions.

B. Site visit and testing by bidders:

1. Bidder shall conduct the required Site visit during normal working hours, and shall not disturb any ongoing operations at the Site.

2. Bidder is not required to conduct any subsurface testing, or exhaustive investigations of Site conditions.

3. On request, and to the extent Owner has control over the Site, and schedule permitting, the Owner will provide Bidder access to the Site to conduct such additional examinations, investigations, explorations, tests, and studies as Bidder deems necessary for preparing and submitting a successful Bid. Owner will not have any obligation to grant such access if doing so is not practical because of existing operations, security or safety concerns, or restraints on Owner's authority regarding the Site.

4. Bidder shall comply with all applicable Laws and Regulations regarding excavation and location of utilities, obtain all permits, and comply with all terms and conditions established by Owner or by property owners or other entities controlling the Site with respect to schedule, access, existing operations, security, liability insurance, and applicable safety programs.

5. Bidder shall fill all holes and clean up and restore the Site to its former condition upon completion of such explorations, investigations, tests, and studies.

C. Owner's safety program: Site visits and work at the Site may be governed by an Owner safety program. As the General Conditions indicate, if an Owner safety program exists, it will be noted in the Supplementary Conditions.

D. Other work at the Site: Reference is made to Article 8 of the Supplementary Conditions for the identification of the general nature of other work of which Owner is aware (if any) that is to be performed at the Site by Owner or others (such as utilities and other prime contractors) and relates to the Work contemplated by these Bidding Documents. If Owner is party to a written contract for such other work, then on request, Owner will provide to each Bidder access to examine such contracts (other than portions thereof related to price and other confidential matters), if any.

ARTICLE 15 - PRE-BID CONFERENCE

15.01 A prebid conference will not be held. Notes from previous prebid conference will be available upon request.

15.02 Engineer will transmit to all prospective Bidders of record such Addenda as Engineer considers necessary in response to questions arising at the conference. Oral statements may not be relied upon and will not be binding or legally effective.

ARTICLE 16 - INTERPRETATIONS AND ADDENDA

16.01 All questions about the meaning or intent of the Bidding Documents are to be submitted to Engineer in writing.

Mr. Philip Schulz
Stanley Consultants, Inc.
Stanley Building
225 Iowa Avenue
Muscatine, Iowa 52761-3764
Schulzphil@stanleygroup.com

16.02 Interpretations or clarifications considered necessary by Engineer in response to such questions will be issued by Addenda delivered to all parties recorded by Engineer as having received the Bidding Documents. Questions received less than 10 days prior to the date for opening of Bids may not be answered. Only questions answered by Addenda will be binding. Oral and other interpretations or clarifications will be without legal effect.

16.03 Addenda may be issued to clarify, correct, or change the Bidding Documents as deemed advisable by Owner or Engineer.

ARTICLE 17 - SUBSTITUTE AND "OR-EQUAL" ITEMS

17.01 The Contract for the Work, as awarded, will be on the basis of materials and equipment specified or described in the Bidding Documents without consideration during the bidding and Contract award process of possible substitute or "or-equal" items. In cases in which the Contract allows the Contractor to request that Engineer authorize the use of a substitute or "or-equal" item of material or equipment, application for such acceptance may not be made to and will not be considered by Engineer until after the Effective Date of the Contract.

17.02 All prices that Bidder sets forth in its Bid shall be based on the presumption that the Contractor will furnish the materials and equipment specified or described in the Bidding Documents, as supplemented by Addenda. Any assumptions regarding the possibility of post-Bid approvals of "or-equal" or substitution requests are made at Bidder's sole risk.

ARTICLE 18 - SUBCONTRACTORS, SUPPLIERS AND OTHERS

18.01 A Bidder shall be prepared to retain specific Subcontractors, Suppliers, or other individuals or entities for the performance of the Work if required by the Bidding Documents (most commonly in the Specifications) to do so. If a prospective Bidder objects to retaining any such Subcontractor, Supplier, or other individual or entity, and the concern is not relieved by an Addendum, then the prospective Bidder should refrain from submitting a Bid.

18.02 Subsequent to the submittal of the Bid, Owner may not require the Successful Bidder or Contractor to retain any Subcontractor, Supplier, or other individual or entity against which Contractor has reasonable objection.

18.03 The apparent Successful Bidder, and any other Bidder so requested, shall within 5 days after Bid opening, submit to Owner a list of the Subcontractors or Suppliers proposed for the following portions of the Work:

18.04 If requested by Owner, such list shall be accompanied by an experience statement with pertinent information regarding similar projects and other evidence of qualification for each such Subcontractor, Supplier, or other individual or entity. If Owner or Engineer, after due investigation, has reasonable objection to any proposed Subcontractor, Supplier, individual, or entity, Owner may, before the Notice of Award is given, request apparent Successful Bidder to submit an acceptable substitute, in which case apparent Successful Bidder shall submit a substitute, Bidder's Bid price will be increased (or decreased) by the difference in cost occasioned by such substitution, and Owner may consider such price adjustment in evaluating Bids and making the Contract award.

18.05 If apparent Successful Bidder declines to make any such substitution, Owner may award the Contract to the next lowest Bidder that proposes to use acceptable Subcontractors, Suppliers, or other individuals or entities. Declining to make requested substitutions will constitute grounds for forfeiture of the Bid security of any Bidder. Any Subcontractor, Supplier, individual, or entity so listed and against which Owner or Engineer makes no written objection prior to the giving of the Notice of Award will be deemed acceptable to Owner and Engineer subject to subsequent revocation of such acceptance as provided in Paragraph 7.06 of the General Conditions.

ARTICLE 19 - EVALUATION OF BIDS AND AWARD OF CONTRACT

19.01 Owner reserves the right to reject any or all Bids, including without limitation, nonconforming, nonresponsive, unbalanced, or conditional Bids. Owner will reject the Bid of any Bidder that Owner finds, after reasonable inquiry and evaluation, to not be responsible. If Bidder purports to add terms or conditions to its Bid, takes exception to any provision of the Bidding Documents, or attempts to alter the contents of the Contract Documents for purposes of the Bid, then the Owner will reject the Bid as nonresponsive; provided that Owner also reserves the right to waive all minor informalities not involving price, time, or changes in the Work.

19.02 Evaluation of Bids:

A. In evaluating Bids, Owner will consider whether or not the Bids comply with the prescribed requirements, and such alternates, unit prices, and other data, as may be requested in the Bid Form or prior to the Notice of Award.

19.03 In evaluating whether a Bidder is responsible, Owner will consider the qualifications of the Bidder and may consider the qualifications and experience of Subcontractors and suppliers proposed for those portions of the Work for which the identity of Subcontractors and suppliers must be submitted as provided in the Bidding Documents.

19.04 Owner may conduct such investigations as Owner deems necessary to establish the responsibility, qualifications, and financial ability of Bidders and any proposed Subcontractors or suppliers.

ARTICLE 20 - SIGNING OF CONTRACT

20.01 When Owner issues a Notice of Award to the Successful Bidder, it shall be accompanied by the unexecuted counterparts of the Agreement along with the other Contract Documents as identified in the Agreement.

20.02 Within 15 days thereafter, Successful Bidder shall execute and deliver the required number of counterparts of the Agreement (and any bonds and insurance documentation required to be delivered by the Contract Documents) to Owner.

20.03 Within 10 days thereafter, Owner shall deliver one fully executed counterpart of the Agreement to Successful Bidder, together with printed and electronic copies of the Contract Documents as stated in Paragraph 2.02 of the General Conditions.

ARTICLE 21 - SALES AND USE TAXES

21.01 Owner is exempt from Illinois state sales and use taxes on materials and equipment to be incorporated in the Work. An exemption certification will be furnished upon request. Said taxes shall not be included in the Bid. Refer to paragraph SC-7.09 of the Supplementary Conditions for additional information.

ARTICLE 22 - SPECIAL LEGAL REQUIREMENTS

22.01 *Nondiscrimination In Employment*: By the submission of its Bid, each Bidder acknowledges that he understands and agrees to be bound by equal opportunity requirements of EPA regulations (40 CFR Part 8, particularly Section 8.4(b)), which shall be applicable throughout the performance of work under any contract awarded pursuant to this solicitation. Each Bidder agrees that if awarded a contract, it will similarly bind contractually each subcontractor. In implementation of the foregoing policies, each Bidder further understands and, agrees that if awarded a contract, it must engage in affirmative action directed at promoting and ensuring equal employment opportunity in the workforce used under the contract and that it must require contractually the same effort of all subcontractors whose contracts exceed $10,000. Bidder understands and agrees that "affirmative action" as used herein shall constitute a good faith effort to achieve and maintain that amount of minority employment in the on-site workforce used on the project that corresponds, for each trade used, to the minority population in the serving labor market area from which workers are reasonably available for hire for the project.

22.02 Suspension And Debarment

A. Any Bidder or equipment supplier whose firm or affiliate is listed in the GSA publication "List of Parties Excluded from Federal Procurement and Nonprocurement Programs" will be prohibited from the bidding process. Anyone submitting a Bid who is listed in this publication will be determined to be a nonresponsive Bidder In accordance with 40 CFR part 31.

B. Contractor's Suspension/Debarment Certification will be contained in the specifications; however, this certification should not preclude any interested party from ascertaining whether the certifying person is actually on the 'List of Parties Excluded from Federal Procurement and Nonprocurement Programs".

ARTICLE 23 - PREPARATION OF BID

23.01 Bid by a corporation shall be executed in the corporate name by a corporate officer (whose title must appear under the signature), accompanied by evidence of authority to sign. The corporate address and state of incorporation shall be shown.

23.02 Bid by a limited liability company shall be executed in the name of the firm by a member or other authorized person and accompanied by evidence of authority to sign. The state of formation of the firm and the official address of the firm shall be shown.

23.03 Bid by an individual shall show the Bidder's name and official address.

23.04 Bid by a joint venture shall be executed by an authorized representative of each joint venturer in the manner indicated on the Bid Form. The official address of the joint venture shall be shown.

23.05 All names shall be printed in ink below the signatures.

23.06 Bid shall contain an acknowledgment of receipt of all Addenda, the numbers of which shall be filled in on the Bid Form.

23.07 Postal and e-mail addresses and telephone number for communications regarding the Bid shall be shown.

23.08 Bid shall contain evidence of Bidder's authority and qualification to do business in the state where the Project is located, or Bidder shall covenant in writing to obtain such authority and qualification prior to award of the Contract and attach such covenant to the Bid. Bidder's state contractor license number, if any, shall also be shown on the Bid Form.

Bidder: *(Indicate correct name of bidding entity)*

IHC Construction Companies, LLC

By: _____
(Signature)

Walter P. Dwyer, COO
(Printed Name)

(If Bidder is a corporation, a limited liability company, a partnership, or a joint venture, attach evidence of authority to sign.)

Attest: _____
(Signature)

Ronald F. Marshall
(Printed Name)

Title: CFO

Submittal Date: 11/13/2023

Address for giving notices:

385 Airport Rd., Suite 100

Elgin, IL 60123

Telephone No. 847-742-1516

Facsimile No. 847-289-3650

Contact Name and email address: Walter P. Dwyer

wdwyer@ihcconstruction.com

Contractor's License Number: 0063312-7.

END OF DOCUMENT

IHC CONSTRUCTION COMPANIES LLC

ACTION BY MEMBERS
IHC CONSTRUCTION COMPANIES, LLC
BY MAJORITY WRITTEN CONSENT

We, the undersigned, being the majority of the members of IHC Construction Companies, L.L.C., an Illinois Limited Liability Company, hereby consent in writing without a meeting to the following actions:

RESOLVED, that those persons whose names are included below hold the positions set beside their name and those persons are hereby authorized to bind the company and to execute all documents necessary to conduct business on behalf of the limited liability company, including, but not limited to the execution of contracts of all kinds, bids, proposals and bonds.

David J. Rock	Managing Member, Chief Executive Officer, President, Treasurer
Walter P. Dwyer	Member, Chief Operating Officer, Executive Vice President, Secretary
Peter D. Nielsen	Member, Vice President, Assistant Secretary
Brian T. Rausch	Member, Vice President, Assistant Secretary
Ronald F. Marshall	Chief Financial Officer, Assistant Secretary
Russell D. Ginn	Vice President, Assistant Secretary
Robert T. Szoch	Vice President, Assistant Secretary
Lawrence C. Creadon	Agent, Assistant Secretary
Grady Higginbotham	Agent, Assistant Secretary

WITNESS WHEREOF, we have hereunto set our hands as Members of IHC Construction Companies, L.L.C., this 11th day of July 2023.

DAVID J. ROCK
Managing Member

WALTER P. DWYER
Member

PETER D. NIELSEN
Member

BRIAN T. RAUSCH
Member

Subscribed and sworn to before me this 11th day of July 2023.

Naomi G. Murdoch
Notary Public

OFFICIAL SEAL
NAOMI G MURDOCH
NOTARY PUBLIC - STATE OF ILLINOIS
MY COMMISSION EXPIRES:08/31/23

IHC CONSTRUCTION COMPANIES LLC

OWNERS OF IHC CONSTRUCTION COMPANIES, LLC
MEMBERS OF THE LIMITED LIABILITY COMPANY

Federal Tax I.D. #: 36-4487367 State IBT#: 3281-0725 DHR #: 113177-00

NAME	ADDRESS
David J. Rock, Managing Member	37W600 York Lane Elgin, IL 60123
Walter P. Dwyer, Member	857 Samantha Circle Geneva, IL 60134
John W. Dwyer, Member	2257 North Wayne Ave., 2D Chicago, IL 60614
Peter D. Nielsen, Member	14475 Eighteenth Fairway Milton, GA 30004
Brian T. Rausch, Member	711 East Suffield Drive Arlington Heights, IL 60004
Matthew D. Rock, Member	3689 Peregrine Way Elgin, IL 60124

IHC CONSTRUCTION COMPANIES LLC

ATTACHMENT D

PROPOSED SUBCONTRACTORS

Subcontractor Name	Business Address	Description of Work
ALI	2233 Palmer Dr., Schaumburg, IL. 60173	Trucking/Hauling
Cardinal State LLC	1719 Spring Creek Rd., Barrington Hills, IL. 60010	Landscape Restoration
High Voltage Electric	102 N. 5th Ave., St. Charles, IL. 60174	Electrical Splicing and Testing
SRN Testing	2258 Southwind Blvd, Bartlett, IL. 60103	Soils Testing
Chicago Testing Laboratory	30W114 Butterfield Rd., Warrenville, IL. 60555	Materials/Compaction Testing

IHC CONSTRUCTION COMPANIES LLC

ATTACHMENT E

PROPOSED SUPPLIERS

Subcontractor Name	Business Address	Description of Work
Vulcan Materials Company	1520 Midway Ct., Elk Grove Village, IL. 60007	Aggregate Supplier
Ozinga Ready Mix Concrete	2175 Point Blvd, Elgin, IL. 60123	Concrete Supplier
Prairie Materials	7601 W. 79th St., Bridgeview, IL. 60455	Concrete Supplier
Carroll Construction Supply	1301 W. Lake St., Aurora, IL. 60506	Rebar Supplier
Graybar	7601 Setzler Pkwy, Brooklyn Park, MN. 55445	Underground Pipe & Material Supplier
Utility Pipe Supply	PO Box 731, Woodstock, IL. 60098	Underground Pipe & Material Supplier

File Number 0063312-7

STATE OF ILLINOIS
OFFICE OF THE SECRETARY OF STATE

To all to whom these Presents Shall Come, Greeting:

***I,* Alexi Giannoulias,** *Secretary of State of the State of Illinois, do hereby certify that I am the keeper of the records of the Department of Business Services. I certify that*

IHC CONSTRUCTION COMPANIES, L.L.C., HAVING ORGANIZED IN THE STATE OF ILLINOIS ON DECEMBER 03, 2001, APPEARS TO HAVE COMPLIED WITH ALL PROVISIONS OF THE LIMITED LIABILITY COMPANY ACT OF THIS STATE, AND AS OF THIS DATE IS IN GOOD STANDING AS A DOMESTIC LIMITED LIABILITY COMPANY IN THE STATE OF ILLINOIS.

In Testimony Whereof, *I hereto set my hand and cause to be affixed the Great Seal of the State of Illinois, this* 24TH *day of* MAY ***A.D.*** 2023 .

Authentication #: 2314402498 verifiable until 05/24/2024
Authenticate at: https://www.ilsos.gov

Alexi Giannoulias
SECRETARY OF STATE

ATTACHMENT A

CERTIFICATION OF COMPLIANCE

The undersigned hereby certifies as follows:

1. That he has the authority and consent to make this certification on behalf of the bidder,

IHC Construction Companies, LLC
(Name of Company)

2. That he has knowledge of the City of Geneva Codes pertaining to the disqualification of certain bidders.

3. That he knows that the bidder listed above is not disqualified from bidding under the aforementioned sections.

4. That he has knowledge of the City of Geneva ordinances relating to Fair Employment Practices and knows and understands the contents thereof; he certifies hereby that it is the policy of the bidder to recruit, hire, train, upgrade, promote, and discipline its employees without regard to race, creed, color, religion, age, sex, or physical or mental impairment.

5. That said bidder is not barred from bidding on the aforementioned contract as a result of a violation of Sections 33E-3 or 33E-4 of Chapter 38 of the Illinois Revised Statutes, 1989.

6. That pursuant to Chapter 24, Section 11-42.1-1 of the Illinois Revised Statutes, the bidder is not delinquent in the payment of any taxes administered by the Department of Revenue.

7. That the contractor (either as an individual or company) agrees to provide a drug free workplace as provided for by the Public Act 86-1459.

8. That all work under this contract shall comply with the Occupational Safety and Health Act (OSHA) of 1975, and all other Federal, State, or Local statutes, rules, or regulations including all City of Geneva Safety Procedures affecting the work done under the contract.

9. That all work done in Kane County, Illinois under this contract shall comply with the Prevailing Wage Rate Act of the State of Illinois, County of Kane, Illinois Revised Statutes, 1987, Chapter 48, par 39s-1, et. seq. and as amended by Public Acts 86-799 and 86-693, in effect at the time work is performed.

ATTACHMENT A (continued)

By submission of this bid, I certify that the bid has been arrived at independently and has been submitted without collusion between or among any vendor of materials, supplies, equipment, or services.

IHC Construction Companies, LLC
Name of Corporation, Partnership, or Proprietor

385 Airport Rd., Suite 385
Address

Elgin	IL	60123
City	State	Zip

847-742-1516
Telephone

Authorized Signature/Title Walter P. Dwyer, COO

SUBSCRIBED AND SWORN to before me

this 13th day of November, 20 23.

Dayna Page Boekenhauer
Notary Public Dayna Page Boekenhauer

OFFICIAL SEAL
DAYNA PAGE BOEKENHAUER
NOTARY PUBLIC, STATE OF ILLINOIS
My Commission Expires 11/29/26

My commission expires: 11/29/2026

ATTACHMENT B - LIST OF OWNER FURNISHED MATERIALS

It is agreed that Contractor will cover Owner Furnished Materials under their Builders Risk until such time as completion of Contract.

Owner Furnished Materials

ITEM-1	DESCRIPTION OF MATERIAL	LOCATION-2	SUPPLIER-3	DELIVERY DATE	CATALOG NUMBER	QUANTITY	UNIT PRICE	EXTENDED PRICE	RECEIVED BY CONTRACTOR (Date & Initial)
1000 AL Cable	1000 kcmil 15kV AL 1/C EPR 133% Cable 1/3 Neutral	Warehouse	Okonite		163-23-3099	73,413	$16.45	$1,207,643.85	
1000 AL Splice	1000 kcmil AL-AL Urd Splice	Warehouse	WESCO		Elastimold 15PCJ1N1410	123	$470.00	$57,810.00	
1000 AL T-Bodies	1000 kcmil AL T-Body Connector 600 A rated	Warehouse	WESCO		COOPER TP615HH27TC	63	$619.00	$38,997.00	
1000 AL – 750 CU separable splice	1000 kcmil AL – 750 kcmil CU separable splice	Warehouse	WESCO		DCP625A	3	$119.00	$357.00	
750 CU T-Bodies	750 kcmil CU T-Body Connector 600 A rated	Warehouse	WESCO		COOPER TP615FF25TC	3	$601.00	$1,803.00	
1/0 AL Cable	1/0 AWG 15kV AL 1/C EPR 133% Cable Full Neutral	Warehouse	Okonite		163-23-3072	2,091	$4.25	$8,886.75	
1/0 AL Splice	1/0 AWG AL-AL Urd Splice	Warehouse	WESCO		Elastimold 15PCJ1G1240	6	$101.00	$606.00	
1/0 AL Elbow	1/0 AL-AL Elbow Termination 200 A rated	Warehouse	WESCO		HPS 215LE45T W/Test Point	15	$47.25	$708.75	

ITEM-1	DESCRIPTION OF MATERIAL	LOCATION-2	SUPPLIER-3	DELIVERY DATE	CATALOG NUMBER	QUANTITY	UNIT PRICE	EXTENDED PRICE	RECEIVED BY CONTRACTOR (Date & Initial)
Switchgear	Federal Pacific AIS-9 per Geneva Specs	Warehouse	WESCO			3	$28,922.00	$86,766.00	
Switchgear	Federal Pacific AIS-11 per Geneva Specs	Warehouse	WESCO			2	$28,713.00	$57,426.00	

NOTES:

(1) Item corresponds with item designation on construction drawings. Bidder must include material values in contract price and provide bonding for owner furnished material. Owner furnished material will be deducted from overall contract payment.

(2) Location: 1. Material is located in Owner's warehouse or on-site.

2. Owner's warehouse location: City of Geneva - 1800 South St. Geneva, IL 60134

(3) Supplier: (Name & Address) A. _____

B. _____

IHC CONSTRUCTION COMPANIES, LLC			EQUIPMENT LISTING			Report Date: 09/30/2020
EQUIPMENT LISTING	Equipment	ModelYr	Manufacturer	Model	Capacity	Unit
AUTOMOBILES						
10003	2013	CHEVROLET	IMPALA	0	GAL	
10005	2014	CHEVROLET	EQUINOX	0	GAL	3.6 V6
10006	2014	CHEVROLET	TRAVERSE	0	GAL	3.6 V6
10009	2014	BUICK	LACROSSE	10	GAL	
10010	2015	BUICK	ENCLAVE	0	GAL	3.6 V6
10011	2016	BUICK	ENCLAVE	0	GAL	3.6
10013	2013	DODGE	DURANGO	0	GAL	3.6
10015	2015	CHEVROLET	EQUINOX	0	GAL	2.4
10028	2019	CHEVROLET	TAHOE	0	GAL	5.3L V8
Count	9					
PICKUPS						
11001	2013	FORD	F 150 XL	0	GAL	5.0L V8
11059	2013	FORD	F250 XL EXT CAB	0	GAL	6.2 L V8
11064	2009	CHEVROLET	2500 W/T 4X4	0	GAL	6.0
11076	2011	CHEVROLET	SILVERADO 1500	0	TON	4.3 L
11078	2010	CHEVROLET	C1500	0	TON	4.3 L V6
11079	2013	FORD	F250 XL EXT CAB	0	GAL	6.2 L V8
11080	2012	CHEVROLET	SILVERADO 1500	0	TON	
11081	2013	FORD	F250 XL EXT CAB	0	GAL	6.2 L V8
11082	2014	FORD	F150 XL EXT CAB	0	GAL	5.0 L V8
11087	2014	FORD	F150 XL EXT CAB	0	GAL	5.0L V8
11091	2014	FORD	F150XL EXT CAB	0	GAL	5.0 L V8
11095	2014	FORD	F150 LX EXT CAB	0	GAL	5.0 L
11096	2014	FORD	F150 LX EXT CAB	0	GAL	5.0 L
11098	2015	CHEVROLET	TAHOE	0	GAL	5.3 LT, V8
11101	2018	FORD	F150XL	0	GAL	5.0 L
11103	2018	FORD	F150XL	0	GAL	5.0 L
Count	16					
CREW CABS						
12001	2014	FORD	F150 XL EXT CAB	0	GAL	5.0L V8
12018	2014	FORD	F150XL	0	GAL	5.0L V8
12019	2014	FORD	F150XL	0	GAL	5.0L V8
12020	2013	FORD	F150XL	0	GAL	5.0L V8
12022	2013	FORD	F150XL	0	GAL	5.0L V8
12024	2019	CHEVROLET	SILVERADO 1500 LD	0	GAL	
12026	2017	CHEVROLET	1500 SILVERADO	0	GAL	355 HP - 5.3
12030	2016	GMC	2500HD Z71 SLE	0	GAL	6.6 L
12031	2011	CHEVROLET	SILVERADO 1500	0	TON	4.8
12036	2010	FORD	F150XL	0	TON	5.4
12037	2010	FORD	F150XL	0	TON	5.4
12040	2015	CHEVROLET	2500 SILVERADO	0	TON	6.0
12041	2014	FORD	FX4 CREWCAB 4X4	0	GAL	5.0 4V DOHC
12042	2017	CHEVROLET	SILVERADO 1500	26	GAL	5.3L V8
12044	2014	FORD	F150 EXT CAB	0	GAL	3.7 L V6
12046	2013	CHEVROLET	C2500HD	0	GAL	6.0
12048	2014	FORD	FORD	0	GAL	3.7 L V6
12050	2015	CHEVROLET	SILVERAD 1500 CC 4X4	20	TON	5.3 V-8
12051	2013	FORD	F150 EXT CAB	0	GAL	3.7 L V6
12052	2013	FORD	F150 EXT CAB	0	GAL	3.7 L V6
12053	2012	FORD	F250 CREWCAB	0	GAL	6.2 L
12058	2019	CHEVROLET	SILVERADO 1500 4X4	0	GAL	5.3 L V8
12060	2018	CHEVROLET	C1500	15	GAL	5.3 L
12066	2013	FORD	F150 XK CREW CAB	0	GAL	6.2 L
12067	2015	FORD	F250 XL EXT CAB	0	GAL	6.2 L
12068	2013	FORD	F250 XL EXT CAB	0	GAL	6.2 GAS
12069	2013	FORD	F250 XL EXT CAB	0	GAL	
12070	2013	FORD	F150 XL EXT CAB	0	GAL	6.2
12071	2013	FORD	F150 XL EXT CAB	0	GAL	6.2
12094	2015	CHEVROLET	SILVERADO 2500	0	TON	6.0
12102	2019	CHEVY	1500	0	GAL	5.3 L
12104	2019	CHEVY	2500	0	GAL	6.0 L
12105	2016	CHEVY	1500	0	GAL	5.3 L
12106	2016	CHEVY	1500	0	GAL	5.3 L
Count	34					
ONE TON TRUCKS						
13001	2019	FORD	F 550	0	GAL	6.7--330
13201	2006	FORD	F550 SD	1	TON	6.0--175
13202	2007	FORD	F550 SD	1	TON	6.0--175
13204	2007	FORD	F550 SD	1	TON	6.0--175

EQUIPMENT LISTING	Equipment	ModelYr	Manufacturer	Model	Capacity	Unit
13205	2007	FORD	FLATBED	1	TON	6.0--175
13210	2018	RAM	5500	52	GAL	6.7 - 175
13211	2018	RAM	550	0	GAL	
13214	2019	RAM	5500	52	GAL	6.7 175
13220	2008	GMC	SIERRA 3500	0	GAL	6.6
13221	2008	GMC	SIERRA 3500	0	TON	6.6
13222	2008	GMC	SIERRA 3500	0	TON	6.6
13223	2018	RAM	5500 SLT	52	GAL	
13246	2006	FORD	F550 SD	0	GAL	6.0--175
13250	2008	CHEVROLET	3500 WT	1	TON	6.6
13252	2004	FORD	F450 SD	0	GAL	6.0---175
13260	2006	FORD	F550 SD	0	GAL	6.7-305
13261	2016	RAM	5500	0	GAL	6.7-305
13262	2016	RAM	5500	0		
13267	2018	RAM	550	52	GAL	6.7 - 175
13275	2013	DODGE	550 TRADESMAN	52	GAL	325
13279	2013	DODGE	5500 TRADEMANS	52	GAL	325
13282	2015	DODGE	5500 TRADESMAN	52	GAL	367
13283	2015	DODGE	5500 TRADESMAN	52	GAL	367
13284	2015	DODGE	5500 TRADESMAN	52	GAL	367
13287	2016	RAM	5500	0	TON	
13288	2016	RAM	5500	0		46
13289	2019	RAM	5500	0	GAL	
Count	27					
SERVICE TRUCKS						
14238	2001	INTERNATIONAL	4900	10	TON	DT466--250
14257	1997	INTERNATIONAL	4900	5	TON	DT466--250
14258	1997	INTERNATIONAL	4900	5	TON	DT466--250
14259	1997	INTERNATIONAL	4900	0	GAL	DT466--250
14280	2009	STERLING	ACTERRA	37,000	GVW	CUM 1SC--330
14281	1998	INTERNATIONAL	4700	0	GAL	DT466--230
14285	1991	FORD	F800	5	TON	429 CI
14286	2007	INTERNATIONAL	4400	0	GAL	DT570--310
14292	2019	INTERNATIONAL	MV607	70	GAL	250 B6.7
14293	1989	FORD	F7000	0	GAL	CAT 3208--225
14294	2016	KENWORTH	T440	0	GAL	250
14295	2016	KENWORTH	T440	0	GAL	250
14319	2003	PETERBILT	330	33,000	GVW	300
14320	2005	INTERNATIONAL	4300	0	GAL	7.6 L 285
14322	2007	PETERBILT	340	0	GAL	CAT C-7
Count	15					
ARTICULATED DIRT TRUCK						
17820	2004	CATERPILLAR	730	80	GAL	325
17821	2004	CATERPILLAR	730	80	GAL	325
17824	2000	VOLVO	A40	0	GAL	
17825	2011	CATERPILAR	740	148	GAL	464 C15 ACERT
17826	2012	VOLVO	A40F	144	GAL	469 TIER 1
Count	5					
MISC TRUCKS / AUTOS						
19405	1981	GMC	BRIGADIER	0		
19822	2007	CATERPILLAR	725	0	GAL	
Count	2					
CRANES RT SMALL						
20994	2008	GROVE	RT650E	58	GAL	173 TIER III
Count	1					
CRANES RT MED						
21991	2009	TADANO	GR800XL-1	9	GAL	267 TIER III
21992	2009	TADANO	GR800XL-1	79	GAL	267 TIER III
21995	2008	TADANO	GR800XL-1	79	GAL	267 TIER III
21996	2009	GROVE	RT880E	72	GAL	274
Count	4					
CRANES CRWL LRG						
24993	2011	MANITOWOC	10000	106	GAL	332 TIER III
24997	2014	MANITOWOC	8000	0	TON	
24998	2008	LINK-BELT	LS298HSL	0	GAL	
Count	3					
PILING EQUIP						
27800	2007	APE	375	0	GAL	375 TIER III
27801	2007	APE	150T	0		
27802	1990	DLEMAG	D19-42	8	DSL	35-52 BPM
Count	3					
TELAHANDLER						
28001	2016	CATERPILLAR	TL1255D	38	GAL	142 C4.4 ACERT

EQUIPMENT LISTING	Equipment	ModelYr	Manufacturer	Model	Capacity	Unit
28002	2016	CATERPILLAR	TL1255D	38	GAL	142 C4.4 ACERT
28949	2006	GENIE	GTH636	0	GAL	99
28950	2011	CATERPILLAR	TL1255	38	GAL	PERKINS 4.4 79HP
28951	2011	CATERPILLAR	TL1255	38	GAL	142-C4.4TA
28952	2011	CATERPILLAR	TL1055	38	GAL	125 - C4.4TA
28953	2011	CATERPILLAR	TL1255	0	GAL	
28954	2011	CATERPILLAR	TL1055	0	GAL	
28955	2013	CATERPILLAR	TL943C	38	GAL	94.5 - 3045CTIER II
28956	2013	CATERPILLAR	TL1255C	0	GAL	142-C4.4 ACERT
28958	2015	CATERPILLAR	TL 1255C	0	GAL	142 C4.4 ACERT
Count	11					
CRAWLER BACKHOES - SMALL						
31844	2010	VOLVO	EW180C	66	GAL	160
31853	2007	KABOTA	KX121-3	0	GAL	42-V2203M-TIER 2
31855	2007	BOBCAT	335G	0	GAL	40-V2203-TIER 2
31856	2015	TAKEUCHI	TB 260	21	GAL	47 TIER FINAL 4
31857	2016	TAKEUCHI	TB280FR	26	GAL	69 TIER IIII
31858	2019	TAKEUCHI	TB 260	21	GAL	47 TIER IIII
31859	2015	YANMAR	Vi035-6A	11	GAL	22.4
31885	2005	JOHN DEERE	160CLC	74	GAL	109
31887	2006	JOHN DEERE	80C	36	GAL	52
31893	2015	CASE	CX145CSR	53	GAL	100 TIER IIII-I
31894	2015	CATERPILLAR	316E	77	GAL	119 C4.4 ACERT
31895	2019	CATERPILLAR	315 FLCR	47	GAL	97 TIER IIII
31896	2015	CASE	CX210 C	0		
31897	2016	CASE	CX145C	53	GAL	100 ISUZU 4 JJ 1X
31898	2015	LINK BELT	80X3	0	GAL	54 ISUZU
Count	15					
CRAWLER BACKHOES - MED						
32884	2005	CASE	CX 330	153	GAL	248 TIER III
32891	2011	VOLVO	290	0		D7E EAE3 192HP
Count	2					
CRAWLER BACKHOES - LARGE						
33883	2014	CATERPILER	336E	164	GAL	308
33890	2003	CASE	CX 460	161	GAL	362 TIER III
33892	2013	CATERPILAR	336E HMR	164	GAL	308 TIER IIII INTER
Count	3					
CRAWLER BACKHOES - XL						
34880	2006	JOHN DEERE	650 D	238	GAL	463 Tier 3
Count	1					
SKID LOADER						
40921	2000	CASE	1845C	0	YD	53
40922	2001	CASE	1845C	0	YD	56
40924	1996	CASE	1845C	0	YD	56
40925	2000	CASE	1845C	0	YD	56
40926	1996	CASE	1845C	0	YD	56
40927	1996	CASE	1845C	0	YD	56
40928	1996	CASE	1845C	0	YD	56
40931	2001	CASE	1845C	0	YD	56
40932	2000	CASE	1845C	0	YD	56
40933	1999	CASE	1845C	0	CY	56
40934	2000	CASE	1845C	0	CY	56
40935	2005	CASE	420	0	CY	56
40936	2000	CATERPILLER	226 B	0	GAL	50
40937	2000	CASE	1845C	0		56
40939	2000	CASE	1845C	0	GAL	56
40940	2000	CASE	1845C	0	GAL	56
40941	2001	CASE	1845C	0	GAL	56
40942	2000	CASE	1845C	0	GAL	56
40943	2000	CASE	1845C	0	GAL	56
40948	1985	SWINGER	220	0	GAL	
Count	20					
SKID LOADER - TRACK						
41860	2014	TAKEUCHI	TL12	24	GAL	110 TIER 4 i
41861	2014	TAKEUCHI	TL12	24	GAL	110 TIER 4 i
41862	2013	CATERPILLAR	279C2	29	GAL	82
41863	2019	TAKEUCHI	TL12R2-CR	24	GAL	110 TIER 4i
41864	2018	BOBCAT	T870	0	GAL	
Count	5					
WHEEL LOADERS - SMALL						
42901	2016	CASE	521F	50	GAL	142 TIER 4 B
42904	2012	CATERPILER	928 HX	59	GAL	149 C6.6 TIER 4
42905	2012	CATERPILER	928 HZ	59	GAL	149 6.6 TIER 4

EQUIPMENT LISTING	Equipment	ModelYr	Manufacturer	Model	Capacity	Unit
42906	2006	JOHN DEERE	544J	85	GAL	145 HP 6.8 TIER 2
Count	4					
WHEEL LOADERS - MED						
43903	2008	CAT	950 H	83	GAL	197
Count	1					
WHEEL LOADERS - LARGE						
44902	2006	CAT	966 G	83	GAL	253 10.3L
Count	1					
CRAWLER LOADERS						
45873	1994	CAT	963	69	GAL	160
45874	1998	CAT	963B	0	GAL	150
Count	2					
DOZER - SMALL						
50868	1989	JOHN DEERE	450G	41	GAL	70
Count	1					
DOZER - MED						
51870	2012	CATERPILER	D6N LGP	79	GAL	C6.6-150 TIER4 INTER
51871	2013	CAT	D6N-XL	79	GAL	C6.6-145 TIER 3
51875	2004	CATERPILLAR	D6RXL SERIES II	0		C-9
51877	2011	CATERPILAR	D5KIILGP	52	GAL	100 4.4 ACERT
Count	4					
DOZER - LARGE						
52876	1989	CATERPILLAR	D8N	129	GAL	285
52878	1997	CATERPILLAR	D8R	165	GAL	305
52879	2001	CAT	D7R	1,260	GAL	240
Count	3					
COMPACTOR - ROLLER						
60696	1999	NAC	HV70SY	0		99
60763	1997	NAC	VHV1-10369	0		
60915	2004	BOMAG	BW213	90	GAL	155-6B5.9
60916	2008	VOLVO	SD100D	72	GAL	128
60917	2000	CATERPILLER	SD563D	58	GAL	145
60918	2005	CATERPILLER	CS423E	42	GAL	79
Count	6					
COMPACTOR - SHEEPS FOOT						
61909	1990	CAT	815A	93	GAL	160
61910	2005	CATERPILLER	815 F	117	GAL	253
61911	2006	BOMAG	BW124PDH-3	29	GAL	49
Count	3					
SCRAPERS/PULL PANS						
65810	1967	RWF BRON	63F	0		Rear 29.5 X 29
65811	1975	ROME	R67H	0		
Count	2					
TRENCHERS						
70867	1999	VERMEER	V-2050	0		
Count	1					
DIRECTIONAL BORING UNITS						
71966	2006	VERMEER	D24/40 II	15	GAL	125 TIER II
71967	2008	VERMEER	D24/40II	15	GAL	125 TIER III
71968	2008	VERMEER	D24/40II	15	GAL	125 TIER III
71969	2007	VERMEER	24/40 II	15	GAL	125 TIER III
71970	1999	VERMEER	D50X100A	15	GAL	
71971	2014	VERMEER	D36/50II	46	GAL	126 TIER III
Count	6					
UTILITY TRAILERS						
74508	2015	JTC	JTC-8000	8,000		8 HOLE
74509	2013	BRINDLE	BRT150	0		
74510	2016	BRINDLE	BRT150	0		
74542	2007	EAGER BEAVER	20XPT	40,000		
74544	2016	CUSTOM	12T202ELPHD	0		
74545	2019	TOWMASTER	T-18D	0		
74546	2019	TOWMASTER	T-20D	20,000		
74547	2020	CUSTOM	12T202ELPHD	0		
74556	2008	EAGER BEAVER	20XPT	20		
74622	1998	TRAILER BOSS	15 TON	0		
74624	2000	TOWMASTER	T-14DD	14,000		
74626	2015	JTC	JTC-1600	0		
74632	2015	JTC	JTC-16000	0		
74633	1998	TRAILER BOSS	15 TON	15		
74656	2001	DYNAWELD	40TALT	50,000		
74659	2001	DYNAWELD	40TALT	50,000		
Count	16					
MISC EQUIPMENT						

EQUIPMENT LISTING	Equipment	ModelYr	Manufacturer	Model	Capacity	Unit
80415	2001	INGERSOLL RAND	S8-4MH	0	GAL	
80518	2015	CONDUX	PULLER	0	GAL	16
80519	2015	CONDUX	PULLER	0	GAL	16
80981	2001	BID-WELL	5000	0		
80982	2002	BID-WELL	3600	1		
80983	2000	BID-WELL	4800	0	GAL	
Count	6					
AIR COMPRESSORS						
81700	2003	INGERSOLL RAND	P185WIR	185	CFM	65 -3059 - TIER 1
81701	2003	INGERSOLL RAND	P185WIR	185	CFM	65-3059-TIER 1
81702	2003	INGERSOLL RAND	P185WIR	185	CFM	65-3059-TIER1
81703	2008	ATLAS COPCO	AC-XAS185JDU6	185	CFM	65-4045-TIER 3
81706	2005	INGERSOLL RAND	P185WJDU	185	CFM	54-4045-TIER 2
81708	2005	INGERSOLL RAND	P185WJDU	185	CFM	54-4045-TIER 2
81710	2006	ATLAS COPCO	AC-XAS96JD	185	CFM	54-4045-TIER 2
81711	2006	ATLAS COPCO	AC-XAS96JD	185	CFM	54
81717	2007	ATLAS COPCO	AC-XAS185JD6	185	CFM	54-4045-TIER 2
81718	2006	ATLAS COPCO	AC-XAS96JD	185	CFM	54-4045-TIER 2
81721	2007	ATLAS COPCO	AC-XAS1855JDC6	185	CFM	54-4045-TIER 2
81722	2007	ATLAS COPCO	AC-XAS185JDL6	185	CFM	54-4045-TIER 2
81723	2006	ATLAS COPCO	AC-XAS96JD	185	CFM	54-4045-TIER 2
81725	1997	LEROI	Q185DJE	0	GAL	
81731	1988	INGERSOLL RAND	P175BWD	185	CFM	54-4045-TIER 2
81733	2007	ATLAS COPCO	AC-XAS96JDU	185	CFM	54-4045-TIER 2
81735	2006	ATLAS COPCO	AC-XAS96JD	185	CFM	54-4045-TIER 2
81736	2006	ATLAS COPCO	AC-XAS96JD	185	CFM	54-4045-TIER 2
81747	2007	ATLAS COPCO	AC-XAS185JDU6	185	CFM	54-4045-TIER 2
81753	2007	ATLAS COPCO	AC-XAS185JDU6	185	CFM	54-4045-TIER 2
81757	2001	LEROI	Q185DKE	185	CFM	54-4045-TIER 2
81759	2007	ATLAS COPCO	AC-XAS185JDU6	185	CFM	54-4045-TIER 2
81764	2007	ATLAS COPCO	AC-XAS185JDU6	0	GAL	54-4045-TIER 2
Count	23					
ATTACHMENTS						
90480	1995	LINE WARD	L-2	0		
90648	2019	FRD (KENT)	F6FSP	0		
90652	1999	NPK	7XH	0		
90675	2015	HOLMS	300	0		
90685	2000	INDECO		0		
90688	2009	INDECO	HP8000	0		
90690	2015	BODINE	APCP-2300C	0		
90697	2016	FRD (KENT)	F6	0		1000 CLASS
90698	2018	FRD (Kent)	F6-SS	0		1000 CLASS
90960	2005	KENT	KF9	0		
90962	1999	ROME	TAW20S	0		
Count	11					
SMALL TOOLS						
98635	2014	BOMAG	BMP8500	0	GAL	
98638	2016	MORRISON	SUPER SCREED	2	GAL	8
98682	2016	FRD (KENT)	F9	0		550-900 BPM
98684	2015	KENT / KURUKAWA	FX55FSP	0		500-1000
98778	2010	COLUMBIA	PCD-24B-08SPL-01	0		
Count	5					

IHC CONSTRUCTION COMPANIES LLC

Mr. Paul Burris

Utility Department Manager

City of Elmhurst

985 South Riverside Drive

Elmhurst, IL 60126

11/24/2020

Subject: **City of Elmhurst – WRF NPW, NG, FO, Elec. Utility Installations WPCLP LN L 175531**

Dear Paul:

We, **IHC Construction LLC,** Contractors on this project, hereby guarantee for a period of the 3 years commencing November 13th, 2020 and ending November 13th, 2023 that should any defect due to improper materials or workmanship develop during the period of the guarantee, the same shall be made good by us without expense to the **City of Elmhurst.**

This guarantee is for all work except that equipment separately guaranteed as called for under Section 01640 of the Specifications.

Very truly yours,

_____

Walter P. Dwyer
Chief Operating Office

Corporate Office: 385 Airport Road, Suite 100, Elgin, IL 60123 • Phone: 847-742-1516 • Fax: 847-742-6610
Underground Contractors Office/Warehouse: 840 Church Road, Elgin, IL 60123 • Fax: 847-289-3650
Repair and Fabrication Shop/Yard: 1797 N. LaFox, South Elgin, IL 60177

www.ihcconstruction.com

IHC CONSTRUCTION COMPANIES LLC

ATTACHMENT B

Exceptions and Clarifications to Contract Documents

1) **Switch Vaults to be supplied by owner: Clarification – Section 33 05 16-13 – Page 1 – Part 1 General.**
2) **Fire Wrap in Hand Holes not included in bid price: Clarification – Section 33 05 16-13 – Page 1 – Part 1 General.**
3) **Permits to be supplied by owner: Clarification – Section 04 40 00 – Page 1 – Part 1 General – 1.03 Building Codes and Permits.**
4) **Field Performance Tests not required: Clarification – Removed in addendum 1 – Section 01 40 00 – Page 5 – Part 3 Execution – 3.03 Field Performance Tests.**
5) **Service Engineer Responsibilities not required: Clarification – Removed in Addendum 1 – Section 01 43 33 – Page 1 – Part 1 General – 1.01 Service Engineer Responsibilities.**

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

STANDARD GENERAL CONDITIONS OF THE CONSTRUCTION CONTRACT

Prepared by

EJCDC®
ENGINEERS JOINT CONTRACT DOCUMENTS COMMITTEE

Issued and Published Jointly by

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AMERICAN COUNCIL OF ENGINEERING COMPANIES

ASCE
AMERICAN SOCIETY OF CIVIL ENGINEERS

National Society of Professional Engineers®

These General Conditions have been prepared for use with the Agreement Between Owner and Contractor for Construction Contract (EJCDC® C-520, Stipulated Sum, or C-525, Cost-Plus, 2013 Editions). Their provisions are interrelated and a change in one may necessitate a change in the other.

To prepare supplementary conditions that are coordinated with the General Conditions, use EJCDC's Guide to the Preparation of Supplementary Conditions (EJCDC® C-800, 2013 Edition). The full EJCDC Construction series of documents is discussed in the Commentary on the 2013 EJCDC Construction Documents (EJCDC® C-001, 2013 Edition).

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STANDARD GENERAL CONDITIONS OF THE CONSTRUCTION CONTRACT

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ARTICLE 1 – DEFINITIONS AND TERMINOLOGY

1.01 *Defined Terms*

A. Wherever used in the Bidding Requirements or Contract Documents, a term printed with initial capital letters, including the term's singular and plural forms, will have the meaning indicated in the definitions below. In addition to terms specifically defined, terms with initial capital letters in the Contract Documents include references to identified articles and paragraphs, and the titles of other documents or forms.

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

2. *Agreement*—The written instrument, executed by Owner and Contractor, that sets forth the Contract Price and Contract Times, identifies the parties and the Engineer, and designates the specific items that are Contract Documents.

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

4. *Bid*—The offer of a Bidder submitted on the prescribed form setting forth the prices for the Work to be performed.

5. *Bidder*—An individual or entity that submits a Bid to Owner.

6. *Bidding Documents*—The Bidding Requirements, the proposed Contract Documents, and all Addenda.

7. *Bidding Requirements*—The advertisement or invitation to bid, Instructions to Bidders, Bid Bond or other Bid security, if any, the Bid Form, and the Bid with any attachments.

8. *Change Order*—A document which is signed by Contractor and Owner and authorizes an addition, deletion, or revision in the Work or an adjustment in the Contract Price or the Contract Times, or other revision to the Contract, issued on or after the Effective Date of the Contract.

9. *Change Proposal*—A written request by Contractor, duly submitted in compliance with the procedural requirements set forth herein, seeking an adjustment in Contract Price or Contract Times, or both; contesting an initial decision by Engineer concerning the requirements of the Contract Documents or the acceptability of Work under the Contract Documents; challenging a set-off against payments due; or seeking other relief with respect to the terms of the Contract.

10. *Claim*—(a) A demand or assertion by Owner directly to Contractor, duly submitted in compliance with the procedural requirements set forth herein: seeking an adjustment of Contract Price or Contract Times, or both; contesting an initial decision by Engineer concerning the requirements of the Contract Documents or the acceptability of Work under the Contract Documents; contesting Engineer's decision regarding a Change Proposal; seeking resolution of a contractual issue that Engineer has declined to address; or seeking other relief with respect to the terms of the Contract; or (b) a demand or assertion by Contractor directly to Owner, duly submitted in compliance with the procedural requirements set forth herein, contesting Engineer's decision regarding a Change Proposal; or seeking resolution of a contractual issue that Engineer has declined to address. A demand for money or services by a third party is not a Claim.

11. *Constituent of Concern*—Asbestos, petroleum, radioactive materials, polychlorinated biphenyls (PCBs), hazardous waste, and any substance, product, waste, or other material of any nature whatsoever that is or becomes listed, regulated, or addressed pursuant to (a) the Comprehensive Environmental Response, Compensation and Liability Act, 42 U.S.C. §§9601 et seq. ("CERCLA"); (b) the Hazardous Materials Transportation Act, 49 U.S.C. §§5501 et seq.; (c) the Resource Conservation and Recovery Act, 42 U.S.C. §§6901 et seq. ("RCRA"); (d) the Toxic Substances Control Act, 15 U.S.C. §§2601 et seq.; (e) the Clean Water Act, 33 U.S.C. §§1251 et seq.; (f) the Clean Air Act, 42 U.S.C. §§7401 et seq.; or (g) any other federal, state, or local statute, law, rule, regulation, ordinance, resolution, code, order, or decree regulating, relating to, or imposing liability or standards of conduct concerning, any hazardous, toxic, or dangerous waste, substance, or material.

12. *Contract*—The entire and integrated written contract between the Owner and Contractor concerning the Work.

13. *Contract Documents*—Those items so designated in the Agreement, and which together comprise the Contract.

14. *Contract Price*—The money that Owner has agreed to pay Contractor for completion of the Work in accordance with the Contract Documents. .

15. *Contract Times*—The number of days or the dates by which Contractor shall: (a) achieve Milestones, if any; (b) achieve Substantial Completion; and (c) complete the Work.

16. *Contractor*—The individual or entity with which Owner has contracted for performance of the Work.

17. *Cost of the Work*—See Paragraph 13.01 for definition.

18. *Drawings*—The part of the Contract that graphically shows the scope, extent, and character of the Work to be performed by Contractor.

19. *Effective Date of the Contract*—The date, indicated in the Agreement, on which the Contract becomes effective.

20. *Engineer*—The individual or entity named as such in the Agreement.

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

22. *Hazardous Environmental Condition*—The presence at the Site of Constituents of Concern in such quantities or circumstances that may present a danger to persons or property exposed thereto. The presence at the Site of materials that are necessary for the execution of the Work, or that are to be incorporated in the Work, and that are controlled and contained pursuant to industry practices, Laws and Regulations, and the requirements of the Contract, does not establish a Hazardous Environmental Condition.

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

24. *Liens*—Charges, security interests, or encumbrances upon Contract-related funds, real property, or personal property.

25. *Milestone*—A principal event in the performance of the Work that the Contract requires Contractor to achieve by an intermediate completion date or by a time prior to Substantial Completion of all the Work.

26. *Notice of Award*—The written notice by Owner to a Bidder of Owner's acceptance of the Bid.

27. *Notice to Proceed*—A written notice by Owner to Contractor fixing the date on which the Contract Times will commence to run and on which Contractor shall start to perform the Work.

28. *Owner*—The individual or entity with which Contractor has contracted regarding the Work, and which has agreed to pay Contractor for the performance of the Work, pursuant to the terms of the Contract.

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

30. *Project*—The total undertaking to be accomplished for Owner by engineers, contractors, and others, including planning, study, design, construction, testing, commissioning, and start-up, and of which the Work to be performed under the Contract Documents is a part.

31. *Project Manual*—The written documents prepared for, or made available for, procuring and constructing the Work, including but not limited to the Bidding Documents or other construction procurement documents, geotechnical and existing conditions information, the Agreement, bond forms, General Conditions, Supplementary Conditions, and Specifications. The contents of the Project Manual may be bound in one or more volumes.

32. *Resident Project Representative*—The authorized representative of Engineer assigned to assist Engineer at the Site. As used herein, the term Resident Project Representative or "RPR" includes any assistants or field staff of Resident Project Representative.

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

34. *Schedule of Submittals*—A schedule, prepared and maintained by Contractor, of required submittals and the time requirements for Engineer's review of the submittals and the performance of related construction activities.

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

36. *Shop Drawings*—All drawings, diagrams, illustrations, schedules, and other data or information that are specifically prepared or assembled by or for Contractor and submitted by Contractor to illustrate some portion of the Work. Shop Drawings, whether approved or not, are not Drawings and are not Contract Documents.

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

38. *Specifications*—The part of the Contract that consists of written requirements for materials, equipment, systems, standards, and workmanship as applied to the Work, and certain administrative requirements and procedural matters applicable to the Work.

39. *Subcontractor*—An individual or entity having a direct contract with Contractor or with any other Subcontractor for the performance of a part of the Work.

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

41. *Successful Bidder*—The Bidder whose Bid the Owner accepts, and to which the Owner makes an award of contract, subject to stated conditions.

42. *Supplementary Conditions*—The part of the Contract that amends or supplements these General Conditions.

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

44. *Technical Data*—Those items expressly identified as Technical Data in the Supplementary Conditions, with respect to either (a) subsurface conditions at the Site, or physical conditions relating to existing surface or subsurface structures at the Site (except Underground Facilities) or (b) Hazardous Environmental Conditions at the Site. If no such express identifications of Technical Data have been made with respect to conditions at the Site, then the data contained in boring logs, recorded measurements of subsurface water levels, laboratory test results, and other factual, objective information regarding conditions at the Site that are set forth in any geotechnical or environmental report prepared for the Project and made available to Contractor are hereby defined as Technical Data with respect to conditions at the Site under Paragraphs 5.03, 5.04, and 5.06.

45. *Underground Facilities*—All underground pipelines, conduits, ducts, cables, wires, manholes, vaults, tanks, tunnels, or other such facilities or attachments, and any encasements containing such facilities, including but not limited to those that convey electricity, gases, steam, liquid petroleum products, telephone or other communications, fiber optic transmissions, cable television, water, wastewater, storm water, other liquids or chemicals, or traffic or other control systems.

46. *Unit Price Work*—Work to be paid for on the basis of unit prices.

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

48. *Work Change Directive*—A written directive to Contractor issued on or after the Effective Date of the Contract, signed by Owner and recommended by Engineer, ordering an addition, deletion, or revision in the Work.

1.02 *Terminology*

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

B. Intent of Certain Terms or Adjectives:

1. The Contract Documents include the terms "as allowed," "as approved," "as ordered," "as directed" or terms of like effect or import to authorize an exercise of professional judgment by Engineer. In addition, the adjectives "reasonable," "suitable," "acceptable," "proper," "satisfactory," or adjectives of like effect or import are used to describe an action or determination of Engineer as to the Work. It is intended that such exercise of professional judgment, action, or determination will be solely to evaluate, in general, the Work for compliance with the information in the Contract Documents and with the design concept of the Project as a functioning whole as shown or indicated in the Contract Documents (unless there is a specific statement indicating otherwise). The use of any such term or adjective is not intended to and shall not be effective to assign to Engineer any duty or authority to supervise or direct the performance of the Work, or any duty or authority to undertake responsibility contrary to the provisions of Article 10 or any other provision of the Contract Documents.

C. Day:

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

D. Defective:

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

a. does not conform to the Contract Documents; or

b. does not meet the requirements of any applicable inspection, reference standard, test, or approval referred to in the Contract Documents; or

c. has been damaged prior to Engineer's recommendation of final payment (unless responsibility for the protection thereof has been assumed by Owner at Substantial Completion in accordance with Paragraph 15.03 or 15.04).

E. Furnish, Install, Perform, Provide:

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

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

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

4. If the Contract Documents establish an obligation of Contractor with respect to specific services, materials, or equipment, but do not expressly use any of the four words "furnish," "install," "perform," or "provide," then Contractor shall furnish and install said services, materials, or equipment complete and ready for intended use.

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

ARTICLE 2 – PRELIMINARY MATTERS

2.01 *Delivery of Bonds and Evidence of Insurance*

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

B. *Evidence of Contractor's Insurance*: When Contractor delivers the executed counterparts of the Agreement to Owner, Contractor shall also deliver to Owner, with copies to each named insured and additional insured (as identified in the Supplementary Conditions or elsewhere in the Contract), the certificates and other evidence of insurance required to be provided by Contractor in accordance with Article 6.

C. *Evidence of Owner's Insurance*: After receipt of the executed counterparts of the Agreement and all required bonds and insurance documentation, Owner shall promptly deliver to Contractor, with copies to each named insured and additional insured (as identified in the Supplementary Conditions or otherwise), the certificates and other evidence of insurance required to be provided by Owner under Article 6.

2.02 *Copies of Documents*

A. Owner shall furnish to Contractor four printed copies of the Contract (including one fully executed counterpart of the Agreement), and one copy in electronic portable document format (PDF). Additional printed copies will be furnished upon request at the cost of reproduction.

B. Owner shall maintain and safeguard at least one original printed record version of the Contract, including Drawings and Specifications signed and sealed by Engineer and other design professionals. Owner shall make such original printed record version of the Contract available to Contractor for review. Owner may delegate the responsibilities under this provision to Engineer.

2.03 *Before Starting Construction*

A. *Preliminary Schedules*: Within 10 days after the Effective Date of the Contract (or as otherwise specifically required by the Contract Documents), Contractor shall submit to Engineer for timely review:

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

2. a preliminary Schedule of Submittals; and

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

2.04 *Preconstruction Conference; Designation of Authorized Representatives*

A. Before any Work at the Site is started, a conference attended by Owner, Contractor, Engineer, and others as appropriate will be held to establish a working understanding among the parties as to the Work and to discuss the schedules referred to in Paragraph 2.03.A, procedures for handling Shop Drawings, Samples, and other submittals, processing Applications for Payment, electronic or digital transmittals, and maintaining required records.

B. At this conference Owner and Contractor each shall designate, in writing, a specific individual to act as its authorized representative with respect to the services and responsibilities under the Contract. Such individuals shall have the authority to transmit and receive information, render decisions relative to the Contract, and otherwise act on behalf of each respective party.

2.05 *Initial Acceptance of Schedules*

A. At least 10 days before submission of the first Application for Payment a conference, attended by Contractor, Engineer, and others as appropriate, will be held to review for acceptability to Engineer as provided below the schedules submitted in accordance with Paragraph 2.03.A. Contractor shall have an additional 10 days to make corrections and adjustments and to complete and resubmit the schedules. No progress payment shall be made to Contractor until acceptable schedules are submitted to Engineer.

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

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

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

2.06 *Electronic Transmittals*

A. Except as otherwise stated elsewhere in the Contract, the Owner, Engineer, and Contractor may transmit, and shall

accept, Project-related correspondence, text, data, documents, drawings, information, and graphics, including but not limited to Shop Drawings and other submittals, in electronic media or digital format, either directly, or through access to a secure Project website.

B. If the Contract does not establish protocols for electronic or digital transmittals, then Owner, Engineer, and Contractor shall jointly develop such protocols.

C. When transmitting items in electronic media or digital format, the transmitting party makes no representations as to long term compatibility, usability, or readability of the items resulting from the recipient's use of software application packages, operating systems, or computer hardware differing from those used in the drafting or transmittal of the items, or from those established in applicable transmittal protocols.

ARTICLE 3 – DOCUMENTS: INTENT, REQUIREMENTS, REUSE

3.01 *Intent*

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

B. It is the intent of the Contract Documents to describe a functionally complete project (or part thereof) to be constructed in accordance with the Contract Documents.

C. Unless otherwise stated in the Contract Documents, if there is a discrepancy between the electronic or digital versions of the Contract Documents (including any printed copies derived from such electronic or digital versions) and the printed record version, the printed record version shall govern.

D. The Contract supersedes prior negotiations, representations, and agreements, whether written or oral.

E. Engineer will issue clarifications and interpretations of the Contract Documents as provided herein.

3.02 *Reference Standards*

A. Standards Specifications, Codes, Laws and Regulations

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

2. No provision of any such standard specification, manual, reference standard, or code, or any instruction of a Supplier, shall be effective to change the duties or responsibilities of Owner, Contractor, or Engineer, or any of their subcontractors, consultants, agents, or employees, from those set forth in the part of the Contract Documents prepared by or for Engineer. No such provision or instruction shall be effective to assign to Owner, Engineer, or any of their officers, directors, members, partners, employees, agents, consultants, or subcontractors, any duty or authority to supervise or direct the performance of the Work or any duty or authority to undertake responsibility inconsistent with the provisions of the part of the Contract Documents prepared by or for Engineer.

3.03 *Reporting and Resolving Discrepancies*

A. Reporting Discrepancies:

1. *Contractor's Verification of Figures and Field Measurements*: Before undertaking each part of the Work, Contractor shall carefully study the Contract Documents, and check and verify pertinent figures and dimensions therein, particularly with respect to applicable field measurements. Contractor shall promptly report in writing to Engineer any conflict, error, ambiguity, or discrepancy that Contractor discovers, or has actual knowledge of, and shall not proceed with any Work affected thereby until the conflict, error, ambiguity, or discrepancy is resolved, by a clarification or interpretation by Engineer, or by an amendment or supplement to the Contract Documents issued pursuant to Paragraph 11.01.

2. *Contractor's Review of Contract Documents*: If, before or during the performance of the Work, Contractor discovers any conflict, error, ambiguity, or discrepancy within the Contract Documents, or between the Contract Documents and (a) any applicable Law or Regulation, (b) actual field conditions, (c) any standard specification, manual, reference standard, or code, or (d) any instruction of any Supplier, then Contractor shall promptly report it to Engineer in writing. Contractor shall not proceed with the Work affected thereby (except in an emergency as required by Paragraph 7.15) until the conflict, error, ambiguity, or discrepancy is resolved, by a clarification or interpretation by Engineer, or by an amendment or supplement to the Contract Documents issued pursuant to Paragraph 11.01.

3. Contractor shall not be liable to Owner or Engineer for failure to report any conflict, error, ambiguity, or discrepancy in the Contract Documents unless Contractor had actual knowledge thereof.

B. Resolving Discrepancies:

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

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

b. the provisions of any Laws or Regulations applicable to the performance of the Work (unless such an interpretation of the provisions of the Contract Documents would result in violation of such Law or Regulation).

3.04 *Requirements of the Contract Documents*

A. During the performance of the Work and until final payment, Contractor and Owner shall submit to the Engineer all matters in question concerning the requirements of the Contract Documents (sometimes referred to as requests for information or interpretation—RFIs), or relating to the acceptability of the Work under the Contract Documents, as soon as possible after such matters arise. Engineer will be the initial interpreter of the requirements of the Contract Documents, and judge of the acceptability of the Work thereunder.

B. Engineer will, with reasonable promptness, render a written clarification, interpretation, or decision on the issue submitted, or initiate an amendment or supplement to the Contract Documents. Engineer's written clarification, interpretation, or decision will be final and binding on Contractor, unless it appeals by submitting a Change Proposal, and on Owner, unless it appeals by filing a Claim.

C. If a submitted matter in question concerns terms and conditions of the Contract Documents that do not involve (1) the performance or acceptability of the Work under the Contract Documents, (2) the design (as set forth in the Drawings, Specifications, or otherwise), or (3) other engineering or technical matters, then Engineer will promptly give written notice to Owner and Contractor that Engineer is unable to provide a decision or interpretation. If Owner and Contractor are unable to agree on resolution of such a matter in question, either party may pursue resolution as provided in Article 12.

3.05 *Reuse of Documents*

A. Contractor and its Subcontractors and Suppliers shall not:

1. have or acquire any title to or ownership rights in any of the Drawings, Specifications, or other documents (or copies of any thereof) prepared by or bearing the seal of Engineer or its consultants, including electronic media editions, or reuse any such Drawings, Specifications, other documents, or copies thereof on extensions of the Project or any other project without written consent of Owner and Engineer and specific written verification or adaptation by Engineer; or

2. have or acquire any title or ownership rights in any other Contract Documents, reuse any such Contract Documents for any purpose without Owner's express written consent, or violate any copyrights pertaining to such Contract Documents.

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

ARTICLE 4 – COMMENCEMENT AND PROGRESS OF THE WORK

4.01 *Commencement of Contract Times; Notice to Proceed*

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

4.02 *Starting the Work*

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

4.03 *Reference Points*

A. Owner shall provide engineering surveys to establish reference points for construction which in Engineer's judgment are necessary to enable Contractor to proceed with the Work. Contractor shall be responsible for laying out the Work, shall protect and preserve the established reference points and property monuments, and shall make no changes or relocations without the prior written approval of Owner. Contractor shall report to Engineer whenever any reference point or property monument is lost or destroyed or requires relocation because of necessary changes in grades or locations, and shall be responsible for the accurate replacement or relocation of such reference points or property monuments by professionally qualified personnel.

4.04 *Progress Schedule*

A. Contractor shall adhere to the Progress Schedule established in accordance with Paragraph 2.05 as it may be adjusted from time to time as provided below.

1. Contractor shall submit to Engineer for acceptance (to the extent indicated in Paragraph 2.05) proposed adjustments in the Progress Schedule that will not result in changing the Contract Times.

2. Proposed adjustments in the Progress Schedule that will change the Contract Times shall be submitted in accordance with the requirements of Article 11.

B. Contractor shall carry on the Work and adhere to the Progress Schedule during all disputes or disagreements with Owner. No Work shall be delayed or postponed pending resolution of any disputes or disagreements, or during any appeal process, except as permitted by Paragraph 16.04, or as Owner and Contractor may otherwise agree in writing.

4.05 *Delays in Contractor's Progress*

A. If Owner, Engineer, or anyone for whom Owner is responsible, delays, disrupts, or interferes with the performance or progress of the Work, then Contractor shall be entitled to an equitable adjustment in the Contract Times and Contract Price. Contractor's entitlement to an adjustment of the Contract Times is conditioned on such adjustment being essential to Contractor's ability to complete the Work within the Contract Times.

B. Contractor shall not be entitled to an adjustment in Contract Price or Contract Times for delay, disruption, or interference caused by or within the control of Contractor. Delay, disruption, and interference attributable to and

within the control of a Subcontractor or Supplier shall be deemed to be within the control of Contractor.

C. If Contractor's performance or progress is delayed, disrupted, or interfered with by unanticipated causes not the fault of and beyond the control of Owner, Contractor, and those for which they are responsible, then Contractor shall be entitled to an equitable adjustment in Contract Times. Contractor's entitlement to an adjustment of the Contract Times is conditioned on such adjustment being essential to Contractor's ability to complete the Work within the Contract Times. Such an adjustment shall be Contractor's sole and exclusive remedy for the delays, disruption, and interference described in this paragraph. Causes of delay, disruption, or interference that may give rise to an adjustment in Contract Times under this paragraph include but are not limited to the following:

1. severe and unavoidable natural catastrophes such as fires, floods, epidemics, and earthquakes;
2. abnormal weather conditions;
3. acts or failures to act of utility owners (other than those performing other work at or adjacent to the Site by arrangement with the Owner, as contemplated in Article 8); and
4. acts of war or terrorism.

D. Delays, disruption, and interference to the performance or progress of the Work resulting from the existence of a differing subsurface or physical condition, an Underground Facility that was not shown or indicated by the Contract Documents, or not shown or indicated with reasonable accuracy, and those resulting from Hazardous Environmental Conditions, are governed by Article 5.

E. Paragraph 8.03 governs delays, disruption, and interference to the performance or progress of the Work resulting from the performance of certain other work at or adjacent to the Site.

F. Contractor shall not be entitled to an adjustment in Contract Price or Contract Times for any delay, disruption, or interference if such delay is concurrent with a delay, disruption, or interference caused by or within the control of Contractor.

G. Contractor must submit any Change Proposal seeking an adjustment in Contract Price or Contract Times under this paragraph within 30 days of the commencement of the delaying, disrupting, or interfering event.

ARTICLE 5 – AVAILABILITY OF LANDS; SUBSURFACE AND PHYSICAL CONDITIONS; HAZARDOUS ENVIRONMENTAL CONDITIONS

5.01 *Availability of Lands*

A. Owner shall furnish the Site. Owner shall notify Contractor of any encumbrances or restrictions not of general application but specifically related to use of the Site with which Contractor must comply in performing the Work.

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

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

5.02 *Use of Site and Other Areas*

A. Limitation on Use of Site and Other Areas:

1. Contractor shall confine construction equipment, temporary construction facilities, the storage of materials and equipment, and the operations of workers to the Site, adjacent areas that Contractor has arranged to use through construction easements or otherwise, and other adjacent areas permitted by Laws and Regulations, and shall not unreasonably encumber the Site and such other adjacent areas with construction equipment or other materials or equipment. Contractor shall assume full responsibility for (a) damage to the Site; (b) damage to any such other adjacent areas used for Contractor's operations; (c) damage to any other adjacent land or areas; and (d) for injuries and losses sustained by the owners or occupants of any such land or areas; provided that such damage or injuries result from the performance of the Work or from other actions or conduct of the Contractor or those for which Contractor is responsible.
2. If a damage or injury claim is made by the owner or occupant of any such land or area because of the performance of the Work, or because of other actions or conduct of the Contractor or those for which Contractor is responsible, Contractor shall (a) take immediate corrective or remedial action as required by Paragraph 7.12, or otherwise; (b) promptly attempt to settle the claim as to all parties through negotiations with such owner or occupant, or otherwise resolve the claim by arbitration or other dispute resolution proceeding, or at law; and (c) to the fullest extent permitted by Laws and Regulations, indemnify and hold harmless Owner and Engineer, and the officers, directors, members, partners, employees, agents, consultants and subcontractors of each and any of them from and against any such claim, and against all costs, losses, and damages (including but not limited to all fees and charges of engineers, architects, attorneys, and other professionals and all court or arbitration or other dispute resolution costs) arising out of or relating to any claim or action, legal or equitable, brought by any such owner or occupant against Owner, Engineer, or any other party indemnified hereunder to the extent caused directly or indirectly, in whole or in part by, or based upon, Contractor's performance of the Work, or because of other actions or conduct of the Contractor or those for which Contractor is responsible.

B. *Removal of Debris During Performance of the Work*: During the progress of the Work the Contractor shall keep the Site and other adjacent areas free from accumulations

of waste materials, rubbish, and other debris. Removal and disposal of such waste materials, rubbish, and other debris shall conform to applicable Laws and Regulations.

C. *Cleaning*: Prior to Substantial Completion of the Work Contractor shall clean the Site and the Work and make it ready for utilization by Owner. At the completion of the Work Contractor shall remove from the Site and adjacent areas all tools, appliances, construction equipment and machinery, and surplus materials and shall restore to original condition all property not designated for alteration by the Contract Documents.

D. *Loading of Structures*: Contractor shall not load nor permit any part of any structure to be loaded in any manner that will endanger the structure, nor shall Contractor subject any part of the Work or adjacent structures or land to stresses or pressures that will endanger them.

5.03 *Subsurface and Physical Conditions*

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

1. those reports known to Owner of explorations and tests of subsurface conditions at or adjacent to the Site;

2. those drawings known to Owner of physical conditions relating to existing surface or subsurface structures at the Site (except Underground Facilities); and

3. Technical Data contained in such reports and drawings.

B. *Reliance by Contractor on Technical Data Authorized*: Contractor may rely upon the accuracy of the Technical Data expressly identified in the Supplementary Conditions with respect to such reports and drawings, but such reports and drawings are not Contract Documents. If no such express identification has been made, then Contractor may rely upon the accuracy of the Technical Data (as defined in Article 1) contained in any geotechnical or environmental report prepared for the Project and made available to Contractor. Except for such reliance on Technical Data, Contractor may not rely upon or make any claim against Owner or Engineer, or any of their officers, directors, members, partners, employees, agents, consultants, or subcontractors, with respect to:

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

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

3. any Contractor interpretation of or conclusion drawn from any Technical Data or any such other data, interpretations, opinions, or information.

5.04 *Differing Subsurface or Physical Conditions*

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

1. is of such a nature as to establish that any Technical Data on which Contractor is entitled to rely as provided in Paragraph 5.03 is materially inaccurate; or

2. is of such a nature as to require a change in the Drawings or Specifications; or

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

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

then Contractor shall, promptly after becoming aware thereof and before further disturbing the subsurface or physical conditions or performing any Work in connection therewith (except in an emergency as required by Paragraph 7.15), notify Owner and Engineer in writing about such condition. Contractor shall not further disturb such condition or perform any Work in connection therewith (except with respect to an emergency) until receipt of a written statement permitting Contractor to do so.

B. *Engineer's Review*: After receipt of written notice as required by the preceding paragraph, Engineer will promptly review the subsurface or physical condition in question; determine the necessity of Owner's obtaining additional exploration or tests with respect to the condition; conclude whether the condition falls within any one or more of the differing site condition categories in Paragraph 5.04.A above; obtain any pertinent cost or schedule information from Contractor; prepare recommendations to Owner regarding the Contractor's resumption of Work in connection with the subsurface or physical condition in question and the need for any change in the Drawings or Specifications; and advise Owner in writing of Engineer's findings, conclusions, and recommendations.

C. *Owner's Statement to Contractor Regarding Site Condition*: After receipt of Engineer's written findings, conclusions, and recommendations, Owner shall issue a written statement to Contractor (with a copy to Engineer) regarding the subsurface or physical condition in question, addressing the resumption of Work in connection with such condition, indicating whether any change in the Drawings or Specifications will be made, and adopting or rejecting Engineer's written findings, conclusions, and recommendations, in whole or in part.

D. Possible Price and Times Adjustments:

1. Contractor shall be entitled to an equitable adjustment in Contract Price or Contract Times, or both, to the extent that the existence of a differing subsurface or physical condition, or any related delay, disruption, or interference, causes an increase

or decrease in Contractor's cost of, or time required for, performance of the Work; subject, however, to the following:

a. such condition must fall within any one or more of the categories described in Paragraph 5.04.A;

b. with respect to Work that is paid for on a unit price basis, any adjustment in Contract Price will be subject to the provisions of Paragraph 13.03; and,

c. Contractor's entitlement to an adjustment of the Contract Times is conditioned on such adjustment being essential to Contractor's ability to complete the Work within the Contract Times.

2. Contractor shall not be entitled to any adjustment in the Contract Price or Contract Times with respect to a subsurface or physical condition if:

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

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

c. Contractor failed to give the written notice as required by Paragraph 5.04.A.

3. If Owner and Contractor agree regarding Contractor's entitlement to and the amount or extent of any adjustment in the Contract Price or Contract Times, or both, then any such adjustment shall be set forth in a Change Order.

4. Contractor may submit a Change Proposal regarding its entitlement to or the amount or extent of any adjustment in the Contract Price or Contract Times, or both, no later than 30 days after Owner's issuance of the Owner's written statement to Contractor regarding the subsurface or physical condition in question.

5.05 *Underground Facilities*

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

1. Owner and Engineer do not warrant or guarantee the accuracy or completeness of any such information or data provided by others; and

2. the cost of all of the following will be included in the Contract Price, and Contractor shall have full responsibility for:

a. reviewing and checking all information and data regarding existing Underground Facilities at the Site;

b. locating all Underground Facilities shown or indicated in the Contract Documents as being at the Site;

c. coordination of the Work with the owners (including Owner) of such Underground Facilities, during construction; and

d. the safety and protection of all existing Underground Facilities at the Site, and repairing any damage thereto resulting from the Work.

B. *Notice by Contractor*: If Contractor believes that an Underground Facility that is uncovered or revealed at the Site was not shown or indicated in the Contract Documents, or was not shown or indicated with reasonable accuracy, then Contractor shall, promptly after becoming aware thereof and before further disturbing conditions affected thereby or performing any Work in connection therewith (except in an emergency as required by Paragraph 7.15), identify the owner of such Underground Facility and give written notice to that owner and to Owner and Engineer.

C. *Engineer's Review*: Engineer will promptly review the Underground Facility and conclude whether such Underground Facility was not shown or indicated in the Contract Documents, or was not shown or indicated with reasonable accuracy; obtain any pertinent cost or schedule information from Contractor; prepare recommendations to Owner regarding the Contractor's resumption of Work in connection with the Underground Facility in question; determine the extent, if any, to which a change is required in the Drawings or Specifications to reflect and document the consequences of the existence or location of the Underground Facility; and advise Owner in writing of Engineer's findings, conclusions, and recommendations. During such time, Contractor shall be responsible for the safety and protection of such Underground Facility.

D. *Owner's Statement to Contractor Regarding Underground Facility*: After receipt of Engineer's written findings, conclusions, and recommendations, Owner shall issue a written statement to Contractor (with a copy to Engineer) regarding the Underground Facility in question, addressing the resumption of Work in connection with such Underground Facility, indicating whether any change in the Drawings or Specifications will be made, and adopting or rejecting Engineer's written findings, conclusions, and recommendations in whole or in part.

E. Possible Price and Times Adjustments:

1. Contractor shall be entitled to an equitable adjustment in the Contract Price or Contract Times, or both, to the extent that any existing Underground Facility at the Site that was not shown or indicated in the Contract Documents, or was not shown or indicated with reasonable accuracy, or any related delay, disruption, or interference, causes an increase or decrease in Contractor's cost of, or time required for, performance of the Work; subject, however, to the following:

a. Contractor did not know of and could not reasonably have been expected to be aware of or to have anticipated the existence or actual location of the Underground Facility in question;

b. With respect to Work that is paid for on a unit price basis, any adjustment in Contract Price will be subject to the provisions of Paragraph 13.03;

c. Contractor's entitlement to an adjustment of the Contract Times is conditioned on such adjustment being essential to Contractor's ability to complete the Work within the Contract Times; and

d. Contractor gave the notice required in Paragraph 5.05.B.

2. If Owner and Contractor agree regarding Contractor's entitlement to and the amount or extent of any adjustment in the Contract Price or Contract Times, or both, then any such adjustment shall be set forth in a Change Order.

3. Contractor may submit a Change Proposal regarding its entitlement to or the amount or extent of any adjustment in the Contract Price or Contract Times, or both, no later than 30 days after Owner's issuance of the Owner's written statement to Contractor regarding the Underground Facility in question.

5.06 *Hazardous Environmental Conditions at Site*

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

1. those reports and drawings known to Owner relating to Hazardous Environmental Conditions that have been identified at or adjacent to the Site; and

2. Technical Data contained in such reports and drawings.

B. *Reliance by Contractor on Technical Data Authorized*: Contractor may rely upon the accuracy of the Technical Data expressly identified in the Supplementary Conditions with respect to such reports and drawings, but such reports and drawings are not Contract Documents. If no such express identification has been made, then Contractor may rely on the accuracy of the Technical Data (as defined in Article 1) contained in any geotechnical or environmental report prepared for the Project and made available to Contractor. Except for such reliance on Technical Data, Contractor may not rely upon or make any claim against Owner or Engineer, or any of their officers, directors, members, partners, employees, agents, consultants, or subcontractors with respect to:

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

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

3. any Contractor interpretation of or conclusion drawn from any Technical Data or any such other data, interpretations, opinions or information.

C. Contractor shall not be responsible for removing or remediating any Hazardous Environmental Condition encountered, uncovered, or revealed at the Site unless such removal or remediation is expressly identified in the Contract Documents to be within the scope of the Work.

D. Contractor shall be responsible for controlling, containing, and duly removing all Constituents of Concern brought to the Site by Contractor, Subcontractors, Suppliers, or anyone else for whom Contractor is responsible, and for any associated costs; and for the costs of removing and remediating any Hazardous Environmental Condition created by the presence of any such Constituents of Concern.

E. If Contractor encounters, uncovers, or reveals a Hazardous Environmental Condition whose removal or remediation is not expressly identified in the Contract Documents as being within the scope of the Work, or if Contractor or anyone for whom Contractor is responsible creates a Hazardous Environmental Condition, then Contractor shall immediately: (1) secure or otherwise isolate such condition; (2) stop all Work in connection with such condition and in any area affected thereby (except in an emergency as required by Paragraph 7.15); and (3) notify Owner and Engineer (and promptly thereafter confirm such notice in writing). Owner shall promptly consult with Engineer concerning the necessity for Owner to retain a qualified expert to evaluate such condition or take corrective action, if any. Promptly after consulting with Engineer, Owner shall take such actions as are necessary to permit Owner to timely obtain required permits and provide Contractor the written notice required by Paragraph 5.06.F. If Contractor or anyone for whom Contractor is responsible created the Hazardous Environmental Condition in question, then Owner may remove and remediate the Hazardous Environmental Condition, and impose a set-off against payments to account for the associated costs.

F. Contractor shall not resume Work in connection with such Hazardous Environmental Condition or in any affected area until after Owner has obtained any required permits related thereto, and delivered written notice to Contractor either (1) specifying that such condition and any affected area is or has been rendered safe for the resumption of Work, or (2) specifying any special conditions under which such Work may be resumed safely.

G. If Owner and Contractor cannot agree as to entitlement to or on the amount or extent, if any, of any adjustment in Contract Price or Contract Times, or both, as a result of such Work stoppage or such special conditions under which Work is agreed to be resumed by Contractor, then within 30 days of Owner's written notice regarding the resumption of Work, Contractor may submit a Change Proposal, or Owner may impose a set-off.

H. If after receipt of such written notice Contractor does not agree to resume such Work based on a reasonable belief it is unsafe, or does not agree to resume such Work under such special conditions, then Owner may order the portion

of the Work that is in the area affected by such condition to be deleted from the Work, following the contractual change procedures in Article 11. Owner may have such deleted portion of the Work performed by Owner's own forces or others in accordance with Article 8.

I. To the fullest extent permitted by Laws and Regulations, Owner shall indemnify and hold harmless Contractor, Subcontractors, and Engineer, and the officers, directors, members, partners, employees, agents, consultants, and subcontractors of each and any of them from and against all claims, costs, losses, and damages (including but not limited to all fees and charges of engineers, architects, attorneys, and other professionals and all court or arbitration or other dispute resolution costs) arising out of or relating to a Hazardous Environmental Condition, provided that such Hazardous Environmental Condition (1) was not shown or indicated in the Drawings, Specifications, or other Contract Documents, identified as Technical Data entitled to limited reliance pursuant to Paragraph 5.06.B, or identified in the Contract Documents to be included within the scope of the Work, and (2) was not created by Contractor or by anyone for whom Contractor is responsible. Nothing in this Paragraph 5.06.H shall obligate Owner to indemnify any individual or entity from and against the consequences of that individual's or entity's own negligence.

J. To the fullest extent permitted by Laws and Regulations, Contractor shall indemnify and hold harmless Owner and Engineer, and the officers, directors, members, partners, employees, agents, consultants, and subcontractors of each and any of them from and against all claims, costs, losses, and damages (including but not limited to all fees and charges of engineers, architects, attorneys, and other professionals and all court or arbitration or other dispute resolution costs) arising out of or relating to the failure to control, contain, or remove a Constituent of Concern brought to the Site by Contractor or by anyone for whom Contractor is responsible, or to a Hazardous Environmental Condition created by Contractor or by anyone for whom Contractor is responsible. Nothing in this Paragraph 5.06.J shall obligate Contractor to indemnify any individual or entity from and against the consequences of that individual's or entity's own negligence.

K. The provisions of Paragraphs 5.03, 5.04, and 5.05 do not apply to the presence of Constituents of Concern or to a Hazardous Environmental Condition uncovered or revealed at the Site.

ARTICLE 6 – BONDS AND INSURANCE

6.01 *Performance, Payment, and Other Bonds*

A. Contractor shall furnish a performance bond and a payment bond, each in an amount at least equal to the Contract Price, as security for the faithful performance and payment of all of Contractor's obligations under the Contract. These bonds shall remain in effect until one year after the date when final payment becomes due or until completion of the correction period specified in Paragraph 15.08, whichever is later, except as provided otherwise by Laws or Regulations, the Supplementary Conditions, or other specific provisions of the Contract. Contractor shall also furnish such other bonds as are required by the Supplementary Conditions or other specific provisions of the Contract.

B. All bonds shall be in the form prescribed by the Contract except as provided otherwise by Laws or Regulations, and shall be executed by such sureties as are named in "Companies Holding Certificates of Authority as Acceptable Sureties on Federal Bonds and as Acceptable Reinsuring Companies" as published in Circular 570 (as amended and supplemented) by the Financial Management Service, Surety Bond Branch, U.S. Department of the Treasury. A bond signed by an agent or attorney-in-fact must be accompanied by a certified copy of that individual's authority to bind the surety. The evidence of authority shall show that it is effective on the date the agent or attorney-in-fact signed the accompanying bond.

C. Contractor shall obtain the required bonds from surety companies that are duly licensed or authorized in the jurisdiction in which the Project is located to issue bonds in the required amounts.

D. If the surety on a bond furnished by Contractor is declared bankrupt or becomes insolvent, or its right to do business is terminated in any state or jurisdiction where any part of the Project is located, or the surety ceases to meet the requirements above, then Contractor shall promptly notify Owner and Engineer and shall, within 20 days after the event giving rise to such notification, provide another bond and surety, both of which shall comply with the bond and surety requirements above.

E. If Contractor has failed to obtain a required bond, Owner may exclude the Contractor from the Site and exercise Owner's termination rights under Article 16.

F. Upon request, Owner shall provide a copy of the payment bond to any Subcontractor, Supplier, or other person or entity claiming to have furnished labor or materials used in the performance of the Work.

6.02 *Insurance—General Provisions*

A. Owner and Contractor shall obtain and maintain insurance as required in this Article and in the Supplementary Conditions.

B. All insurance required by the Contract to be purchased and maintained by Owner or Contractor shall be obtained from insurance companies that are duly licensed or authorized, in the state or jurisdiction in which the Project is located, to issue insurance policies for the required limits and coverages. Unless a different standard is indicated in the Supplementary Conditions, all companies that provide insurance policies required under this Contract shall have an A.M. Best rating of A-VII or better.

C. Contractor shall deliver to Owner, with copies to each named insured and additional insured (as identified in this Article, in the Supplementary Conditions, or elsewhere in the Contract), certificates of insurance establishing that Contractor has obtained and is maintaining the policies, coverages, and endorsements required by the Contract.

Upon request by Owner or any other insured, Contractor shall also furnish other evidence of such required insurance, including but not limited to copies of policies and endorsements, and documentation of applicable self-insured retentions and deductibles. Contractor may block out (redact) any confidential premium or pricing information contained in any policy or endorsement furnished under this provision.

D. Owner shall deliver to Contractor, with copies to each named insured and additional insured (as identified in this Article, the Supplementary Conditions, or elsewhere in the Contract), certificates of insurance establishing that Owner has obtained and is maintaining the policies, coverages, and endorsements required of Owner by the Contract (if any). Upon request by Contractor or any other insured, Owner shall also provide other evidence of such required insurance (if any), including but not limited to copies of policies and endorsements, and documentation of applicable self-insured retentions and deductibles. Owner may block out (redact) any confidential premium or pricing information contained in any policy or endorsement furnished under this provision.

E. Failure of Owner or Contractor to demand such certificates or other evidence of the other party's full compliance with these insurance requirements, or failure of Owner or Contractor to identify a deficiency in compliance from the evidence provided, shall not be construed as a waiver of the other party's obligation to obtain and maintain such insurance.

F. If either party does not purchase or maintain all of the insurance required of such party by the Contract, such party shall notify the other party in writing of such failure to purchase prior to the start of the Work, or of such failure to maintain prior to any change in the required coverage.

G. If Contractor has failed to obtain and maintain required insurance, Owner may exclude the Contractor from the Site, impose an appropriate set-off against payment, and exercise Owner's termination rights under Article 16.

H. Without prejudice to any other right or remedy, if a party has failed to obtain required insurance, the other party may elect to obtain equivalent insurance to protect such other party's interests at the expense of the party who was required to provide such coverage, and the Contract Price shall be adjusted accordingly.

I. Owner does not represent that insurance coverage and limits established in this Contract necessarily will be adequate to protect Contractor or Contractor's interests.

J. The insurance and insurance limits required herein shall not be deemed as a limitation on Contractor's liability under the indemnities granted to Owner and other individuals and entities in the Contract.

6.03 *Contractor's Insurance*

A. *Workers' Compensation*: Contractor shall purchase and maintain workers' compensation and employer's liability insurance for:

1. claims under workers' compensation, disability benefits, and other similar employee benefit acts.

2. United States Longshoreman and Harbor Workers' Compensation Act and Jones Act coverage (if applicable).

3. claims for damages because of bodily injury, occupational sickness or disease, or death of Contractor's employees (by stop-gap endorsement in monopolist worker's compensation states).

4. Foreign voluntary worker compensation (if applicable).

B. *Commercial General Liability—Claims Covered*: Contractor shall purchase and maintain commercial general liability insurance, covering all operations by or on behalf of Contractor, on an occurrence basis, against:

1. claims for damages because of bodily injury, sickness or disease, or death of any person other than Contractor's employees.

2. claims for damages insured by reasonably available personal injury liability coverage.

3. claims for damages, other than to the Work itself, because of injury to or destruction of tangible property wherever located, including loss of use resulting therefrom.

C. *Commercial General Liability—Form and Content*: Contractor's commercial liability policy shall be written on a 1996 (or later) ISO commercial general liability form (occurrence form) and include the following coverages and endorsements:

1. Products and completed operations coverage:

a. Such insurance shall be maintained for three years after final payment.

b. Contractor shall furnish Owner and each other additional insured (as identified in the Supplementary Conditions or elsewhere in the Contract) evidence of continuation of such insurance at final payment and three years thereafter.

2. Blanket contractual liability coverage, to the extent permitted by law, including but not limited to coverage of Contractor's contractual indemnity obligations in Paragraph 7.18.

3. Broad form property damage coverage.

4. Severability of interest.

5. Underground, explosion, and collapse coverage.

6. Personal injury coverage.

7. Additional insured endorsements that include both ongoing operations and products and completed operations coverage through ISO Endorsements CG 20 10 10 01 and CG 20 37 10 01 (together); or CG 20 10 07 04 and CG 20 37 07 04 (together); or their equivalent.

8. For design professional additional insureds, ISO Endorsement CG 20 32 07 04, "Additional Insured—

Engineers, Architects or Surveyors Not Engaged by the Named Insured" or its equivalent.

D. *Automobile liability*: Contractor shall purchase and maintain automobile liability insurance against claims for damages because of bodily injury or death of any person or property damage arising out of the ownership, maintenance, or use of any motor vehicle. The automobile liability policy shall be written on an occurrence basis.

E. *Umbrella or excess liability*: Contractor shall purchase and maintain umbrella or excess liability insurance written over the underlying employer's liability, commercial general liability, and automobile liability insurance described in the paragraphs above. Subject to industry-standard exclusions, the coverage afforded shall follow form as to each and every one of the underlying policies.

F. *Contractor's pollution liability insurance*: Contractor shall purchase and maintain a policy covering third-party injury and property damage claims, including clean-up costs, as a result of pollution conditions arising from Contractor's operations and completed operations. This insurance shall be maintained for no less than three years after final completion.

G. *Additional insureds*: The Contractor's commercial general liability, automobile liability, umbrella or excess, and pollution liability policies shall include and list as additional insureds Owner and Engineer, and any individuals or entities identified in the Supplementary Conditions; include coverage for the respective officers, directors, members, partners, employees, agents, consultants, and subcontractors of each and any of all such additional insureds; and the insurance afforded to these additional insureds shall provide primary coverage for all claims covered thereby (including as applicable those arising from both ongoing and completed operations) on a non-contributory basis. Contractor shall obtain all necessary endorsements to support these requirements.

H. *Contractor's professional liability insurance*: If Contractor will provide or furnish professional services under this Contract, through a delegation of professional design services or otherwise, then Contractor shall be responsible for purchasing and maintaining applicable professional liability insurance. This insurance shall provide protection against claims arising out of performance of professional design or related services, and caused by a negligent error, omission, or act for which the insured party is legally liable. It shall be maintained throughout the duration of the Contract and for a minimum of two years after Substantial Completion. If such professional design services are performed by a Subcontractor, and not by Contractor itself, then the requirements of this paragraph may be satisfied through the purchasing and maintenance of such insurance by such Subcontractor.

I. *General provisions*: The policies of insurance required by this Paragraph 6.03 shall:

1. include at least the specific coverages provided in this Article.
2. be written for not less than the limits of liability provided in this Article and in the Supplementary Conditions, or required by Laws or Regulations, whichever is greater.
3. contain a provision or endorsement that the coverage afforded will not be canceled, materially changed, or renewal refused until at least 10 days prior written notice has been given to Contractor. Within three days of receipt of any such written notice, Contractor shall provide a copy of the notice to Owner, Engineer, and each other insured under the policy.
4. remain in effect at least until final payment (and longer if expressly required in this Article) and at all times thereafter when Contractor may be correcting, removing, or replacing defective Work as a warranty or correction obligation, or otherwise, or returning to the Site to conduct other tasks arising from the Contract Documents.
5. be appropriate for the Work being performed and provide protection from claims that may arise out of or result from Contractor's performance of the Work and Contractor's other obligations under the Contract Documents, whether it is to be performed by Contractor, any Subcontractor or Supplier, or by anyone directly or indirectly employed by any of them to perform any of the Work, or by anyone for whose acts any of them may be liable.

J. The coverage requirements for specific policies of insurance must be met by such policies, and not by reference to excess or umbrella insurance provided in other policies.

6.04 *Owner's Liability Insurance*

A. In addition to the insurance required to be provided by Contractor under Paragraph 6.03, Owner, at Owner's option, may purchase and maintain at Owner's expense Owner's own liability insurance as will protect Owner against claims which may arise from operations under the Contract Documents.

B. Owner's liability policies, if any, operate separately and independently from policies required to be provided by Contractor, and Contractor cannot rely upon Owner's liability policies for any of Contractor's obligations to the Owner, Engineer, or third parties.

6.05 *Property Insurance*

A. *Builder's Risk*: Unless otherwise provided in the Supplementary Conditions, Contractor shall purchase and maintain builder's risk insurance upon the Work on a completed value basis, in the amount of the full insurable replacement cost thereof (subject to such deductible amounts as may be provided in the Supplementary Conditions or required by Laws and Regulations). This insurance shall:

1. include the Owner and Contractor as named insureds, and all Subcontractors, and any individuals or entities required by the Supplementary Conditions to be insured under such builder's risk policy, as insureds or named insureds. For purposes of the remainder of

this Paragraph 6.05, Paragraphs 6.06 and 6.07, and any corresponding Supplementary Conditions, the parties required to be insured shall collectively be referred to as "insureds."

2. be written on a builder's risk "all risk" policy form that shall at least include insurance for physical loss or damage to the Work, temporary buildings, falsework, and materials and equipment in transit, and shall insure against at least the following perils or causes of loss: fire; lightning; windstorm; riot; civil commotion; terrorism; vehicle impact; aircraft; smoke; theft; vandalism and malicious mischief; mechanical breakdown, boiler explosion, and artificially generated electric current; earthquake; volcanic activity, and other earth movement; flood; collapse; explosion; debris removal; demolition occasioned by enforcement of Laws and Regulations; water damage (other than that caused by flood); and such other perils or causes of loss as may be specifically required by the Supplementary Conditions. If insurance against mechanical breakdown, boiler explosion, and artificially generated electric current; earthquake; volcanic activity, and other earth movement; or flood, are not commercially available under builder's risk policies, by endorsement or otherwise, such insurance may be provided through other insurance policies acceptable to Owner and Contractor.

3. cover, as insured property, at least the following: (a) the Work and all materials, supplies, machinery, apparatus, equipment, fixtures, and other property of a similar nature that are to be incorporated into or used in the preparation, fabrication, construction, erection, or completion of the Work, including Owner-furnished or assigned property; (b) spare parts inventory required within the scope of the Contract; and (c) temporary works which are not intended to form part of the permanent constructed Work but which are intended to provide working access to the Site, or to the Work under construction, or which are intended to provide temporary support for the Work under construction, including scaffolding, form work, fences, shoring, falsework, and temporary structures.

4. cover expenses incurred in the repair or replacement of any insured property (including but not limited to fees and charges of engineers and architects).

5. extend to cover damage or loss to insured property while in temporary storage at the Site or in a storage location outside the Site (but not including property stored at the premises of a manufacturer or Supplier).

6. extend to cover damage or loss to insured property while in transit.

7. allow for partial occupation or use of the Work by Owner, such that those portions of the Work that are not yet occupied or used by Owner shall remain covered by the builder's risk insurance.

8. allow for the waiver of the insurer's subrogation rights, as set forth below.

9. provide primary coverage for all losses and damages caused by the perils or causes of loss covered.

10. not include a co-insurance clause.

11. include an exception for ensuing losses from physical damage or loss with respect to any defective workmanship, design, or materials exclusions.

12. include performance/hot testing and start-up.

13. be maintained in effect, subject to the provisions herein regarding Substantial Completion and partial occupancy or use of the Work by Owner, until the Work is complete.

B. *Notice of Cancellation or Change*: All the policies of insurance (and the certificates or other evidence thereof) required to be purchased and maintained in accordance with this Paragraph 6.05 will contain a provision or endorsement that the coverage afforded will not be canceled or materially changed or renewal refused until at least 10 days prior written notice has been given to the purchasing policyholder. Within three days of receipt of any such written notice, the purchasing policyholder shall provide a copy of the notice to each other insured.

C. *Deductibles*: The purchaser of any required builder's risk or property insurance shall pay for costs not covered because of the application of a policy deductible.

D. *Partial Occupancy or Use by Owner*: If Owner will occupy or use a portion or portions of the Work prior to Substantial Completion of all the Work as provided in Paragraph 15.04, then Owner (directly, if it is the purchaser of the builder's risk policy, or through Contractor) will provide notice of such occupancy or use to the builder's risk insurer. The builder's risk insurance shall not be canceled or permitted to lapse on account of any such partial use or occupancy; rather, those portions of the Work that are occupied or used by Owner may come off the builder's risk policy, while those portions of the Work not yet occupied or used by Owner shall remain covered by the builder's risk insurance.

E. *Additional Insurance*: If Contractor elects to obtain other special insurance to be included in or supplement the builder's risk or property insurance policies provided under this Paragraph 6.05, it may do so at Contractor's expense.

F. *Insurance of Other Property*: If the express insurance provisions of the Contract do not require or address the insurance of a property item or interest, such as tools, construction equipment, or other personal property owned by Contractor, a Subcontractor, or an employee of Contractor or a Subcontractor, then the entity or individual owning such property item will be responsible for deciding whether to insure it, and if so in what amount.

6.06 *Waiver of Rights*

A. All policies purchased in accordance with Paragraph 6.05, expressly including the builder's risk policy, shall contain provisions to the effect that in the event of payment of any loss or damage the insurers will have no rights of recovery against any insureds thereunder, or against Engineer or its

consultants, or their officers, directors, members, partners, employees, agents, consultants, or subcontractors. Owner and Contractor waive all rights against each other and the respective officers, directors, members, partners, employees, agents, consultants, and subcontractors of each and any of them, for all losses and damages caused by, arising out of, or resulting from any of the perils or causes of loss covered by such policies and any other property insurance applicable to the Work; and, in addition, waive all such rights against Engineer, its consultants, all Subcontractors, all individuals or entities identified in the Supplementary Conditions as insureds, and the officers, directors, members, partners, employees, agents, consultants, and subcontractors of each and any of them, under such policies for losses and damages so caused. None of the above waivers shall extend to the rights that any party making such waiver may have to the proceeds of insurance held by Owner or Contractor as trustee or fiduciary, or otherwise payable under any policy so issued.

B. Owner waives all rights against Contractor, Subcontractors, and Engineer, and the officers, directors, members, partners, employees, agents, consultants and subcontractors of each and any of them, for:

1. loss due to business interruption, loss of use, or other consequential loss extending beyond direct physical loss or damage to Owner's property or the Work caused by, arising out of, or resulting from fire or other perils whether or not insured by Owner; and

2. loss or damage to the completed Project or part thereof caused by, arising out of, or resulting from fire or other insured peril or cause of loss covered by any property insurance maintained on the completed Project or part thereof by Owner during partial occupancy or use pursuant to Paragraph 15.04, after Substantial Completion pursuant to Paragraph 15.03, or after final payment pursuant to Paragraph 15.06.

C. Any insurance policy maintained by Owner covering any loss, damage or consequential loss referred to in Paragraph 6.06.B shall contain provisions to the effect that in the event of payment of any such loss, damage, or consequential loss, the insurers will have no rights of recovery against Contractor, Subcontractors, or Engineer, or the officers, directors, members, partners, employees, agents, consultants, or subcontractors of each and any of them.

D. Contractor shall be responsible for assuring that the agreement under which a Subcontractor performs a portion of the Work contains provisions whereby the Subcontractor waives all rights against Owner, Contractor, all individuals or entities identified in the Supplementary Conditions as insureds, the Engineer and its consultants, and the officers, directors, members, partners, employees, agents, consultants, and subcontractors of each and any of them, for all losses and damages caused by, arising out of, relating to, or resulting from any of the perils or causes of loss covered by builder's risk insurance and any other property insurance applicable to the Work.

6.07 *Receipt and Application of Property Insurance Proceeds*

A. Any insured loss under the builder's risk and other policies of insurance required by Paragraph 6.05 will be adjusted and settled with the named insured that purchased the policy. Such named insured shall act as fiduciary for the other insureds, and give notice to such other insureds that adjustment and settlement of a claim is in progress. Any other insured may state its position regarding a claim for insured loss in writing within 15 days after notice of such claim.

B. Proceeds for such insured losses may be made payable by the insurer either jointly to multiple insureds, or to the named insured that purchased the policy in its own right and as fiduciary for other insureds, subject to the requirements of any applicable mortgage clause. A named insured receiving insurance proceeds under the builder's risk and other policies of insurance required by Paragraph 6.05 shall distribute such proceeds in accordance with such agreement as the parties in interest may reach, or as otherwise required under the dispute resolution provisions of this Contract or applicable Laws and Regulations.

C. If no other special agreement is reached, the damaged Work shall be repaired or replaced, the money so received applied on account thereof, and the Work and the cost thereof covered by Change Order, if needed.

ARTICLE 7 – CONTRACTOR'S RESPONSIBILITIES

7.01 *Supervision and Superintendence*

A. Contractor shall supervise, inspect, and direct the Work competently and efficiently, devoting such attention thereto and applying such skills and expertise as may be necessary to perform the Work in accordance with the Contract Documents. Contractor shall be solely responsible for the means, methods, techniques, sequences, and procedures of construction.

B. At all times during the progress of the Work, Contractor shall assign a competent resident superintendent who shall not be replaced without written notice to Owner and Engineer except under extraordinary circumstances.

7.02 *Labor; Working Hours*

A. Contractor shall provide competent, suitably qualified personnel to survey and lay out the Work and perform construction as required by the Contract Documents. Contractor shall at all times maintain good discipline and order at the Site.

B. Except as otherwise required for the safety or protection of persons or the Work or property at the Site or adjacent thereto, and except as otherwise stated in the Contract Documents, all Work at the Site shall be performed during regular working hours, Monday through Friday. Contractor will not perform Work on a Saturday, Sunday, or any legal holiday. Contractor may perform Work outside regular working hours or on Saturdays, Sundays, or legal holidays only with Owner's written consent, which will not be unreasonably withheld.

7.03 *Services, Materials, and Equipment*

A. Unless otherwise specified in the Contract Documents, Contractor shall provide and assume full responsibility for all services, materials, equipment, labor, transportation, construction equipment and machinery, tools, appliances, fuel, power, light, heat, telephone, water, sanitary facilities, temporary facilities, and all other facilities and incidentals necessary for the performance, testing, start up, and completion of the Work, whether or not such items are specifically called for in the Contract Documents.

B. All materials and equipment incorporated into the Work shall be of good quality and new, except as otherwise provided in the Contract Documents. All special warranties and guarantees required by the Specifications shall expressly run to the benefit of Owner. If required by Engineer, Contractor shall furnish satisfactory evidence (including reports of required tests) as to the source, kind, and quality of materials and equipment.

C. All materials and equipment shall be stored, applied, installed, connected, erected, protected, used, cleaned, and conditioned in accordance with instructions of the applicable Supplier, except as otherwise may be provided in the Contract Documents.

7.04 *"Or Equals"*

A. Whenever an item of material or equipment is specified or described in the Contract Documents by using the name of a proprietary item or the name of a particular Supplier, the Contract Price has been based upon Contractor furnishing such item as specified. The specification or description of such an item is intended to establish the type, function, appearance, and quality required. Unless the specification or description contains or is followed by words reading that no like, equivalent, or "or equal" item is permitted, Contractor may request that Engineer authorize the use of other items of material or equipment, or items from other proposed suppliers under the circumstances described below.

1. If Engineer in its sole discretion determines that an item of material or equipment proposed by Contractor is functionally equal to that named and sufficiently similar so that no change in related Work will be required, Engineer shall deem it an "or equal" item. For the purposes of this paragraph, a proposed item of material or equipment will be considered functionally equal to an item so named if:

a. in the exercise of reasonable judgment Engineer determines that:

1) it is at least equal in materials of construction, quality, durability, appearance, strength, and design characteristics;

2) it will reliably perform at least equally well the function and achieve the results imposed by the design concept of the completed Project as a functioning whole;

3) it has a proven record of performance and availability of responsive service; and

4) it is not objectionable to Owner.

b. Contractor certifies that, if approved and incorporated into the Work:

1) there will be no increase in cost to the Owner or increase in Contract Times; and

2) it will conform substantially to the detailed requirements of the item named in the Contract Documents.

B. *Contractor's Expense*: Contractor shall provide all data in support of any proposed "or equal" item at Contractor's expense.

C. *Engineer's Evaluation and Determination*: Engineer will be allowed a reasonable time to evaluate each "or-equal" request. Engineer may require Contractor to furnish additional data about the proposed "or-equal" item. Engineer will be the sole judge of acceptability. No "or-equal" item will be ordered, furnished, installed, or utilized until Engineer's review is complete and Engineer determines that the proposed item is an "or-equal", which will be evidenced by an approved Shop Drawing or other written communication. Engineer will advise Contractor in writing of any negative determination.

D. *Effect of Engineer's Determination*: Neither approval nor denial of an "or-equal" request shall result in any change in Contract Price. The Engineer's denial of an "or-equal" request shall be final and binding, and may not be reversed through an appeal under any provision of the Contract Documents.

E. *Treatment as a Substitution Request*: If Engineer determines that an item of material or equipment proposed by Contractor does not qualify as an "or-equal" item, Contractor may request that Engineer considered the proposed item as a substitute pursuant to Paragraph 7.05.

7.05 *Substitutes*

A. Unless the specification or description of an item of material or equipment required to be furnished under the Contract Documents contains or is followed by words reading that no substitution is permitted, Contractor may request that Engineer authorize the use of other items of material or equipment under the circumstances described below. To the extent possible such requests shall be made before commencement of related construction at the Site.

1. Contractor shall submit sufficient information as provided below to allow Engineer to determine if the item of material or equipment proposed is functionally equivalent to that named and an acceptable substitute therefor. Engineer will not accept requests for review of proposed substitute items of material or equipment from anyone other than Contractor.

2. The requirements for review by Engineer will be as set forth in Paragraph 7.05.B, as supplemented by the

Specifications, and as Engineer may decide is appropriate under the circumstances.

3. Contractor shall make written application to Engineer for review of a proposed substitute item of material or equipment that Contractor seeks to furnish or use. The application:

a. shall certify that the proposed substitute item will:

1) perform adequately the functions and achieve the results called for by the general design,

2) be similar in substance to that specified, and

3) be suited to the same use as that specified.

b. will state:

1) the extent, if any, to which the use of the proposed substitute item will necessitate a change in Contract Times,

2) whether use of the proposed substitute item in the Work will require a change in any of the Contract Documents (or in the provisions of any other direct contract with Owner for other work on the Project) to adapt the design to the proposed substitute item, and

3) whether incorporation or use of the proposed substitute item in connection with the Work is subject to payment of any license fee or royalty.

c. will identify:

1) all variations of the proposed substitute item from that specified, and

2) available engineering, sales, maintenance, repair, and replacement services.

d. shall contain an itemized estimate of all costs or credits that will result directly or indirectly from use of such substitute item, including but not limited to changes in Contract Price, shared savings, costs of redesign, and claims of other contractors affected by any resulting change.

B. *Engineer's Evaluation and Determination*: Engineer will be allowed a reasonable time to evaluate each substitute request, and to obtain comments and direction from Owner. Engineer may require Contractor to furnish additional data about the proposed substitute item. Engineer will be the sole judge of acceptability. No substitute will be ordered, furnished, installed, or utilized until Engineer's review is complete and Engineer determines that the proposed item is an acceptable substitute. Engineer's determination will be evidenced by a Field Order or a proposed Change Order accounting for the substitution itself and all related impacts, including changes in Contract Price or Contract Times. Engineer will advise Contractor in writing of any negative determination.

C. *Special Guarantee*: Owner may require Contractor to furnish at Contractor's expense a special performance guarantee or other surety with respect to any substitute.

D. *Reimbursement of Engineer's Cost*: Engineer will record Engineer's costs in evaluating a substitute proposed or submitted by Contractor. Whether or not Engineer approves a substitute so proposed or submitted by Contractor, Contractor shall reimburse Owner for the reasonable charges of Engineer for evaluating each such proposed substitute. Contractor shall also reimburse Owner for the reasonable charges of Engineer for making changes in the Contract Documents (or in the provisions of any other direct contract with Owner) resulting from the acceptance of each proposed substitute.

E. *Contractor's Expense*: Contractor shall provide all data in support of any proposed substitute at Contractor's expense.

F. *Effect of Engineer's Determination*: If Engineer approves the substitution request, Contractor shall execute the proposed Change Order and proceed with the substitution. The Engineer's denial of a substitution request shall be final and binding, and may not be reversed through an appeal under any provision of the Contract Documents. Contractor may challenge the scope of reimbursement costs imposed under Paragraph 7.05.D, by timely submittal of a Change Proposal.

7.06 *Concerning Subcontractors, Suppliers, and Others*

A. Contractor may retain Subcontractors and Suppliers for the performance of parts of the Work. Such Subcontractors and Suppliers must be acceptable to Owner.

B. Contractor shall retain specific Subcontractors, Suppliers, or other individuals or entities for the performance of designated parts of the Work if required by the Contract to do so.

C. Subsequent to the submittal of Contractor's Bid or final negotiation of the terms of the Contract, Owner may not require Contractor to retain any Subcontractor, Supplier, or other individual or entity to furnish or perform any of the Work against which Contractor has reasonable objection.

D. Prior to entry into any binding subcontract or purchase order, Contractor shall submit to Owner the identity of the proposed Subcontractor or Supplier (unless Owner has already deemed such proposed Subcontractor or Supplier acceptable, during the bidding process or otherwise). Such proposed Subcontractor or Supplier shall be deemed acceptable to Owner unless Owner raises a substantive, reasonable objection within five days.

E. Owner may require the replacement of any Subcontractor, Supplier, or other individual or entity retained by Contractor to perform any part of the Work. Owner also may require Contractor to retain specific replacements; provided, however, that Owner may not require a replacement to which Contractor has a reasonable objection. If Contractor has submitted the identity of certain Subcontractors, Suppliers, or other individuals or entities for acceptance by Owner, and Owner has accepted

it (either in writing or by failing to make written objection thereto), then Owner may subsequently revoke the acceptance of any such Subcontractor, Supplier, or other individual or entity so identified solely on the basis of substantive, reasonable objection after due investigation. Contractor shall submit an acceptable replacement for the rejected Subcontractor, Supplier, or other individual or entity.

F. If Owner requires the replacement of any Subcontractor, Supplier, or other individual or entity retained by Contractor to perform any part of the Work, then Contractor shall be entitled to an adjustment in Contract Price or Contract Times, or both, with respect to the replacement; and Contractor shall initiate a Change Proposal for such adjustment within 30 days of Owner's requirement of replacement.

G. No acceptance by Owner of any such Subcontractor, Supplier, or other individual or entity, whether initially or as a replacement, shall constitute a waiver of the right of Owner to the completion of the Work in accordance with the Contract Documents.

H. On a monthly basis Contractor shall submit to Engineer a complete list of all Subcontractors and Suppliers having a direct contract with Contractor, and of all other Subcontractors and Suppliers known to Contractor at the time of submittal.

I. Contractor shall be fully responsible to Owner and Engineer for all acts and omissions of the Subcontractors, Suppliers, and other individuals or entities performing or furnishing any of the Work just as Contractor is responsible for Contractor's own acts and omissions.

J. Contractor shall be solely responsible for scheduling and coordinating the work of Subcontractors, Suppliers, and all other individuals or entities performing or furnishing any of the Work.

K. Contractor shall restrict all Subcontractors, Suppliers, and such other individuals or entities performing or furnishing any of the Work from communicating with Engineer or Owner, except through Contractor or in case of an emergency, or as otherwise expressly allowed herein.

L. The divisions and sections of the Specifications and the identifications of any Drawings shall not control Contractor in dividing the Work among Subcontractors or Suppliers or delineating the Work to be performed by any specific trade.

M. All Work performed for Contractor by a Subcontractor or Supplier shall be pursuant to an appropriate contractual agreement that specifically binds the Subcontractor or Supplier to the applicable terms and conditions of the Contract Documents for the benefit of Owner and Engineer.

N. Owner may furnish to any Subcontractor or Supplier, to the extent practicable, information about amounts paid to Contractor on account of Work performed for Contractor by the particular Subcontractor or Supplier.

O. Nothing in the Contract Documents:

1. shall create for the benefit of any such Subcontractor, Supplier, or other individual or entity any contractual relationship between Owner or Engineer and any such Subcontractor, Supplier, or other individual or entity; nor

2. shall create any obligation on the part of Owner or Engineer to pay or to see to the payment of any money due any such Subcontractor, Supplier, or other individual or entity except as may otherwise be required by Laws and Regulations.

7.07 *Patent Fees and Royalties*

A. Contractor shall pay all license fees and royalties and assume all costs incident to the use in the performance of the Work or the incorporation in the Work of any invention, design, process, product, or device which is the subject of patent rights or copyrights held by others. If a particular invention, design, process, product, or device is specified in the Contract Documents for use in the performance of the Work and if, to the actual knowledge of Owner or Engineer, its use is subject to patent rights or copyrights calling for the payment of any license fee or royalty to others, the existence of such rights shall be disclosed by Owner in the Contract Documents.

B. To the fullest extent permitted by Laws and Regulations, Owner shall indemnify and hold harmless Contractor, and its officers, directors, members, partners, employees, agents, consultants, and subcontractors from and against all claims, costs, losses, and damages (including but not limited to all fees and charges of engineers, architects, attorneys, and other professionals, and all court or arbitration or other dispute resolution costs) arising out of or relating to any infringement of patent rights or copyrights incident to the use in the performance of the Work or resulting from the incorporation in the Work of any invention, design, process, product, or device specified in the Contract Documents, but not identified as being subject to payment of any license fee or royalty to others required by patent rights or copyrights.

C. To the fullest extent permitted by Laws and Regulations, Contractor shall indemnify and hold harmless Owner and Engineer, and the officers, directors, members, partners, employees, agents, consultants and subcontractors of each and any of them from and against all claims, costs, losses, and damages (including but not limited to all fees and charges of engineers, architects, attorneys, and other professionals and all court or arbitration or other dispute resolution costs) arising out of or relating to any infringement of patent rights or copyrights incident to the use in the performance of the Work or resulting from the incorporation in the Work of any invention, design, process, product, or device not specified in the Contract Documents.

7.08 *Permits*

A. Unless otherwise provided in the Contract Documents, Contractor shall obtain and pay for all construction permits and licenses. Owner shall assist Contractor, when necessary, in obtaining such permits and licenses. Contractor shall pay all governmental charges and inspection fees necessary for the prosecution of the Work

which are applicable at the time of the submission of Contractor's Bid (or when Contractor became bound under a negotiated contract). Owner shall pay all charges of utility owners for connections for providing permanent service to the Work

7.09 *Taxes*

A. Contractor shall pay all sales, consumer, use, and other similar taxes required to be paid by Contractor in accordance with the Laws and Regulations of the place of the Project which are applicable during the performance of the Work.

7.10 *Laws and Regulations*

A. Contractor shall give all notices required by and shall comply with all Laws and Regulations applicable to the performance of the Work. Except where otherwise expressly required by applicable Laws and Regulations, neither Owner nor Engineer shall be responsible for monitoring Contractor's compliance with any Laws or Regulations.

B. If Contractor performs any Work or takes any other action knowing or having reason to know that it is contrary to Laws or Regulations, Contractor shall bear all resulting costs and losses, and shall indemnify and hold harmless Owner and Engineer, and the officers, directors, members, partners, employees, agents, consultants, and subcontractors of each and any of them from and against all claims, costs, losses, and damages (including but not limited to all fees and charges of engineers, architects, attorneys, and other professionals and all court or arbitration or other dispute resolution costs) arising out of or relating to such Work or other action. It shall not be Contractor's responsibility to make certain that the Work described in the Contract Documents is in accordance with Laws and Regulations, but this shall not relieve Contractor of Contractor's obligations under Paragraph 3.03.

C. Owner or Contractor may give notice to the other party of any changes after the submission of Contractor's Bid (or after the date when Contractor became bound under a negotiated contract) in Laws or Regulations having an effect on the cost or time of performance of the Work, including but not limited to changes in Laws or Regulations having an effect on procuring permits and on sales, use, value-added, consumption, and other similar taxes. If Owner and Contractor are unable to agree on entitlement to or on the amount or extent, if any, of any adjustment in Contract Price or Contract Times resulting from such changes, then within 30 days of such notice Contractor may submit a Change Proposal, or Owner may initiate a Claim.

7.11 *Record Documents*

A. Contractor shall maintain in a safe place at the Site one printed record copy of all Drawings, Specifications, Addenda, Change Orders, Work Change Directives, Field Orders, written interpretations and clarifications, and approved Shop Drawings. Contractor shall keep such record documents in good order and annotate them to show changes made during construction. These record documents, together with all approved Samples, will be available to Engineer for reference. Upon completion of the Work, Contractor shall deliver these record documents to Engineer.

7.12 *Safety and Protection*

A. Contractor shall be solely responsible for initiating, maintaining, and supervising all safety precautions and programs in connection with the Work. Such responsibility does not relieve Subcontractors of their responsibility for the safety of persons or property in the performance of their work, nor for compliance with applicable safety Laws and Regulations. Contractor shall take all necessary precautions for the safety of, and shall provide the necessary protection to prevent damage, injury, or loss to:

1. all persons on the Site or who may be affected by the Work;

2. all the Work and materials and equipment to be incorporated therein, whether in storage on or off the Site; and

3. other property at the Site or adjacent thereto, including trees, shrubs, lawns, walks, pavements, roadways, structures, other work in progress, utilities, and Underground Facilities not designated for removal, relocation, or replacement in the course of construction.

B. Contractor shall comply with all applicable Laws and Regulations relating to the safety of persons or property, or to the protection of persons or property from damage, injury, or loss; and shall erect and maintain all necessary safeguards for such safety and protection. Contractor shall notify Owner; the owners of adjacent property, Underground Facilities, and other utilities; and other contractors and utility owners performing work at or adjacent to the Site, when prosecution of the Work may affect them, and shall cooperate with them in the protection, removal, relocation, and replacement of their property or work in progress.

C. Contractor shall comply with the applicable requirements of Owner's safety programs, if any. The Supplementary Conditions identify any Owner's safety programs that are applicable to the Work.

D. Contractor shall inform Owner and Engineer of the specific requirements of Contractor's safety program with which Owner's and Engineer's employees and representatives must comply while at the Site.

E. All damage, injury, or loss to any property referred to in Paragraph 7.12.A.2 or 7.12.A.3 caused, directly or indirectly, in whole or in part, by Contractor, any Subcontractor, Supplier, or any other individual or entity directly or indirectly employed by any of them to perform any of the Work, or anyone for whose acts any of them may be liable, shall be remedied by Contractor at its expense (except damage or loss attributable to the fault of Drawings or Specifications or to the acts or omissions of Owner or Engineer or anyone employed by any of them, or anyone for whose acts any of them may be liable, and not attributable, directly or indirectly, in whole or in part,

to the fault or negligence of Contractor or any Subcontractor, Supplier, or other individual or entity directly or indirectly employed by any of them).

F. Contractor's duties and responsibilities for safety and protection shall continue until such time as all the Work is completed and Engineer has issued a notice to Owner and Contractor in accordance with Paragraph 15.06.B that the Work is acceptable (except as otherwise expressly provided in connection with Substantial Completion).

G. Contractor's duties and responsibilities for safety and protection shall resume whenever Contractor or any Subcontractor or Supplier returns to the Site to fulfill warranty or correction obligations, or to conduct other tasks arising from the Contract Documents.

7.13 *Safety Representative*

A. Contractor shall designate a qualified and experienced safety representative at the Site whose duties and responsibilities shall be the prevention of accidents and the maintaining and supervising of safety precautions and programs.

7.14 *Hazard Communication Programs*

A. Contractor shall be responsible for coordinating any exchange of material safety data sheets or other hazard communication information required to be made available to or exchanged between or among employers at the Site in accordance with Laws or Regulations.

7.15 *Emergencies*

A. In emergencies affecting the safety or protection of persons or the Work or property at the Site or adjacent thereto, Contractor is obligated to act to prevent threatened damage, injury, or loss. Contractor shall give Engineer prompt written notice if Contractor believes that any significant changes in the Work or variations from the Contract Documents have been caused thereby or are required as a result thereof. If Engineer determines that a change in the Contract Documents is required because of the action taken by Contractor in response to such an emergency, a Work Change Directive or Change Order will be issued.

7.16 *Shop Drawings, Samples, and Other Submittals*

A. Shop Drawing and Sample Submittal Requirements:

1. Before submitting a Shop Drawing or Sample, Contractor shall have:

a. reviewed and coordinated the Shop Drawing or Sample with other Shop Drawings and Samples and with the requirements of the Work and the Contract Documents;

b. determined and verified all field measurements, quantities, dimensions, specified performance and design criteria, installation requirements, materials, catalog numbers, and similar information with respect thereto;

c. determined and verified the suitability of all materials and equipment offered with respect to the indicated application, fabrication, shipping, handling, storage, assembly, and installation pertaining to the performance of the Work; and

d. determined and verified all information relative to Contractor's responsibilities for means, methods, techniques, sequences, and procedures of construction, and safety precautions and programs incident thereto.

2. Each submittal shall bear a stamp or specific written certification that Contractor has satisfied Contractor's obligations under the Contract Documents with respect to Contractor's review of that submittal, and that Contractor approves the submittal.

3. With each submittal, Contractor shall give Engineer specific written notice of any variations that the Shop Drawing or Sample may have from the requirements of the Contract Documents. This notice shall be set forth in a written communication separate from the Shop Drawings or Sample submittal; and, in addition, in the case of Shop Drawings by a specific notation made on each Shop Drawing submitted to Engineer for review and approval of each such variation.

B. *Submittal Procedures for Shop Drawings and Samples*: Contractor shall submit Shop Drawings and Samples to Engineer for review and approval in accordance with the accepted Schedule of Submittals. Each submittal will be identified as Engineer may require.

1. Shop Drawings:

a. Contractor shall submit the number of copies required in the Specifications.

b. Data shown on the Shop Drawings will be complete with respect to quantities, dimensions, specified performance and design criteria, materials, and similar data to show Engineer the services, materials, and equipment Contractor proposes to provide and to enable Engineer to review the information for the limited purposes required by Paragraph 7.16.D.

2. Samples:

a. Contractor shall submit the number of Samples required in the Specifications.

b. Contractor shall clearly identify each Sample as to material, Supplier, pertinent data such as catalog numbers, the use for which intended and other data as Engineer may require to enable Engineer to review the submittal for the limited purposes required by Paragraph 7.16.D.

3. Where a Shop Drawing or Sample is required by the Contract Documents or the Schedule of Submittals, any related Work performed prior to Engineer's review and approval of the pertinent submittal will be at the sole expense and responsibility of Contractor.

C. *Other Submittals*: Contractor shall submit other submittals to Engineer in accordance with the accepted Schedule of Submittals, and pursuant to the applicable terms of the Specifications.

D. Engineer's Review:

1. Engineer will provide timely review of Shop Drawings and Samples in accordance with the Schedule of Submittals acceptable to Engineer. Engineer's review and approval will be only to determine if the items covered by the submittals will, after installation or incorporation in the Work, conform to the information given in the Contract Documents and be compatible with the design concept of the completed Project as a functioning whole as indicated by the Contract Documents.

2. Engineer's review and approval will not extend to means, methods, techniques, sequences, or procedures of construction or to safety precautions or programs incident thereto.

3. Engineer's review and approval of a separate item as such will not indicate approval of the assembly in which the item functions.

4. Engineer's review and approval of a Shop Drawing or Sample shall not relieve Contractor from responsibility for any variation from the requirements of the Contract Documents unless Contractor has complied with the requirements of Paragraph 7.16.A.3 and Engineer has given written approval of each such variation by specific written notation thereof incorporated in or accompanying the Shop Drawing or Sample. Engineer will document any such approved variation from the requirements of the Contract Documents in a Field Order.

5. Engineer's review and approval of a Shop Drawing or Sample shall not relieve Contractor from responsibility for complying with the requirements of Paragraph 7.16.A and B.

6. Engineer's review and approval of a Shop Drawing or Sample, or of a variation from the requirements of the Contract Documents, shall not, under any circumstances, change the Contract Times or Contract Price, unless such changes are included in a Change Order.

7. Neither Engineer's receipt, review, acceptance or approval of a Shop Drawing, Sample, or other submittal shall result in such item becoming a Contract Document.

8. Contractor shall perform the Work in compliance with the requirements and commitments set forth in approved Shop Drawings and Samples, subject to the provisions of Paragraph 7.16.D.4.

E. Resubmittal Procedures:

1. Contractor shall make corrections required by Engineer and shall return the required number of corrected copies of Shop Drawings and submit, as required, new Samples for review and approval. Contractor shall direct specific attention in writing to revisions other than the corrections called for by Engineer on previous submittals.

2. Contractor shall furnish required submittals with sufficient information and accuracy to obtain required approval of an item with no more than three submittals. Engineer will record Engineer's time for reviewing a fourth or subsequent submittal of a Shop Drawings, sample, or other item requiring approval, and Contractor shall be responsible for Engineer's charges to Owner for such time. Owner may impose a set-off against payments due to Contractor to secure reimbursement for such charges.

3. If Contractor requests a change of a previously approved submittal item, Contractor shall be responsible for Engineer's charges to Owner for its review time, and Owner may impose a set-off against payments due to Contractor to secure reimbursement for such charges, unless the need for such change is beyond the control of Contractor.

7.17 *Contractor's General Warranty and Guarantee*

A. Contractor warrants and guarantees to Owner that all Work will be in accordance with the Contract Documents and will not be defective. Engineer and its officers, directors, members, partners, employees, agents, consultants, and subcontractors shall be entitled to rely on Contractor's warranty and guarantee.

B. Contractor's warranty and guarantee hereunder excludes defects or damage caused by:

1. abuse, modification, or improper maintenance or operation by persons other than Contractor, Subcontractors, Suppliers, or any other individual or entity for whom Contractor is responsible; or

2. normal wear and tear under normal usage.

C. Contractor's obligation to perform and complete the Work in accordance with the Contract Documents shall be absolute. None of the following will constitute an acceptance of Work that is not in accordance with the Contract Documents or a release of Contractor's obligation to perform the Work in accordance with the Contract Documents:

1. observations by Engineer;

2. recommendation by Engineer or payment by Owner of any progress or final payment;

3. the issuance of a certificate of Substantial Completion by Engineer or any payment related thereto by Owner;

4. use or occupancy of the Work or any part thereof by Owner;

5. any review and approval of a Shop Drawing or Sample submittal;

6. the issuance of a notice of acceptability by Engineer;

7. any inspection, test, or approval by others; or

8. any correction of defective Work by Owner.

D. If the Contract requires the Contractor to accept the assignment of a contract entered into by Owner, then the specific warranties, guarantees, and correction obligations contained in the assigned contract shall govern with respect to Contractor's performance obligations to Owner for the Work described in the assigned contract.

7.18 *Indemnification*

A. To the fullest extent permitted by Laws and Regulations, and in addition to any other obligations of Contractor under the Contract or otherwise, Contractor shall indemnify and hold harmless Owner and Engineer, and the officers, directors, members, partners, employees, agents, consultants and subcontractors of each and any of them from and against all claims, costs, losses, and damages (including but not limited to all fees and charges of engineers, architects, attorneys, and other professionals and all court or arbitration or other dispute resolution costs) arising out of or relating to the performance of the Work, provided that any such claim, cost, loss, or damage is attributable to bodily injury, sickness, disease, or death, or to injury to or destruction of tangible property (other than the Work itself), including the loss of use resulting therefrom but only to the extent caused by any negligent act or omission of Contractor, any Subcontractor, any Supplier, or any individual or entity directly or indirectly employed by any of them to perform any of the Work or anyone for whose acts any of them may be liable.

B. In any and all claims against Owner or Engineer or any of their officers, directors, members, partners, employees, agents, consultants, or subcontractors by any employee (or the survivor or personal representative of such employee) of Contractor, any Subcontractor, any Supplier, or any individual or entity directly or indirectly employed by any of them to perform any of the Work, or anyone for whose acts any of them may be liable, the indemnification obligation under Paragraph 7.18.A shall not be limited in any way by any limitation on the amount or type of damages, compensation, or benefits payable by or for Contractor or any such Subcontractor, Supplier, or other individual or entity under workers' compensation acts, disability benefit acts, or other employee benefit acts.

C. The indemnification obligations of Contractor under Paragraph 7.18.A shall not extend to the liability of Engineer and Engineer's officers, directors, members, partners, employees, agents, consultants and subcontractors arising out of:

1. the preparation or approval of, or the failure to prepare or approve maps, Drawings, opinions, reports, surveys, Change Orders, designs, or Specifications; or

2. giving directions or instructions, or failing to give them, if that is the primary cause of the injury or damage.

7.19 *Delegation of Professional Design Services*

A. Contractor will not be required to provide professional design services unless such services are specifically required by the Contract Documents for a portion of the Work or unless such services are required to carry out Contractor's responsibilities for construction means, methods, techniques, sequences and procedures. Contractor shall not be required to provide professional services in violation of applicable Laws and Regulations.

B. If professional design services or certifications by a design professional related to systems, materials, or equipment are specifically required of Contractor by the Contract Documents, Owner and Engineer will specify all performance and design criteria that such services must satisfy. Contractor shall cause such services or certifications to be provided by a properly licensed professional, whose signature and seal shall appear on all drawings, calculations, specifications, certifications, and other submittals prepared by such professional. Shop Drawings and other submittals related to the Work designed or certified by such professional, if prepared by others, shall bear such professional's written approval when submitted to Engineer.

C. Owner and Engineer shall be entitled to rely upon the adequacy, accuracy, and completeness of the services, certifications, or approvals performed by such design professionals, provided Owner and Engineer have specified to Contractor all performance and design criteria that such services must satisfy.

D. Pursuant to this paragraph, Engineer's review and approval of design calculations and design drawings will be only for the limited purpose of checking for conformance with performance and design criteria given and the design concept expressed in the Contract Documents. Engineer's review and approval of Shop Drawings and other submittals (except design calculations and design drawings) will be only for the purpose stated in Paragraph 7.16.D.1.

E. Contractor shall not be responsible for the adequacy of the performance or design criteria specified by Owner or Engineer.

ARTICLE 8 – OTHER WORK AT THE SITE

8.01 *Other Work*

A. In addition to and apart from the Work under the Contract Documents, the Owner may perform other work at or adjacent to the Site. Such other work may be performed by Owner's employees, or through contracts between the Owner and third parties. Owner may also arrange to have third-party utility owners perform work on their utilities and facilities at or adjacent to the Site.

B. If Owner performs other work at or adjacent to the Site with Owner's employees, or through contracts for such other work, then Owner shall give Contractor written notice thereof prior to starting any such other work. If Owner has advance information regarding the start of any utility work at or adjacent to the Site, Owner shall provide such information to Contractor.

C. Contractor shall afford each other contractor that performs such other work, each utility owner performing other work, and Owner, if Owner is performing other work with Owner's employees, proper and safe access to the Site, and provide a reasonable opportunity for the introduction and storage of materials and equipment and the execution of such other work. Contractor shall do all cutting, fitting, and patching of the Work that may be required to properly connect or otherwise make its several parts come together and properly integrate with such other work. Contractor shall not endanger any work of others by cutting, excavating, or otherwise altering such work; provided,

however, that Contractor may cut or alter others' work with the written consent of Engineer and the others whose work will be affected.

D. If the proper execution or results of any part of Contractor's Work depends upon work performed by others under this Article 8, Contractor shall inspect such other work and promptly report to Engineer in writing any delays, defects, or deficiencies in such other work that render it unavailable or unsuitable for the proper execution and results of Contractor's Work. Contractor's failure to so report will constitute an acceptance of such other work as fit and proper for integration with Contractor's Work except for latent defects and deficiencies in such other work.

8.02 *Coordination*

A. If Owner intends to contract with others for the performance of other work at or adjacent to the Site, to perform other work at or adjacent to the Site with Owner's employees, or to arrange to have utility owners perform work at or adjacent to the Site, the following will be set forth in the Supplementary Conditions or provided to Contractor prior to the start of any such other work:

1. the identity of the individual or entity that will have authority and responsibility for coordination of the activities among the various contractors;

2. an itemization of the specific matters to be covered by such authority and responsibility; and

3. the extent of such authority and responsibilities.

B. Unless otherwise provided in the Supplementary Conditions, Owner shall have sole authority and responsibility for such coordination.

8.03 *Legal Relationships*

A. If, in the course of performing other work at or adjacent to the Site for Owner, the Owner's employees, any other contractor working for Owner, or any utility owner causes damage to the Work or to the property of Contractor or its Subcontractors, or delays, disrupts, interferes with, or increases the scope or cost of the performance of the Work, through actions or inaction, then Contractor shall be entitled to an equitable adjustment in the Contract Price or the Contract Times, or both. Contractor must submit any Change Proposal seeking an equitable adjustment in the Contract Price or the Contract Times under this paragraph within 30 days of the damaging, delaying, disrupting, or interfering event. The entitlement to, and extent of, any such equitable adjustment shall take into account information (if any) regarding such other work that was provided to Contractor in the Contract Documents prior to the submittal of the Bid or the final negotiation of the terms of the Contract. When applicable, any such equitable adjustment in Contract Price shall be conditioned on Contractor assigning to Owner all Contractor's rights against such other contractor or utility owner with respect to the damage, delay, disruption, or interference that is the subject of the adjustment. Contractor's entitlement to an adjustment of the Contract Times is conditioned on such adjustment being essential to Contractor's ability to complete the Work within the Contract Times.

B. Contractor shall take reasonable and customary measures to avoid damaging, delaying, disrupting, or interfering with the work of Owner, any other contractor, or any utility owner performing other work at or adjacent to the Site. If Contractor fails to take such measures and as a result damages, delays, disrupts, or interferes with the work of any such other contractor or utility owner, then Owner may impose a set-off against payments due to Contractor, and assign to such other contractor or utility owner the Owner's contractual rights against Contractor with respect to the breach of the obligations set forth in this paragraph.

C. When Owner is performing other work at or adjacent to the Site with Owner's employees, Contractor shall be liable to Owner for damage to such other work, and for the reasonable direct delay, disruption, and interference costs incurred by Owner as a result of Contractor's failure to take reasonable and customary measures with respect to Owner's other work. In response to such damage, delay, disruption, or interference, Owner may impose a set-off against payments due to Contractor.

D. If Contractor damages, delays, disrupts, or interferes with the work of any other contractor, or any utility owner performing other work at or adjacent to the Site, through Contractor's failure to take reasonable and customary measures to avoid such impacts, or if any claim arising out of Contractor's actions, inactions, or negligence in performance of the Work at or adjacent to the Site is made by any such other contractor or utility owner against Contractor, Owner, or Engineer, then Contractor shall (1) promptly attempt to settle the claim as to all parties through negotiations with such other contractor or utility owner, or otherwise resolve the claim by arbitration or other dispute resolution proceeding or at law, and (2) indemnify and hold harmless Owner and Engineer, and the officers, directors, members, partners, employees, agents, consultants and subcontractors of each and any of them from and against any such claims, and against all costs, losses, and damages (including but not limited to all fees and charges of engineers, architects, attorneys, and other professionals and all court or arbitration or other dispute resolution costs) arising out of or relating to such damage, delay, disruption, or interference.

ARTICLE 9 – OWNER'S RESPONSIBILITIES

9.01 *Communications to Contractor*

A. Except as otherwise provided in these General Conditions, Owner shall issue all communications to Contractor through Engineer.

9.02 *Replacement of Engineer*

A. Owner may at its discretion appoint an engineer to replace Engineer, provided Contractor makes no reasonable objection to the replacement engineer. The replacement engineer's status under the Contract Documents shall be that of the former Engineer.

9.03 *Furnish Data*

A. Owner shall promptly furnish the data required of Owner under the Contract Documents.

9.04 *Pay When Due*

A. Owner shall make payments to Contractor when they are due as provided in the Agreement.

9.05 *Lands and Easements; Reports, Tests, and Drawings*

A. Owner's duties with respect to providing lands and easements are set forth in Paragraph 5.01.

B. Owner's duties with respect to providing engineering surveys to establish reference points are set forth in Paragraph 4.03.

C. Article 5 refers to Owner's identifying and making available to Contractor copies of reports of explorations and tests of conditions at the Site, and drawings of physical conditions relating to existing surface or subsurface structures at the Site.

9.06 *Insurance*

A. Owner's responsibilities, if any, with respect to purchasing and maintaining liability and property insurance are set forth in Article 6.

9.07 *Change Orders*

A. Owner's responsibilities with respect to Change Orders are set forth in Article 11.

9.08 *Inspections, Tests, and Approvals*

A. Owner's responsibility with respect to certain inspections, tests, and approvals is set forth in Paragraph 14.02.B.

9.09 *Limitations on Owner's Responsibilities*

A. The Owner shall not supervise, direct, or have control or authority over, nor be responsible for, Contractor's means, methods, techniques, sequences, or procedures of construction, or the safety precautions and programs incident thereto, or for any failure of Contractor to comply with Laws and Regulations applicable to the performance of the Work. Owner will not be responsible for Contractor's failure to perform the Work in accordance with the Contract Documents.

9.10 *Undisclosed Hazardous Environmental Condition*

A. Owner's responsibility in respect to an undisclosed Hazardous Environmental Condition is set forth in Paragraph 5.06.

9.11 *Evidence of Financial Arrangements*

A. Upon request of Contractor, Owner shall furnish Contractor reasonable evidence that financial arrangements have been made to satisfy Owner's obligations under the Contract Documents (including obligations under proposed changes in the Work).

9.12 *Safety Programs*

A. While at the Site, Owner's employees and representatives shall comply with the specific applicable requirements of Contractor's safety programs of which Owner has been informed.

B. Owner shall furnish copies of any applicable Owner safety programs to Contractor.

ARTICLE 10 – ENGINEER'S STATUS DURING CONSTRUCTION

10.01 *Owner's Representative*

A. Engineer will be Owner's representative during the construction period. The duties and responsibilities and the limitations of authority of Engineer as Owner's representative during construction are set forth in the Contract.

10.02 *Visits to Site*

A. Engineer will make visits to the Site at intervals appropriate to the various stages of construction as Engineer deems necessary in order to observe as an experienced and qualified design professional the progress that has been made and the quality of the various aspects of Contractor's executed Work. Based on information obtained during such visits and observations, Engineer, for the benefit of Owner, will determine, in general, if the Work is proceeding in accordance with the Contract Documents. Engineer will not be required to make exhaustive or continuous inspections on the Site to check the quality or quantity of the Work. Engineer's efforts will be directed toward providing for Owner a greater degree of confidence that the completed Work will conform generally to the Contract Documents. On the basis of such visits and observations, Engineer will keep Owner informed of the progress of the Work and will endeavor to guard Owner against defective Work.

B. Engineer's visits and observations are subject to all the limitations on Engineer's authority and responsibility set forth in Paragraph 10.08. Particularly, but without limitation, during or as a result of Engineer's visits or observations of Contractor's Work, Engineer will not supervise, direct, control, or have authority over or be responsible for Contractor's means, methods, techniques, sequences, or procedures of construction, or the safety precautions and programs incident thereto, or for any failure of Contractor to comply with Laws and Regulations applicable to the performance of the Work.

10.03 *Project Representative*

A. If Owner and Engineer have agreed that Engineer will furnish a Resident Project Representative to represent Engineer at the Site and assist Engineer in observing the progress and quality of the Work, then the authority and responsibilities of any such Resident Project Representative will be as provided in the Supplementary Conditions, and limitations on the responsibilities thereof will be as provided in Paragraph 10.08. If Owner designates another representative or agent to represent Owner at the Site who is not Engineer's consultant, agent, or employee, the responsibilities and authority and limitations thereon of such other individual or entity will be as provided in the Supplementary Conditions.

10.04 *Rejecting Defective Work*

A. Engineer has the authority to reject Work in accordance with Article 14.

10.05 *Shop Drawings, Change Orders and Payments*

A. Engineer's authority, and limitations thereof, as to Shop Drawings and Samples, are set forth in Paragraph 7.16.

B. Engineer's authority, and limitations thereof, as to design calculations and design drawings submitted in response to a delegation of professional design services, if any, are set forth in Paragraph 7.19.

C. Engineer's authority as to Change Orders is set forth in Article 11.

D. Engineer's authority as to Applications for Payment is set forth in Article 15.

10.06 *Determinations for Unit Price Work*

A. Engineer will determine the actual quantities and classifications of Unit Price Work performed by Contractor as set forth in Paragraph 13.03.

10.07 *Decisions on Requirements of Contract Documents and Acceptability of Work*

A. Engineer will render decisions regarding the requirements of the Contract Documents, and judge the acceptability of the Work, pursuant to the specific procedures set forth herein for initial interpretations, Change Proposals, and acceptance of the Work. In rendering such decisions and judgments, Engineer will not show partiality to Owner or Contractor, and will not be liable to Owner, Contractor, or others in connection with any proceedings, interpretations, decisions, or judgments conducted or rendered in good faith.

10.08 *Limitations on Engineer's Authority and Responsibilities*

A. Neither Engineer's authority or responsibility under this Article 10 or under any other provision of the Contract, nor any decision made by Engineer in good faith either to exercise or not exercise such authority or responsibility or the undertaking, exercise, or performance of any authority or responsibility by Engineer, shall create, impose, or give rise to any duty in contract, tort, or otherwise owed by Engineer to Contractor, any Subcontractor, any Supplier, any other individual or entity, or to any surety for or employee or agent of any of them.

B. Engineer will not supervise, direct, control, or have authority over or be responsible for Contractor's means, methods, techniques, sequences, or procedures of construction, or the safety precautions and programs incident thereto, or for any failure of Contractor to comply with Laws and Regulations applicable to the performance of the Work. Engineer will not be responsible for Contractor's failure to perform the Work in accordance with the Contract Documents.

C. Engineer will not be responsible for the acts or omissions of Contractor or of any Subcontractor, any Supplier, or of any other individual or entity performing any of the Work.

D. Engineer's review of the final Application for Payment and accompanying documentation and all maintenance and operating instructions, schedules, guarantees, bonds, certificates of inspection, tests and approvals, and other documentation required to be delivered by Paragraph 15.06.A will only be to determine generally that their content complies with the requirements of, and in the case of certificates of inspections, tests, and approvals, that the results certified indicate compliance with the Contract Documents.

E. The limitations upon authority and responsibility set forth in this Paragraph 10.08 shall also apply to the Resident Project Representative, if any.

10.09 *Compliance with Safety Program*

A. While at the Site, Engineer's employees and representatives will comply with the specific applicable requirements of Owner's and Contractor's safety programs (if any) of which Engineer has been informed.

ARTICLE 11 – AMENDING THE CONTRACT DOCUMENTS; CHANGES IN THE WORK

11.01 *Amending and Supplementing Contract Documents*

A. The Contract Documents may be amended or supplemented by a Change Order, a Work Change Directive, or a Field Order.

1. Change Orders:

a. If an amendment or supplement to the Contract Documents includes a change in the Contract Price or the Contract Times, such amendment or supplement must be set forth in a Change Order. A Change Order also may be used to establish amendments and supplements of the Contract Documents that do not affect the Contract Price or Contract Times.

b. Owner and Contractor may amend those terms and conditions of the Contract Documents that do not involve (1) the performance or acceptability of the Work, (2) the design (as set forth in the Drawings, Specifications, or otherwise), or (3) other engineering or technical matters, without the recommendation of the Engineer. Such an amendment shall be set forth in a Change Order.

2. *Work Change Directives*: A Work Change Directive will not change the Contract Price or the Contract Times but is evidence that the parties expect that the modification ordered or documented by a Work Change Directive will be incorporated in a subsequently issued Change Order, following negotiations by the parties as to the Work Change Directive's effect, if any, on the Contract Price and Contract Times; or, if negotiations are unsuccessful, by a determination under the terms of the Contract Documents governing adjustments, expressly including Paragraph 11.04 regarding change of Contract Price. Contractor must submit any Change Proposal seeking an adjustment of the Contract Price or the Contract Times, or both, no later than 30 days after the completion of the Work set out in the Work Change Directive. Owner must submit any Claim seeking an adjustment of the Contract Price or the

Contract Times, or both, no later than 60 days after issuance of the Work Change Directive.

3. *Field Orders*: Engineer may authorize minor changes in the Work if the changes do not involve an adjustment in the Contract Price or the Contract Times and are compatible with the design concept of the completed Project as a functioning whole as indicated by the Contract Documents. Such changes will be accomplished by a Field Order and will be binding on Owner and also on Contractor, which shall perform the Work involved promptly. If Contractor believes that a Field Order justifies an adjustment in the Contract Price or Contract Times, or both, then before proceeding with the Work at issue, Contractor shall submit a Change Proposal as provided herein.

11.02 *Owner-Authorized Changes in the Work*

A. Without invalidating the Contract and without notice to any surety, Owner may, at any time or from time to time, order additions, deletions, or revisions in the Work. Such changes shall be supported by Engineer's recommendation, to the extent the change involves the design (as set forth in the Drawings, Specifications, or otherwise), or other engineering or technical matters. Such changes may be accomplished by a Change Order, if Owner and Contractor have agreed as to the effect, if any, of the changes on Contract Times or Contract Price; or by a Work Change Directive. Upon receipt of any such document, Contractor shall promptly proceed with the Work involved; or, in the case of a deletion in the Work, promptly cease construction activities with respect to such deleted Work. Added or revised Work shall be performed under the applicable conditions of the Contract Documents. Nothing in this paragraph shall obligate Contractor to undertake work that Contractor reasonably concludes cannot be performed in a manner consistent with Contractor's safety obligations under the Contract Documents or Laws and Regulations.

11.03 *Unauthorized Changes in the Work*

A. Contractor shall not be entitled to an increase in the Contract Price or an extension of the Contract Times with respect to any work performed that is not required by the Contract Documents, as amended, modified, or supplemented, except in the case of an emergency as provided in Paragraph 7.15 or in the case of uncovering Work as provided in Paragraph 14.05.

11.04 *Change of Contract Price*

A. The Contract Price may only be changed by a Change Order. Any Change Proposal for an adjustment in the Contract Price shall comply with the provisions of Paragraph 11.06. Any Claim for an adjustment of Contract Price shall comply with the provisions of Article 12.

B. An adjustment in the Contract Price will be determined as follows:

1. where the Work involved is covered by unit prices contained in the Contract Documents, then by application of such unit prices to the quantities of the items involved (subject to the provisions of Paragraph 13.03); or

2. where the Work involved is not covered by unit prices contained in the Contract Documents, then by a mutually agreed lump sum (which may include an allowance for overhead and profit not necessarily in accordance with Paragraph 11.04.C.2); or

3. where the Work involved is not covered by unit prices contained in the Contract Documents and the parties do not reach mutual agreement to a lump sum, then on the basis of the Cost of the Work (determined as provided in Paragraph 13.01) plus a Contractor's fee for overhead and profit (determined as provided in Paragraph 11.04.C).

C. *Contractor's Fee*: When applicable, the Contractor's fee for overhead and profit shall be determined as follows:

1. a mutually acceptable fixed fee; or

2. if a fixed fee is not agreed upon, then a fee based on the following percentages of the various portions of the Cost of the Work:

a. for costs incurred under Paragraphs 13.01.B.1 and 13.01.B.2, the Contractor's fee shall be 15 percent;

b. for costs incurred under Paragraph 13.01.B.3, the Contractor's fee shall be five percent;

c. where one or more tiers of subcontracts are on the basis of Cost of the Work plus a fee and no fixed fee is agreed upon, the intent of Paragraphs 11.01.C.2.a and 11.01.C.2.b is that the Contractor's fee shall be based on: (1) a fee of 15 percent of the costs incurred under Paragraphs 13.01.A.1 and 13.01.A.2 by the Subcontractor that actually performs the Work, at whatever tier, and (2) with respect to Contractor itself and to any Subcontractors of a tier higher than that of the Subcontractor that actually performs the Work, a fee of five percent of the amount (fee plus underlying costs incurred) attributable to the next lower tier Subcontractor; provided, however, that for any such subcontracted work the maximum total fee to be paid by Owner shall be no greater than 27 percent of the costs incurred by the Subcontractor that actually performs the work;

d. no fee shall be payable on the basis of costs itemized under Paragraphs 13.01.B.4, 13.01.B.5, and 13.01.C;

e. the amount of credit to be allowed by Contractor to Owner for any change which results in a net decrease in cost will be the amount of the actual net decrease in cost plus a deduction in Contractor's fee by an amount equal to five percent of such net decrease; and

f. when both additions and credits are involved in any one change, the adjustment in Contractor's fee shall be computed on the basis of the net change in accordance with Paragraphs 11.04.C.2.a through 11.04.C.2.e, inclusive.

11.05 *Change of Contract Times*

A. The Contract Times may only be changed by a Change Order. Any Change Proposal for an adjustment in the Contract Times shall comply with the provisions of Paragraph 11.06. Any Claim for an adjustment in the Contract Times shall comply with the provisions of Article 12.

B. An adjustment of the Contract Times shall be subject to the limitations set forth in Paragraph 4.05, concerning delays in Contractor's progress.

11.06 *Change Proposals*

A. Contractor shall submit a Change Proposal to Engineer to request an adjustment in the Contract Times or Contract Price; appeal an initial decision by Engineer concerning the requirements of the Contract Documents or relating to the acceptability of the Work under the Contract Documents; contest a set-off against payment due; or seek other relief under the Contract. The Change Proposal shall specify any proposed change in Contract Times or Contract Price, or both, or other proposed relief, and explain the reason for the proposed change, with citations to any governing or applicable provisions of the Contract Documents.

1. *Procedures*: Contractor shall submit each Change Proposal to Engineer promptly (but in no event later than 30 days) after the start of the event giving rise thereto, or after such initial decision. The Contractor shall submit supporting data, including the proposed change in Contract Price or Contract Time (if any), to the Engineer and Owner within 15 days after the submittal of the Change Proposal. The supporting data shall be accompanied by a written statement that the supporting data are accurate and complete, and that any requested time or price adjustment is the entire adjustment to which Contractor believes it is entitled as a result of said event. Engineer will advise Owner regarding the Change Proposal, and consider any comments or response from Owner regarding the Change Proposal.

2. *Engineer's Action*: Engineer will review each Change Proposal and, within 30 days after receipt of the Contractor's supporting data, either deny the Change Proposal in whole, approve it in whole, or deny it in part and approve it in part. Such actions shall be in writing, with a copy provided to Owner and Contractor. If Engineer does not take action on the Change Proposal within 30 days, then either Owner or Contractor may at any time thereafter submit a letter to the other party indicating that as a result of Engineer's inaction the Change Proposal is deemed denied, thereby commencing the time for appeal of the denial under Article 12.

3. *Binding Decision*: Engineer's decision will be final and binding upon Owner and Contractor, unless Owner or Contractor appeals the decision by filing a Claim under Article 12.

B. *Resolution of Certain Change Proposals*: If the Change Proposal does not involve the design (as set forth in the Drawings, Specifications, or otherwise), the acceptability of the Work, or other engineering or technical matters, then Engineer will notify the parties that the Engineer is unable to resolve the Change Proposal. For purposes of further resolution of such a Change Proposal, such notice shall be deemed a denial, and Contractor may choose to seek resolution under the terms of Article 12.

11.07 *Execution of Change Orders*

A. Owner and Contractor shall execute appropriate Change Orders covering:

1. changes in the Contract Price or Contract Times which are agreed to by the parties, including any undisputed sum or amount of time for Work actually performed in accordance with a Work Change Directive;

2. changes in Contract Price resulting from an Owner set-off, unless Contractor has duly contested such set-off;

3. changes in the Work which are: (a) ordered by Owner pursuant to Paragraph 11.02, (b) required because of Owner's acceptance of defective Work under Paragraph 14.04 or Owner's correction of defective Work under Paragraph 14.07, or (c) agreed to by the parties, subject to the need for Engineer's recommendation if the change in the Work involves the design (as set forth in the Drawings, Specifications, or otherwise), or other engineering or technical matters; and

4. changes in the Contract Price or Contract Times, or other changes, which embody the substance of any final and binding results under Paragraph 11.06, or Article 12.

B. If Owner or Contractor refuses to execute a Change Order that is required to be executed under the terms of this Paragraph 11.07, it shall be deemed to be of full force and effect, as if fully executed.

11.08 *Notification to Surety*

A. If the provisions of any bond require notice to be given to a surety of any change affecting the general scope of the Work or the provisions of the Contract Documents (including, but not limited to, Contract Price or Contract Times), the giving of any such notice will be Contractor's responsibility. The amount of each applicable bond will be adjusted to reflect the effect of any such change.

ARTICLE 12 – CLAIMS

12.01 *Claims*

A. *Claims Process*: The following disputes between Owner and Contractor shall be submitted to the Claims process set forth in this Article:

1. Appeals by Owner or Contractor of Engineer's decisions regarding Change Proposals;

2. Owner demands for adjustments in the Contract Price or Contract Times, or other relief under the Contract Documents; and

3. Disputes that Engineer has been unable to address because they do not involve the design (as set forth in the Drawings, Specifications, or otherwise), the acceptability of the Work, or other engineering or technical matters.

B. *Submittal of Claim*: The party submitting a Claim shall deliver it directly to the other party to the Contract promptly (but in no event later than 30 days) after the start of the event giving rise thereto; in the case of appeals regarding Change Proposals within 30 days of the decision under appeal. The party submitting the Claim shall also furnish a copy to the Engineer, for its information only. The responsibility to substantiate a Claim shall rest with the party making the Claim. In the case of a Claim by Contractor seeking an increase in the Contract Times or Contract Price, or both, Contractor shall certify that the Claim is made in good faith, that the supporting data are accurate and complete, and that to the best of Contractor's knowledge and belief the amount of time or money requested accurately reflects the full amount to which Contractor is entitled.

C. *Review and Resolution*: The party receiving a Claim shall review it thoroughly, giving full consideration to its merits. The two parties shall seek to resolve the Claim through the exchange of information and direct negotiations. The parties may extend the time for resolving the Claim by mutual agreement. All actions taken on a Claim shall be stated in writing and submitted to the other party, with a copy to Engineer.

D. Mediation:

1. At any time after initiation of a Claim, Owner and Contractor may mutually agree to mediation of the underlying dispute. The agreement to mediate shall stay the Claim submittal and response process.

2. If Owner and Contractor agree to mediation, then after 60 days from such agreement, either Owner or Contractor may unilaterally terminate the mediation process, and the Claim submittal and decision process shall resume as of the date of the termination. If the mediation proceeds but is unsuccessful in resolving the dispute, the Claim submittal and decision process shall resume as of the date of the conclusion of the mediation, as determined by the mediator.

3. Owner and Contractor shall each pay one-half of the mediator's fees and costs.

E. *Partial Approval*: If the party receiving a Claim approves the Claim in part and denies it in part, such action shall be final and binding unless within 30 days of such action the other party invokes the procedure set forth in Article 17 for final resolution of disputes.

F. *Denial of Claim*: If efforts to resolve a Claim are not successful, the party receiving the Claim may deny it by giving written notice of denial to the other party. If the receiving party does not take action on the Claim within 90 days, then either Owner or Contractor may at any time thereafter submit a letter to the other party indicating that as a result of the inaction, the Claim is deemed denied, thereby commencing the time for appeal of the denial. A denial of the Claim shall be final and binding unless within 30 days of the denial the other party invokes the procedure set forth in Article 17 for the final resolution of disputes.

G. *Final and Binding Results*: If the parties reach a mutual agreement regarding a Claim, whether through approval of the Claim, direct negotiations, mediation, or otherwise; or if a Claim is approved in part and denied in part, or denied in full, and such actions become final and binding; then the results of the agreement or action on the Claim shall be incorporated in a Change Order to the extent they affect the Contract, including the Work, the Contract Times, or the Contract Price.

ARTICLE 13 – COST OF THE WORK; ALLOWANCES; UNIT PRICE WORK

13.01 *Cost of the Work*

A. *Purposes for Determination of Cost of the Work*: The term Cost of the Work means the sum of all costs necessary for the proper performance of the Work at issue, as further defined below. The provisions of this Paragraph 13.01 are used for two distinct purposes:

1. To determine Cost of the Work when Cost of the Work is a component of the Contract Price, under cost-plus-fee, time-and-materials, or other cost-based terms; or

2. To determine the value of a Change Order, Change Proposal, Claim, set-off, or other adjustment in Contract Price. When the value of any such adjustment is determined on the basis of Cost of the Work, Contractor is entitled only to those additional or incremental costs required because of the change in the Work or because of the event giving rise to the adjustment.

B. *Costs Included*: Except as otherwise may be agreed to in writing by Owner, costs included in the Cost of the Work shall be in amounts no higher than those prevailing in the locality of the Project, shall not include any of the costs itemized in Paragraph 13.01.C, and shall include only the following items:

1. Payroll costs for employees in the direct employ of Contractor in the performance of the Work under schedules of job classifications agreed upon by Owner and Contractor. Such employees shall include, without limitation, superintendents, foremen, and other personnel employed full time on the Work. Payroll costs for employees not employed full time on the Work shall be apportioned on the basis of their time spent on the Work. Payroll costs shall include, but not be limited to, salaries and wages plus the cost of fringe benefits, which shall include social security contributions, unemployment, excise, and payroll taxes, workers' compensation, health and retirement benefits, bonuses, sick leave, and vacation and holiday pay applicable thereto. The expenses of performing Work outside of regular working hours, on Saturday, Sunday, or legal holidays, shall be

included in the above to the extent authorized by Owner.

2. Cost of all materials and equipment furnished and incorporated in the Work, including costs of transportation and storage thereof, and Suppliers' field services required in connection therewith. All cash discounts shall accrue to Contractor unless Owner deposits funds with Contractor with which to make payments, in which case the cash discounts shall accrue to Owner. All trade discounts, rebates, and refunds and returns from sale of surplus materials and equipment shall accrue to Owner, and Contractor shall make provisions so that they may be obtained.

3. Payments made by Contractor to Subcontractors for Work performed by Subcontractors. If required by Owner, Contractor shall obtain competitive bids from subcontractors acceptable to Owner and Contractor and shall deliver such bids to Owner, who will then determine, with the advice of Engineer, which bids, if any, will be acceptable. If any subcontract provides that the Subcontractor is to be paid on the basis of Cost of the Work plus a fee, the Subcontractor's Cost of the Work and fee shall be determined in the same manner as Contractor's Cost of the Work and fee as provided in this Paragraph 13.01.

4. Costs of special consultants (including but not limited to engineers, architects, testing laboratories, surveyors, attorneys, and accountants) employed for services specifically related to the Work.

5. Supplemental costs including the following:

   a. The proportion of necessary transportation, travel, and subsistence expenses of Contractor's employees incurred in discharge of duties connected with the Work.

   b. Cost, including transportation and maintenance, of all materials, supplies, equipment, machinery, appliances, office, and temporary facilities at the Site, and hand tools not owned by the workers, which are consumed in the performance of the Work, and cost, less market value, of such items used but not consumed which remain the property of Contractor.

   c. Rentals of all construction equipment and machinery, and the parts thereof, whether rented from Contractor or others in accordance with rental agreements approved by Owner with the advice of Engineer, and the costs of transportation, loading, unloading, assembly, dismantling, and removal thereof. All such costs shall be in accordance with the terms of said rental agreements. The rental of any such equipment, machinery, or parts shall cease when the use thereof is no longer necessary for the Work.

   d. Sales, consumer, use, and other similar taxes related to the Work, and for which Contractor is liable, as imposed by Laws and Regulations.

   e. Deposits lost for causes other than negligence of Contractor, any Subcontractor, or anyone directly or indirectly employed by any of them or for whose acts any of them may be liable, and royalty payments and fees for permits and licenses.

   f. Losses and damages (and related expenses) caused by damage to the Work, not compensated by insurance or otherwise, sustained by Contractor in connection with the performance of the Work (except losses and damages within the deductible amounts of property insurance established in accordance with Paragraph 6.05), provided such losses and damages have resulted from causes other than the negligence of Contractor, any Subcontractor, or anyone directly or indirectly employed by any of them or for whose acts any of them may be liable. Such losses shall include settlements made with the written consent and approval of Owner. No such losses, damages, and expenses shall be included in the Cost of the Work for the purpose of determining Contractor's fee.

   g. The cost of utilities, fuel, and sanitary facilities at the Site.

   h. Minor expenses such as communication service at the Site, express and courier services, and similar petty cash items in connection with the Work.

   i. The costs of premiums for all bonds and insurance that Contractor is required by the Contract Documents to purchase and maintain.

C. *Costs Excluded*: The term Cost of the Work shall not include any of the following items:

   1. Payroll costs and other compensation of Contractor's officers, executives, principals (of partnerships and sole proprietorships), general managers, safety managers, engineers, architects, estimators, attorneys, auditors, accountants, purchasing and contracting agents, expediters, timekeepers, clerks, and other personnel employed by Contractor, whether at the Site or in Contractor's principal or branch office for general administration of the Work and not specifically included in the agreed upon schedule of job classifications referred to in Paragraph 13.01.B.1 or specifically covered by Paragraph 13.01.B.4. The payroll costs and other compensation excluded here are to be considered administrative costs covered by the Contractor's fee.

   2. Expenses of Contractor's principal and branch offices other than Contractor's office at the Site.

   3. Any part of Contractor's capital expenses, including interest on Contractor's capital employed for the Work and charges against Contractor for delinquent payments.

   4. Costs due to the negligence of Contractor, any Subcontractor, or anyone directly or indirectly employed by any of them or for whose acts any of them may be liable, including but not limited to, the correction of defective Work, disposal of materials or equipment wrongly supplied, and making good any damage to property.

5. Other overhead or general expense costs of any kind and the costs of any item not specifically and expressly included in Paragraph 13.01.B.

D. *Contractor's Fee*: When the Work as a whole is performed on the basis of cost-plus, Contractor's fee shall be determined as set forth in the Agreement. When the value of any Work covered by a Change Order, Change Proposal, Claim, set-off, or other adjustment in Contract Price is determined on the basis of Cost of the Work, Contractor's fee shall be determined as set forth in Paragraph 11.04.C.

E. *Documentation*: Whenever the Cost of the Work for any purpose is to be determined pursuant to this Article 13, Contractor will establish and maintain records thereof in accordance with generally accepted accounting practices and submit in a form acceptable to Engineer an itemized cost breakdown together with supporting data.

13.02 *Allowances*

A. It is understood that Contractor has included in the Contract Price all allowances so named in the Contract Documents and shall cause the Work so covered to be performed for such sums and by such persons or entities as may be acceptable to Owner and Engineer.

B. *Cash Allowances*: Contractor agrees that:

1. the cash allowances include the cost to Contractor (less any applicable trade discounts) of materials and equipment required by the allowances to be delivered at the Site, and all applicable taxes; and

2. Contractor's costs for unloading and handling on the Site, labor, installation, overhead, profit, and other expenses contemplated for the cash allowances have been included in the Contract Price and not in the allowances, and no demand for additional payment on account of any of the foregoing will be valid.

C. *Contingency Allowance*: Contractor agrees that a contingency allowance, if any, is for the sole use of Owner to cover unanticipated costs.

D. Prior to final payment, an appropriate Change Order will be issued as recommended by Engineer to reflect actual amounts due Contractor on account of Work covered by allowances, and the Contract Price shall be correspondingly adjusted.

13.03 *Unit Price Work*

A. Where the Contract Documents provide that all or part of the Work is to be Unit Price Work, initially the Contract Price will be deemed to include for all Unit Price Work an amount equal to the sum of the unit price for each separately identified item of Unit Price Work times the estimated quantity of each item as indicated in the Agreement.

B. The estimated quantities of items of Unit Price Work are not guaranteed and are solely for the purpose of comparison of Bids and determining an initial Contract Price. Payments to Contractor for Unit Price Work will be based on actual quantities.

C. Each unit price will be deemed to include an amount considered by Contractor to be adequate to cover Contractor's overhead and profit for each separately identified item.

D. Engineer will determine the actual quantities and classifications of Unit Price Work performed by Contractor. Engineer will review with Contractor the Engineer's preliminary determinations on such matters before rendering a written decision thereon (by recommendation of an Application for Payment or otherwise). Engineer's written decision thereon will be final and binding (except as modified by Engineer to reflect changed factual conditions or more accurate data) upon Owner and Contractor, subject to the provisions of the following paragraph.

E. Within 30 days of Engineer's written decision under the preceding paragraph, Contractor may submit a Change Proposal, or Owner may file a Claim, seeking an adjustment in the Contract Price if:

1. the quantity of any item of Unit Price Work performed by Contractor differs materially and significantly from the estimated quantity of such item indicated in the Agreement;

2. there is no corresponding adjustment with respect to any other item of Work; and

3. Contractor believes that it is entitled to an increase in Contract Price as a result of having incurred additional expense or Owner believes that Owner is entitled to a decrease in Contract Price, and the parties are unable to agree as to the amount of any such increase or decrease.

ARTICLE 14 – TESTS AND INSPECTIONS; CORRECTION, REMOVAL OR ACCEPTANCE OF DEFECTIVE WORK

14.01 *Access to Work*

A. Owner, Engineer, their consultants and other representatives and personnel of Owner, independent testing laboratories, and authorities having jurisdiction will have access to the Site and the Work at reasonable times for their observation, inspection, and testing. Contractor shall provide them proper and safe conditions for such access and advise them of Contractor's safety procedures and programs so that they may comply therewith as applicable.

14.02 *Tests, Inspections, and Approvals*

A. Contractor shall give Engineer timely notice of readiness of the Work (or specific parts thereof) for all required inspections and tests, and shall cooperate with inspection and testing personnel to facilitate required inspections and tests.

B. Owner shall retain and pay for the services of an independent inspector, testing laboratory, or other qualified individual or entity to perform all inspections and tests expressly required by the Contract Documents to be furnished and paid for by Owner, except that costs incurred in connection with tests or inspections of covered

Work shall be governed by the provisions of Paragraph 14.05.

C. If Laws or Regulations of any public body having jurisdiction require any Work (or part thereof) specifically to be inspected, tested, or approved by an employee or other representative of such public body, Contractor shall assume full responsibility for arranging and obtaining such inspections, tests, or approvals, pay all costs in connection therewith, and furnish Engineer the required certificates of inspection or approval.

D. Contractor shall be responsible for arranging, obtaining, and paying for all inspections and tests required:

1. by the Contract Documents, unless the Contract Documents expressly allocate responsibility for a specific inspection or test to Owner;

2. to attain Owner's and Engineer's acceptance of materials or equipment to be incorporated in the Work;

3. by manufacturers of equipment furnished under the Contract Documents;

4. for testing, adjusting, and balancing of mechanical, electrical, and other equipment to be incorporated into the Work; and

5. for acceptance of materials, mix designs, or equipment submitted for approval prior to Contractor's purchase thereof for incorporation in the Work.

Such inspections and tests shall be performed by independent inspectors, testing laboratories, or other qualified individuals or entities acceptable to Owner and Engineer.

E. If the Contract Documents require the Work (or part thereof) to be approved by Owner, Engineer, or another designated individual or entity, then Contractor shall assume full responsibility for arranging and obtaining such approvals.

F. If any Work (or the work of others) that is to be inspected, tested, or approved is covered by Contractor without written concurrence of Engineer, Contractor shall, if requested by Engineer, uncover such Work for observation. Such uncovering shall be at Contractor's expense unless Contractor had given Engineer timely notice of Contractor's intention to cover the same and Engineer had not acted with reasonable promptness in response to such notice.

14.03 *Defective Work*

A. *Contractor's Obligation*: It is Contractor's obligation to assure that the Work is not defective.

B. *Engineer's Authority*: Engineer has the authority to determine whether Work is defective, and to reject defective Work.

C. *Notice of Defects*: Prompt notice of all defective Work of which Owner or Engineer has actual knowledge will be given to Contractor.

D. *Correction, or Removal and Replacement*: Promptly after receipt of written notice of defective Work, Contractor shall correct all such defective Work, whether or not fabricated, installed, or completed, or, if Engineer has rejected the defective Work, remove it from the Project and replace it with Work that is not defective.

E. *Preservation of Warranties*: When correcting defective Work, Contractor shall take no action that would void or otherwise impair Owner's special warranty and guarantee, if any, on said Work.

F. *Costs and Damages*: In addition to its correction, removal, and replacement obligations with respect to defective Work, Contractor shall pay all claims, costs, losses, and damages arising out of or relating to defective Work, including but not limited to the cost of the inspection, testing, correction, removal, replacement, or reconstruction of such defective Work, fines levied against Owner by governmental authorities because the Work is defective, and the costs of repair or replacement of work of others resulting from defective Work. Prior to final payment, if Owner and Contractor are unable to agree as to the measure of such claims, costs, losses, and damages resulting from defective Work, then Owner may impose a reasonable set-off against payments due under Article 15.

14.04 *Acceptance of Defective Work*

A. If, instead of requiring correction or removal and replacement of defective Work, Owner prefers to accept it, Owner may do so (subject, if such acceptance occurs prior to final payment, to Engineer's confirmation that such acceptance is in general accord with the design intent and applicable engineering principles, and will not endanger public safety). Contractor shall pay all claims, costs, losses, and damages attributable to Owner's evaluation of and determination to accept such defective Work (such costs to be approved by Engineer as to reasonableness), and for the diminished value of the Work to the extent not otherwise paid by Contractor. If any such acceptance occurs prior to final payment, the necessary revisions in the Contract Documents with respect to the Work shall be incorporated in a Change Order. If the parties are unable to agree as to the decrease in the Contract Price, reflecting the diminished value of Work so accepted, then Owner may impose a reasonable set-off against payments due under Article 15. If the acceptance of defective Work occurs after final payment, Contractor shall pay an appropriate amount to Owner.

14.05 *Uncovering Work*

A. Engineer has the authority to require special inspection or testing of the Work, whether or not the Work is fabricated, installed, or completed.

B. If any Work is covered contrary to the written request of Engineer, then Contractor shall, if requested by Engineer, uncover such Work for Engineer's observation, and then replace the covering, all at Contractor's expense.

C. If Engineer considers it necessary or advisable that covered Work be observed by Engineer or inspected or tested by others, then Contractor, at Engineer's request,

shall uncover, expose, or otherwise make available for observation, inspection, or testing as Engineer may require, that portion of the Work in question, and provide all necessary labor, material, and equipment.

1. If it is found that the uncovered Work is defective, Contractor shall be responsible for all claims, costs, losses, and damages arising out of or relating to such uncovering, exposure, observation, inspection, and testing, and of satisfactory replacement or reconstruction (including but not limited to all costs of repair or replacement of work of others); and pending Contractor's full discharge of this responsibility the Owner shall be entitled to impose a reasonable set-off against payments due under Article 15.

2. If the uncovered Work is not found to be defective, Contractor shall be allowed an increase in the Contract Price or an extension of the Contract Times, or both, directly attributable to such uncovering, exposure, observation, inspection, testing, replacement, and reconstruction. If the parties are unable to agree as to the amount or extent thereof, then Contractor may submit a Change Proposal within 30 days of the determination that the Work is not defective.

14.06 *Owner May Stop the Work*

A. If the Work is defective, or Contractor fails to supply sufficient skilled workers or suitable materials or equipment, or fails to perform the Work in such a way that the completed Work will conform to the Contract Documents, then Owner may order Contractor to stop the Work, or any portion thereof, until the cause for such order has been eliminated; however, this right of Owner to stop the Work shall not give rise to any duty on the part of Owner to exercise this right for the benefit of Contractor, any Subcontractor, any Supplier, any other individual or entity, or any surety for, or employee or agent of any of them.

14.07 *Owner May Correct Defective Work*

A. If Contractor fails within a reasonable time after written notice from Engineer to correct defective Work, or to remove and replace rejected Work as required by Engineer, or if Contractor fails to perform the Work in accordance with the Contract Documents, or if Contractor fails to comply with any other provision of the Contract Documents, then Owner may, after seven days written notice to Contractor, correct or remedy any such deficiency.

B. In exercising the rights and remedies under this Paragraph 14.07, Owner shall proceed expeditiously. In connection with such corrective or remedial action, Owner may exclude Contractor from all or part of the Site, take possession of all or part of the Work and suspend Contractor's services related thereto, and incorporate in the Work all materials and equipment stored at the Site or for which Owner has paid Contractor but which are stored elsewhere. Contractor shall allow Owner, Owner's representatives, agents and employees, Owner's other contractors, and Engineer and Engineer's consultants access to the Site to enable Owner to exercise the rights and remedies under this paragraph.

C. All claims, costs, losses, and damages incurred or sustained by Owner in exercising the rights and remedies under this Paragraph 14.07 will be charged against Contractor as set-offs against payments due under Article 15. Such claims, costs, losses and damages will include but not be limited to all costs of repair, or replacement of work of others destroyed or damaged by correction, removal, or replacement of Contractor's defective Work.

D. Contractor shall not be allowed an extension of the Contract Times because of any delay in the performance of the Work attributable to the exercise by Owner of Owner's rights and remedies under this Paragraph 14.07.

ARTICLE 15 – PAYMENTS TO CONTRACTOR; SET-OFFS; COMPLETION; CORRECTION PERIOD

15.01 *Progress Payments*

A. *Basis for Progress Payments*: The Schedule of Values established as provided in Article 2 will serve as the basis for progress payments and will be incorporated into a form of Application for Payment acceptable to Engineer. Progress payments on account of Unit Price Work will be based on the number of units completed during the pay period, as determined under the provisions of Paragraph 13.03. Progress payments for cost-based Work will be based on Cost of the Work completed by Contractor during the pay period.

B. Applications for Payments:

1. At least 20 days before the date established in the Agreement for each progress payment (but not more often than once a month), Contractor shall submit to Engineer for review an Application for Payment filled out and signed by Contractor covering the Work completed as of the date of the Application and accompanied by such supporting documentation as is required by the Contract Documents. If payment is requested on the basis of materials and equipment not incorporated in the Work but delivered and suitably stored at the Site or at another location agreed to in writing, the Application for Payment shall also be accompanied by a bill of sale, invoice, or other documentation warranting that Owner has received the materials and equipment free and clear of all Liens, and evidence that the materials and equipment are covered by appropriate property insurance, a warehouse bond, or other arrangements to protect Owner's interest therein, all of which must be satisfactory to Owner.

2. Beginning with the second Application for Payment, each Application shall include an affidavit of Contractor stating that all previous progress payments received on account of the Work have been applied on account to discharge Contractor's legitimate obligations associated with prior Applications for Payment.

3. The amount of retainage with respect to progress payments will be as stipulated in the Agreement.

C. Review of Applications:

1. Engineer will, within 10 days after receipt of each Application for Payment, including each resubmittal, either indicate in writing a recommendation of payment and present the Application to Owner, or return the Application to Contractor indicating in writing Engineer's reasons for refusing to recommend payment. In the latter case, Contractor may make the necessary corrections and resubmit the Application.

2. Engineer's recommendation of any payment requested in an Application for Payment will constitute a representation by Engineer to Owner, based on Engineer's observations of the executed Work as an experienced and qualified design professional, and on Engineer's review of the Application for Payment and the accompanying data and schedules, that to the best of Engineer's knowledge, information and belief:

a. the Work has progressed to the point indicated;

b. the quality of the Work is generally in accordance with the Contract Documents (subject to an evaluation of the Work as a functioning whole prior to or upon Substantial Completion, the results of any subsequent tests called for in the Contract Documents, a final determination of quantities and classifications for Unit Price Work under Paragraph 13.03, and any other qualifications stated in the recommendation); and

c. the conditions precedent to Contractor's being entitled to such payment appear to have been fulfilled in so far as it is Engineer's responsibility to observe the Work.

3. By recommending any such payment Engineer will not thereby be deemed to have represented that:

a. inspections made to check the quality or the quantity of the Work as it has been performed have been exhaustive, extended to every aspect of the Work in progress, or involved detailed inspections of the Work beyond the responsibilities specifically assigned to Engineer in the Contract; or

b. there may not be other matters or issues between the parties that might entitle Contractor to be paid additionally by Owner or entitle Owner to withhold payment to Contractor.

4. Neither Engineer's review of Contractor's Work for the purposes of recommending payments nor Engineer's recommendation of any payment, including final payment, will impose responsibility on Engineer:

a. to supervise, direct, or control the Work, or

b. for the means, methods, techniques, sequences, or procedures of construction, or the safety precautions and programs incident thereto, or

c. for Contractor's failure to comply with Laws and Regulations applicable to Contractor's performance of the Work, or

d. to make any examination to ascertain how or for what purposes Contractor has used the money paid on account of the Contract Price, or

e. to determine that title to any of the Work, materials, or equipment has passed to Owner free and clear of any Liens.

5. Engineer may refuse to recommend the whole or any part of any payment if, in Engineer's opinion, it would be incorrect to make the representations to Owner stated in Paragraph 15.01.C.2.

6. Engineer will recommend reductions in payment (set-offs) necessary in Engineer's opinion to protect Owner from loss because:

a. the Work is defective, requiring correction or replacement;

b. the Contract Price has been reduced by Change Orders;

c. Owner has been required to correct defective Work in accordance with Paragraph 14.07, or has accepted defective Work pursuant to Paragraph 14.04;

d. Owner has been required to remove or remediate a Hazardous Environmental Condition for which Contractor is responsible; or

e. Engineer has actual knowledge of the occurrence of any of the events that would constitute a default by Contractor and therefore justify termination for cause under the Contract Documents.

D. Payment Becomes Due:

1. Ten days after presentation of the Application for Payment to Owner with Engineer's recommendation, the amount recommended (subject to any Owner set-offs) will become due, and when due will be paid by Owner to Contractor.

E. Reductions in Payment by Owner:

1. In addition to any reductions in payment (set-offs) recommended by Engineer, Owner is entitled to impose a set-off against payment based on any of the following:

a. claims have been made against Owner on account of Contractor's conduct in the performance or furnishing of the Work, or Owner has incurred costs, losses, or damages on account of Contractor's conduct in the performance or furnishing of the Work, including but not limited to claims, costs, losses, or damages from workplace injuries, adjacent property damage, non-compliance with Laws and Regulations, and patent infringement;

b. Contractor has failed to take reasonable and customary measures to avoid damage, delay, disruption, and interference with other work at or adjacent to the Site;

c. Contractor has failed to provide and maintain required bonds or insurance;

d. Owner has been required to remove or remediate a Hazardous Environmental Condition for which Contractor is responsible;

e. Owner has incurred extra charges or engineering costs related to submittal reviews, evaluations of proposed substitutes, tests and inspections, or return visits to manufacturing or assembly facilities;

f. the Work is defective, requiring correction or replacement;

g. Owner has been required to correct defective Work in accordance with Paragraph 14.07, or has accepted defective Work pursuant to Paragraph 14.04;

h. the Contract Price has been reduced by Change Orders;

i. an event that would constitute a default by Contractor and therefore justify a termination for cause has occurred;

j. liquidated damages have accrued as a result of Contractor's failure to achieve Milestones, Substantial Completion, or final completion of the Work;

k. Liens have been filed in connection with the Work, except where Contractor has delivered a specific bond satisfactory to Owner to secure the satisfaction and discharge of such Liens;

l. there are other items entitling Owner to a set off against the amount recommended.

2. If Owner imposes any set-off against payment, whether based on its own knowledge or on the written recommendations of Engineer, Owner will give Contractor immediate written notice (with a copy to Engineer) stating the reasons for such action and the specific amount of the reduction, and promptly pay Contractor any amount remaining after deduction of the amount so withheld. Owner shall promptly pay Contractor the amount so withheld, or any adjustment thereto agreed to by Owner and Contractor, if Contractor remedies the reasons for such action. The reduction imposed shall be binding on Contractor unless it duly submits a Change Proposal contesting the reduction.

3. Upon a subsequent determination that Owner's refusal of payment was not justified, the amount wrongfully withheld shall be treated as an amount due as determined by Paragraph 15.01.C.1 and subject to interest as provided in the Agreement.

15.02 *Contractor's Warranty of Title*

A. Contractor warrants and guarantees that title to all Work, materials, and equipment furnished under the Contract will pass to Owner free and clear of (1) all Liens and other title defects, and (2) all patent, licensing, copyright, or royalty obligations, no later than seven days after the time of payment by Owner.

15.03 *Substantial Completion*

A. When Contractor considers the entire Work ready for its intended use Contractor shall notify Owner and Engineer in writing that the entire Work is substantially complete and request that Engineer issue a certificate of Substantial Completion. Contractor shall at the same time submit to Owner and Engineer an initial draft of punch list items to be completed or corrected before final payment.

B. Promptly after Contractor's notification, Owner, Contractor, and Engineer shall make an inspection of the Work to determine the status of completion. If Engineer does not consider the Work substantially complete, Engineer will notify Contractor in writing giving the reasons therefor.

C. If Engineer considers the Work substantially complete, Engineer will deliver to Owner a preliminary certificate of Substantial Completion which shall fix the date of Substantial Completion. Engineer shall attach to the certificate a punch list of items to be completed or corrected before final payment. Owner shall have seven days after receipt of the preliminary certificate during which to make written objection to Engineer as to any provisions of the certificate or attached punch list. If, after considering the objections to the provisions of the preliminary certificate, Engineer concludes that the Work is not substantially complete, Engineer will, within 14 days after submission of the preliminary certificate to Owner, notify Contractor in writing that the Work is not substantially complete, stating the reasons therefor. If Owner does not object to the provisions of the certificate, or if despite consideration of Owner's objections Engineer concludes that the Work is substantially complete, then Engineer will, within said 14 days, execute and deliver to Owner and Contractor a final certificate of Substantial Completion (with a revised punch list of items to be completed or corrected) reflecting such changes from the preliminary certificate as Engineer believes justified after consideration of any objections from Owner.

D. At the time of receipt of the preliminary certificate of Substantial Completion, Owner and Contractor will confer regarding Owner's use or occupancy of the Work following Substantial Completion, review the builder's risk insurance policy with respect to the end of the builder's risk coverage, and confirm the transition to coverage of the Work under a permanent property insurance policy held by Owner. Unless Owner and Contractor agree otherwise in writing, Owner shall bear responsibility for security, operation, protection of the Work, property insurance, maintenance, heat, and utilities upon Owner's use or occupancy of the Work.

E. After Substantial Completion the Contractor shall promptly begin work on the punch list of items to be completed or corrected prior to final payment. In appropriate cases Contractor may submit monthly Applications for Payment for completed punch list items, following the progress payment procedures set forth above.

F. Owner shall have the right to exclude Contractor from the Site after the date of Substantial Completion subject to

allowing Contractor reasonable access to remove its property and complete or correct items on the punch list.

15.04 *Partial Use or Occupancy*

A. Prior to Substantial Completion of all the Work, Owner may use or occupy any substantially completed part of the Work which has specifically been identified in the Contract Documents, or which Owner, Engineer, and Contractor agree constitutes a separately functioning and usable part of the Work that can be used by Owner for its intended purpose without significant interference with Contractor's performance of the remainder of the Work, subject to the following conditions:

1. At any time Owner may request in writing that Contractor permit Owner to use or occupy any such part of the Work that Owner believes to be substantially complete. If and when Contractor agrees that such part of the Work is substantially complete, Contractor, Owner, and Engineer will follow the procedures of Paragraph 15.03.A through E for that part of the Work.

2. At any time Contractor may notify Owner and Engineer in writing that Contractor considers any such part of the Work substantially complete and request Engineer to issue a certificate of Substantial Completion for that part of the Work.

3. Within a reasonable time after either such request, Owner, Contractor, and Engineer shall make an inspection of that part of the Work to determine its status of completion. If Engineer does not consider that part of the Work to be substantially complete, Engineer will notify Owner and Contractor in writing giving the reasons therefor. If Engineer considers that part of the Work to be substantially complete, the provisions of Paragraph 15.03 will apply with respect to certification of Substantial Completion of that part of the Work and the division of responsibility in respect thereof and access thereto.

4. No use or occupancy or separate operation of part of the Work may occur prior to compliance with the requirements of Paragraph 6.05 regarding builder's risk or other property insurance.

15.05 *Final Inspection*

A. Upon written notice from Contractor that the entire Work or an agreed portion thereof is complete, Engineer will promptly make a final inspection with Owner and Contractor and will notify Contractor in writing of all particulars in which this inspection reveals that the Work, or agreed portion thereof, is incomplete or defective. Contractor shall immediately take such measures as are necessary to complete such Work or remedy such deficiencies.

15.06 *Final Payment*

A. Application for Payment:

1. After Contractor has, in the opinion of Engineer, satisfactorily completed all corrections identified during the final inspection and has delivered, in accordance with the Contract Documents, all maintenance and operating instructions, schedules, guarantees, bonds, certificates or other evidence of insurance, certificates of inspection, annotated record documents (as provided in Paragraph 7.11), and other documents, Contractor may make application for final payment.

2. The final Application for Payment shall be accompanied (except as previously delivered) by:

a. all documentation called for in the Contract Documents;

b. consent of the surety, if any, to final payment;

c. satisfactory evidence that all title issues have been resolved such that title to all Work, materials, and equipment has passed to Owner free and clear of any Liens or other title defects, or will so pass upon final payment.

d. a list of all disputes that Contractor believes are unsettled; and

e. complete and legally effective releases or waivers (satisfactory to Owner) of all Lien rights arising out of the Work, and of Liens filed in connection with the Work.

3. In lieu of the releases or waivers of Liens specified in Paragraph 15.06.A.2 and as approved by Owner, Contractor may furnish receipts or releases in full and an affidavit of Contractor that: (a) the releases and receipts include all labor, services, material, and equipment for which a Lien could be filed; and (b) all payrolls, material and equipment bills, and other indebtedness connected with the Work for which Owner might in any way be responsible, or which might in any way result in liens or other burdens on Owner's property, have been paid or otherwise satisfied. If any Subcontractor or Supplier fails to furnish such a release or receipt in full, Contractor may furnish a bond or other collateral satisfactory to Owner to indemnify Owner against any Lien, or Owner at its option may issue joint checks payable to Contractor and specified Subcontractors and Suppliers.

B. Engineer's Review of Application and Acceptance:

1. If, on the basis of Engineer's observation of the Work during construction and final inspection, and Engineer's review of the final Application for Payment and accompanying documentation as required by the Contract Documents, Engineer is satisfied that the Work has been completed and Contractor's other obligations under the Contract have been fulfilled, Engineer will, within ten days after receipt of the final Application for Payment, indicate in writing Engineer's recommendation of final payment and present the Application for Payment to Owner for payment. Such recommendation shall account for any set-offs against payment that are necessary in Engineer's opinion to protect Owner from loss for the reasons stated above with respect to progress payments. At the same time Engineer will also give written notice

to Owner and Contractor that the Work is acceptable, subject to the provisions of Paragraph 15.07. Otherwise, Engineer will return the Application for Payment to Contractor, indicating in writing the reasons for refusing to recommend final payment, in which case Contractor shall make the necessary corrections and resubmit the Application for Payment.

C. *Completion of Work*: The Work is complete (subject to surviving obligations) when it is ready for final payment as established by the Engineer's written recommendation of final payment.

D. *Payment Becomes Due*: Thirty days after the presentation to Owner of the final Application for Payment and accompanying documentation, the amount recommended by Engineer (less any further sum Owner is entitled to set off against Engineer's recommendation, including but not limited to set-offs for liquidated damages and set-offs allowed under the provisions above with respect to progress payments) will become due and shall be paid by Owner to Contractor.

15.07 *Waiver of Claims*

A. The making of final payment will not constitute a waiver by Owner of claims or rights against Contractor. Owner expressly reserves claims and rights arising from unsettled Liens, from defective Work appearing after final inspection pursuant to Paragraph 15.05, from Contractor's failure to comply with the Contract Documents or the terms of any special guarantees specified therein, from outstanding Claims by Owner, or from Contractor's continuing obligations under the Contract Documents.

B. The acceptance of final payment by Contractor will constitute a waiver by Contractor of all claims and rights against Owner other than those pending matters that have been duly submitted or appealed under the provisions of Article 17.

15.08 *Correction Period*

A. If within one year after the date of Substantial Completion (or such longer period of time as may be prescribed by the terms of any applicable special guarantee required by the Contract Documents, or by any specific provision of the Contract Documents), any Work is found to be defective, or if the repair of any damages to the Site, adjacent areas that Contractor has arranged to use through construction easements or otherwise, and other adjacent areas used by Contractor as permitted by Laws and Regulations, is found to be defective, then Contractor shall promptly, without cost to Owner and in accordance with Owner's written instructions:

1. correct the defective repairs to the Site or such other adjacent areas;

2. correct such defective Work;

3. if the defective Work has been rejected by Owner, remove it from the Project and replace it with Work that is not defective, and

4. satisfactorily correct or repair or remove and replace any damage to other Work, to the work of others, or to other land or areas resulting therefrom.

B. If Contractor does not promptly comply with the terms of Owner's written instructions, or in an emergency where delay would cause serious risk of loss or damage, Owner may have the defective Work corrected or repaired or may have the rejected Work removed and replaced. Contractor shall pay all claims, costs, losses, and damages (including but not limited to all fees and charges of engineers, architects, attorneys, and other professionals and all court or arbitration or other dispute resolution costs) arising out of or relating to such correction or repair or such removal and replacement (including but not limited to all costs of repair or replacement of work of others).

C. In special circumstances where a particular item of equipment is placed in continuous service before Substantial Completion of all the Work, the correction period for that item may start to run from an earlier date if so provided in the Specifications.

D. Where defective Work (and damage to other Work resulting therefrom) has been corrected or removed and replaced under this paragraph, the correction period hereunder with respect to such Work will be extended for an additional period of one year after such correction or removal and replacement has been satisfactorily completed.

E. Contractor's obligations under this paragraph are in addition to all other obligations and warranties. The provisions of this paragraph shall not be construed as a substitute for, or a waiver of, the provisions of any applicable statute of limitation or repose.

ARTICLE 16 – SUSPENSION OF WORK AND TERMINATION

16.01 *Owner May Suspend Work*

A. At any time and without cause, Owner may suspend the Work or any portion thereof for a period of not more than 90 consecutive days by written notice to Contractor and Engineer. Such notice will fix the date on which Work will be resumed. Contractor shall resume the Work on the date so fixed. Contractor shall be entitled to an adjustment in the Contract Price or an extension of the Contract Times, or both, directly attributable to any such suspension. Any Change Proposal seeking such adjustments shall be submitted no later than 30 days after the date fixed for resumption of Work.

16.02 *Owner May Terminate for Cause*

A. The occurrence of any one or more of the following events will constitute a default by Contractor and justify termination for cause:

1. Contractor's persistent failure to perform the Work in accordance with the Contract Documents (including, but not limited to, failure to supply sufficient skilled workers or suitable materials or equipment or failure to adhere to the Progress Schedule);

2. Failure of Contractor to perform or otherwise to comply with a material term of the Contract Documents;

3. Contractor's disregard of Laws or Regulations of any public body having jurisdiction; or

4. Contractor's repeated disregard of the authority of Owner or Engineer.

B. If one or more of the events identified in Paragraph 16.02.A occurs, then after giving Contractor (and any surety) ten days written notice that Owner is considering a declaration that Contractor is in default and termination of the contract, Owner may proceed to:

1. declare Contractor to be in default, and give Contractor (and any surety) notice that the Contract is terminated; and

2. enforce the rights available to Owner under any applicable performance bond.

C. Subject to the terms and operation of any applicable performance bond, if Owner has terminated the Contract for cause, Owner may exclude Contractor from the Site, take possession of the Work, incorporate in the Work all materials and equipment stored at the Site or for which Owner has paid Contractor but which are stored elsewhere, and complete the Work as Owner may deem expedient.

D. Owner may not proceed with termination of the Contract under Paragraph 16.02.B if Contractor within seven days of receipt of notice of intent to terminate begins to correct its failure to perform and proceeds diligently to cure such failure.

E. If Owner proceeds as provided in Paragraph 16.02.B, Contractor shall not be entitled to receive any further payment until the Work is completed. If the unpaid balance of the Contract Price exceeds the cost to complete the Work, including all related claims, costs, losses, and damages (including but not limited to all fees and charges of engineers, architects, attorneys, and other professionals) sustained by Owner, such excess will be paid to Contractor. If the cost to complete the Work including such related claims, costs, losses, and damages exceeds such unpaid balance, Contractor shall pay the difference to Owner. Such claims, costs, losses, and damages incurred by Owner will be reviewed by Engineer as to their reasonableness and, when so approved by Engineer, incorporated in a Change Order. When exercising any rights or remedies under this paragraph, Owner shall not be required to obtain the lowest price for the Work performed.

F. Where Contractor's services have been so terminated by Owner, the termination will not affect any rights or remedies of Owner against Contractor then existing or which may thereafter accrue, or any rights or remedies of Owner against Contractor or any surety under any payment bond or performance bond. Any retention or payment of money due Contractor by Owner will not release Contractor from liability.

G. If and to the extent that Contractor has provided a performance bond under the provisions of Paragraph 6.01.A, the provisions of that bond shall govern over any inconsistent provisions of Paragraphs 16.02.B and 16.02.D.

16.03 *Owner May Terminate For Convenience*

A. Upon seven days written notice to Contractor and Engineer, Owner may, without cause and without prejudice to any other right or remedy of Owner, terminate the Contract. In such case, Contractor shall be paid for (without duplication of any items):

1. completed and acceptable Work executed in accordance with the Contract Documents prior to the effective date of termination, including fair and reasonable sums for overhead and profit on such Work;

2. expenses sustained prior to the effective date of termination in performing services and furnishing labor, materials, or equipment as required by the Contract Documents in connection with uncompleted Work, plus fair and reasonable sums for overhead and profit on such expenses; and

3. other reasonable expenses directly attributable to termination, including costs incurred to prepare a termination for convenience cost proposal.

B. Contractor shall not be paid on account of loss of anticipated overhead, profits, or revenue, or other economic loss arising out of or resulting from such termination.

16.04 *Contractor May Stop Work or Terminate*

A. If, through no act or fault of Contractor, (1) the Work is suspended for more than 90 consecutive days by Owner or under an order of court or other public authority, or (2) Engineer fails to act on any Application for Payment within 30 days after it is submitted, or (3) Owner fails for 30 days to pay Contractor any sum finally determined to be due, then Contractor may, upon seven days written notice to Owner and Engineer, and provided Owner or Engineer do not remedy such suspension or failure within that time, terminate the contract and recover from Owner payment on the same terms as provided in Paragraph 16.03.

B. In lieu of terminating the Contract and without prejudice to any other right or remedy, if Engineer has failed to act on an Application for Payment within 30 days after it is submitted, or Owner has failed for 30 days to pay Contractor any sum finally determined to be due, Contractor may, seven days after written notice to Owner and Engineer, stop the Work until payment is made of all such amounts due Contractor, including interest thereon. The provisions of this paragraph are not intended to preclude Contractor from submitting a Change Proposal for an adjustment in Contract Price or Contract Times or otherwise for expenses or damage directly attributable to Contractor's stopping the Work as permitted by this paragraph.

ARTICLE 17 – FINAL RESOLUTION OF DISPUTES

17.01 *Methods and Procedures*

A. *Disputes Subject to Final Resolution*: The following disputed matters are subject to final resolution under the provisions of this Article:

1. A timely appeal of an approval in part and denial in part of a Claim, or of a denial in full; and

2. Disputes between Owner and Contractor concerning the Work or obligations under the Contract Documents, and arising after final payment has been made.

B. *Final Resolution of Disputes*: For any dispute subject to resolution under this Article, Owner or Contractor may:

1. elect in writing to invoke the dispute resolution process provided for in the Supplementary Conditions; or

2. agree with the other party to submit the dispute to another dispute resolution process; or

3. if no dispute resolution process is provided for in the Supplementary Conditions or mutually agreed to, give written notice to the other party of the intent to submit the dispute to a court of competent jurisdiction.

ARTICLE 18 – MISCELLANEOUS

18.01 *Giving Notice*

A. Whenever any provision of the Contract Documents requires the giving of written notice, it will be deemed to have been validly given if:

1. delivered in person, by a commercial courier service or otherwise, to the individual or to a member of the firm or to an officer of the corporation for which it is intended; or

2. delivered at or sent by registered or certified mail, postage prepaid, to the last business address known to the sender of the notice.

18.02 *Computation of Times*

A. When any period of time is referred to in the Contract by days, it will be computed to exclude the first and include the last day of such period. If the last day of any such period falls on a Saturday or Sunday or on a day made a legal holiday by the law of the applicable jurisdiction, such day will be omitted from the computation.

18.03 *Cumulative Remedies*

A. The duties and obligations imposed by these General Conditions and the rights and remedies available hereunder to the parties hereto are in addition to, and are not to be construed in any way as a limitation of, any rights and remedies available to any or all of them which are otherwise imposed or available by Laws or Regulations, by special warranty or guarantee, or by other provisions of the Contract. The provisions of this paragraph will be as effective as if repeated specifically in the Contract Documents in connection with each particular duty, obligation, right, and remedy to which they apply.

18.04 *Limitation of Damages*

A. With respect to any and all Change Proposals, Claims, disputes subject to final resolution, and other matters at issue, neither Owner nor Engineer, nor any of their officers, directors, members, partners, employees, agents, consultants, or subcontractors, shall be liable to Contractor for any claims, costs, losses, or damages sustained by Contractor on or in connection with any other project or anticipated project.

18.05 *No Waiver*

A. A party's non-enforcement of any provision shall not constitute a waiver of that provision, nor shall it affect the enforceability of that provision or of the remainder of this Contract.

18.06 *Survival of Obligations*

A. All representations, indemnifications, warranties, and guarantees made in, required by, or given in accordance with the Contract, as well as all continuing obligations indicated in the Contract, will survive final payment, completion, and acceptance of the Work or termination or completion of the Contract or termination of the services of Contractor.

18.07 *Controlling Law*

A. This Contract is to be governed by the law of the state in which the Project is located.

18.08 *Headings*

A. Article and paragraph headings are inserted for convenience only and do not constitute parts of these General Conditions.

These Supplementary Conditions amend or supplement the Standard General Conditions of the Construction Contract, EJCDC® C-700 (2013 Edition). All provisions that are not so amended or supplemented remain in full force and effect.

The terms used in these Supplementary Conditions have the meanings stated in the General Conditions. Additional terms used in these Supplementary Conditions have the meanings stated below, which are applicable to both the singular and plural thereof.

The address system used in these Supplementary Conditions is the same as the address system used in the General Conditions, with the prefix "SC" added thereto.

ARTICLE 1 - DEFINITIONS AND TERMINOLOGY

SC-1.01 Defined Terms

Add the following new paragraphs immediately after paragraph 1.01.A.48 of the General Conditions to read as follows:

49. *Instruction to Contractor* — Same as "Field Order."

50. *Geotechnical Baseline Report (GBR)* — The interpretive report prepared by or for Owner regarding subsurface conditions at the Site, and containing specific baseline geotechnical conditions that may be anticipated or relied upon for bidding and contract administration purposes, subject to the controlling provisions of the Contract, including the GBR's own terms. The GBR is a Contract Document.

ARTICLE 2 – PRELIMINARY MATTERS

SC-2.01 Delivery of Bonds and Evidence of Insurance

Delete Paragraphs 2.01 B. and C. in their entirety and insert the following in their place:

B. Evidence of Contractor's Insurance: When Contractor delivers the executed counterparts of the Agreement to Owner, Contractor shall also deliver to Owner copies of the policies of insurance (including all endorsements, and identification of applicable self-insured retentions and deductibles) required to be provided by Contractor in Article 6. Contractor may block out (redact) any confidential premium or pricing information contained in any policy or endorsement furnished under this provision.

C. Evidence of Owner's Insurance: After receipt from Contractor of the executed counterparts of the Agreement and all required bonds and insurance documentation, Owner shall promptly deliver to Contractor copies of the policies of insurance to be provided by Owner under Article 6 (if any). Owner may block out (redact) any confidential premium or pricing information contained in any policy or endorsement furnished under this provision.

SC-2.02 Copies of Documents

Delete Paragraph 2.02.A in its entirety and insert the following new paragraph in its place:

A. Owner will furnish to Contractor 1 copy of the conformed Contract Documents incorporating and integrating all Addenda and any amendments negotiated prior to the Effective Date of the Contract (including one fully executed counterpart of the Agreement), and one copy in electronic portable document format (PDF). Additional printed copies of the conformed Contract Documents will not be provided.

ARTICLE 3 – DOCUMENTS: INTENT, REQUIREMENTS, REUSE

SC-3.01 Intent

Delete Paragraph 3.01C in its entirety.

ARTICLE 5 – AVAILABILITY OF LANDS; SUBSURFACE AND PHYSICAL CONDITIONS; HAZARDOUS ENVIRONMENTAL CONDITIONS

SC/GBR-5.04 *Differing Subsurface or Physical Conditions*

A. Notice: If Contractor believes that any subsurface condition that is uncovered or revealed at the Site:

1. differs materially from conditions shown or indicated in the GBR; or

2. differs materially from conditions shown or indicated in Contract Documents other than the GBR, to the extent the GBR are inapplicable; or

3. to the extent the GBR are inapplicable, is of such a nature as to establish that any Technical Data on which Contractor is entitled to rely as provided in Paragraph 5.03 is materially inaccurate; or

4. to the extent the GBR are inapplicable, is of such a nature as to require a change in the Drawings or Specifications; or

5. to the extent the GBR are inapplicable, is of an unusual nature, and differs materially from conditions ordinarily encountered and generally recognized as inherent in work of the character provided for in the Contract Documents;

then Contractor shall, promptly after becoming aware thereof and before further disturbing the subsurface conditions or performing any Work in connection therewith (except in an emergency as required by Paragraph 7.15), notify Owner and Engineer in writing about such condition. Contractor shall not further disturb such condition or perform any Work in connection therewith (except with respect to an emergency) until receipt of a written statement permitting Contractor to do so.

B. *Engineer's Review*: After receipt of written notice as required by the preceding paragraph, Engineer will promptly review the subsurface or physical condition in question; determine the necessity of Owner's obtaining additional exploration or tests with respect to the condition; conclude whether the condition falls within any one or more of the differing site condition categories in Paragraph SC/GBR 5.04.A above; obtain any pertinent cost or schedule information from Contractor; prepare recommendations to Owner regarding the Contractor's resumption or continuation of Work in connection with the subsurface or physical condition in question and the need for any change in the Drawings or Specifications; and advise Owner in writing of Engineer's findings, conclusions, and recommendations.

C. *Owner's Statement to Contractor Regarding Site Condition:* After receipt of Engineer's written findings, conclusions, and recommendations, Owner shall issue a written statement to Contractor (with a copy to Engineer) regarding the subsurface or physical condition in question, addressing the resumption or continuation of Work in connection with such condition, indicating whether any change in the Drawings or Specifications will be made, and adopting or rejecting Engineer's written findings, conclusions, and recommendations, in whole or in part.

D. *Possible Price and Times Adjustments:*

1. Contractor shall be entitled to an equitable adjustment in Contract Price or Contract Times, or both, to the extent that the existence of a differing subsurface or physical condition, or any related delay, disruption, or interference, causes an increase or decrease in Contractor's cost of, or time required for, performance of the Work; subject, however, to the following:

a. such condition must fall within any one or more of the categories described in Paragraph SC/GBR 5.04.A;

b. with respect to Work that is paid for on a unit price basis, any adjustment in Contract Price will be subject to the provisions of Paragraph 13.03 of the General Conditions; and,

c. Contractor's entitlement to an adjustment of the Contract Times is conditioned on such adjustment being essential to Contractor's ability to complete the Work within the Contract Times.

2. Contractor shall not be entitled to any adjustment in the Contract Price or Contract Times with respect to a subsurface or physical condition if:

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

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

c. Contractor failed to give the written notice as required by Paragraph SC/GBR 5.04.A.

3. If Owner and Contractor agree regarding Contractor's entitlement to and the amount or extent of any adjustment in the Contract Price or Contract Times, or both, then any such adjustment shall be set forth in a Change Order.

4. Contractor may submit a Change Proposal regarding its entitlement to or the amount or extent of any adjustment in the Contract Price or Contract Times, or both, no later than 30 days after Owner's issuance of the Owner's written statement to Contractor regarding the subsurface or physical condition in question.

SC-5.06 Hazardous Environmental Condition

Delete Paragraphs 5.06.A and 5.06.B in their entirety and insert the following:

A. No reports or drawings related to Hazardous Environmental Conditions at the Site are known to Owner.

ARTICLE 6 – BONDS AND INSURANCE

SC-6.01 Performance, Payment and Other Bonds

Add the following paragraph immediately after Paragraph 6.01.F:

G. Performance and payment bond shall be deemed amended automatically and immediately without formal and separate amendments hereto, upon any amendment to the contract so as to bind the Principal and Surety to the full and faithful performance of the contract, as so amended, providing only that the total amount of all increases in the cost shall not exceed 20 percent of the amount of the maximum price set forth in the original contract.

SC-6.02 Insurance—General Provisions

Add the following paragraph immediately after Paragraph 6.02.B:

1. Contractor may obtain worker's compensation insurance from an insurance company that has not been rated by A.M. Best, provided that such company (a) is domiciled in the state in which the project is located, (b) is certified or authorized as a worker's compensation insurance provider by the appropriate state agency, and (c) has been accepted to provide worker's compensation insurance for similar projects by the state within the last 12 months.

SC-6.03 Contractor's Insurance

In paragraph 6.03.I.3., delete the words "materially changed"

Add the following new paragraph immediately after paragraph 6.03.J:

K. The limits of liability for the insurance required by paragraph 6.03 of the General Conditions shall provide coverage for not less than the following amounts or greater where required by Laws and Regulations. Required insurance coverage limits may be provided through a combination of primary and excess/umbrella liability policies. If coverage limits are provided by Seller through excess/umbrella liability policies, then such policies must follow form of the underlying policies and must be maintained in a similar manner:

1. Workers' Compensation, and related coverages under paragraphs 6.03.A.1 and A.2 of the General Conditions:

a.	State:	Statutory
b.	Federal, if applicable (e.g., Longshoreman's):	Statutory
c.	Jones Act coverage, if applicable:	
	Bodily injury by accident, each accident	$ N/A
	Bodily injury by disease, aggregate	$ N/A
c.	Employer's Liability:	
	Bodily injury, each accident	$ 1,000,000
	Bodily injury by disease, each employee	$ 1,000,000
	Bodily injury/disease, aggregate	$ 1,000,000
d.	For work performed in monopolistic states, stop-gap liability coverage shall be endorsed to either the worker's compensation or commercial general liability policy with a minimum limit of:	$ N/A
e.	Foreign voluntary worker compensation	$ N/A

f. Workers' Compensation and Employer's Liability insurance shall include the proprietor/partners/executive officers.

2. Contractor's Commercial General Liability under Paragraphs 6.03.B and 6.03.C of the General Conditions:

a.	General Aggregate	$ 5,000,000
b.	Products--Completed Operations Aggregate	$ 5,000,000
c.	Personal and Advertising Injury	$ 5,000,000

d. Each Occurrence (Bodily Injury and Property Damage) $ 5,000,000

e. Damage to Rented Premises (Each Occurrence) $ 1,000,000

3. Business Automobile Liability under paragraph 6.03.D of the General Conditions:

a. Bodily Injury

Each person $ 2,000,000

Each accident $ 2,000,000

b. Property Damage

Each accident $ 2,000,000

4. Excess or Umbrella Liability:

a. General Aggregate $ 5,000,000

b. Each Occurrence $ 5,000,000

5. Contractor's Pollution Liability:

a. General Aggregate $ 5,000,000

b. Each Occurrence $ 5,000,000

c. If box is checked, Contractor is not required to provide Contractor's Pollution Liability insurance under this Contract ☐

6. Additional Insureds: Stanley Consultants, City of Geneva and subcontractors shall be specifically named on policy as additional insureds by endorsement, including completed operations.

7. Contractor's Professional Liability:

a. Each Claim $ 2,000,000

b. Annual Aggregate $ 5,000,000

SC-6.05 *Property Insurance*

In paragraph 6.05.A.2., change the words "all risk policy" to read "special perils policy."

Add the following to the list of requirements in Paragraph 6.05.A, as a numbered item:

13. be subject to a deductible amount of choice for direct physical loss in any one occurrence.

Add the following to the list of items in Paragraph 6.05.A, as numbered items:

14 include for the benefit of Owner loss of profits and soft cost coverage including, without limitation, fixed expenses and debt service for a minimum of 12 months with a maximum deductible of 30 days, plus attorneys fees and engineering or other consultants' fees, if not otherwise covered;

15. include by express endorsement coverage of damage to Contractor's equipment.

Delete Paragraph 6.05.A in its entirety and insert the following in its place:

A. Contractor shall provide and maintain installation floater insurance for property under the care, custody, or control of Contractor. The installation floater insurance shall be a broad form or “all risk” policy providing coverage for all materials, supplies, machinery, fixtures, and equipment that will be incorporated into the Work. Coverage under the Contractor’s installation floater will include:

1. any loss to property while in transit,

2. any loss at the Site, and

3. any loss while in storage, both on-site and off-site.

Coverage cannot be contingent on an external cause or risk, or limited to property for which the Contractor is legally liable. The Contractor shall be solely responsible for any deductible carried under this coverage and claims on materials, supplies, machinery, fixture, and equipment that will be incorporated into the Work while in transit or in storage. This policy will include a waiver of subrogation applicable to Owner, Contractor, Engineer, all Subcontractors, and the officers, directors, partners, employees, agents and other consultants and subcontractors of any of them.

Delete the first sentence of Paragraph 6.05.A and insert the following sentence in its place:

A. Owner will purchase and maintain builder’s risk insurance upon the Work on a completed value basis, in the amount of the full insurable replacement cost thereof (subject to such deductible amounts as may be provided in the Supplementary Conditions or required by Laws and Regulations). . . .

ARTICLE 7 – CONTRACTOR’S RESPONSIBILITIES

SC-7.02 *Labor; Working Hours*

Amend the first and second sentences of Paragraph 7.02.B to read:

“ all Work at site shall be performed during regular working hours, and Contractor shall not permit overtime work or performance of Work on Saturday, Sunday, or any legal holiday without Owner's written consent given after prior written notice to Engineer.”

Add the following new subparagraphs immediately after Paragraph 7.02.B:

1. Regular working hours will be established by the City of Geneva.

2. Owner's legal holidays will be established by the City of Geneva.

Add the following new paragraph immediately after Paragraph 7.02.B:

C. Contractor shall be responsible for the cost of any overtime pay or other expense incurred by the Owner for Engineer’s services (including those of the Resident Project Representative, if any), Owner's representative, and construction observation services, occasioned by the performance of Work on Saturday, Sunday, any legal holiday, or as overtime on any regular work day. If Contractor is responsible but does not pay, or if the parties are unable to agree as to the amount owed, then Owner may impose a reasonable set-off against payments due under Article 15.

Add the following new subparagraph immediately after Paragraph 7.02.C:

1. For purposes of administering the foregoing requirement, additional overtime costs are defined as work performed not during regular working hours and Contractors shall not permit overtime work.

SC-7.04.C *"Or-Equals"*

Amend the third sentence of paragraph 7.04.C of the General Conditions to read as follows:

"No "or-equal" item will be ordered, furnish, installed or utilized until Engineer's review is complete and Engineer determines that the proposed item is an "or-equal," which will be evidenced by a Change Order or other written communication. Engineer will advise Contractor in writing of any negative determination"

SC-7.09 *Taxes*

Add a new paragraph immediately after Paragraph 7.09.A:

B. Owner is exempt from payment of sales and compensating use taxes of the State of Illinois and of cities and counties thereof on all materials to be incorporated into the Work.

1. Owner will furnish the required certificates of tax exemption to Contractor for use in the purchase of supplies and materials to be incorporated into the Work.

2. Owner's exemption does not apply to construction tools, machinery, equipment, or other property purchased by or leased by Contractor, or to supplies or materials not incorporated into the Work.

SC-7.12 *Safety and Protection*

Add a new paragraph immediately after paragraph 7.12.G:

H. Contractor shall be responsible for initiating, maintaining, and supervising all safety precautions and programs in connections with the Work. The Owner and Engineer will not have such responsibility. No action under taken by the Owner or Engineer under General Conditions paragraphs 16.01 or 16.02, or article 10 will constitute a transfer of this responsibility or acceptance of this responsibility by the Owner or Engineer.

SC-7.16 *Shop Drawings, Samples, and Other Submittals*

Amend paragraph 7.16 by deleting the following words:

"and approval" and "and approve"

Delete paragraph 7.16.A.3. in its entirety and insert the following in its place:

3. If Contractor wishes to propose a variation from the requirements of the Contract Documents and a drawing or sample will be used to help describe the variation, the drawing or Sample shall not be submitted as a Shop Drawing or Sample, but rather will have specific notations regarding the variation and shall be transmitted to the Engineer with a letter describing all aspects of the variation, including any effect the variation will have on work of separate contractors, if any, and its effect, if any, on the Contract Price or Contract Time. If Engineer determines that the variation will be acceptable, the variation will be authorized by a Change Order executed by the Owner and Contractor.

Delete paragraph 7.16.D.3. in its entirety and insert the following in its place:

3. Engineer's review of Shop Drawings or Samples shall not relieve Contractor from responsibility for any variation from the requirements of the Contract Documents; nor will any review by Engineer relieve Contractor from responsibility for errors or omissions in the Shop Drawings or from responsibility for having complied with the requirements of paragraph 7.16.A.3.

Add the following new paragraphs immediately after Paragraph 7.16.E:

F. Contractor shall furnish required submittals with sufficient information and accuracy in order to obtain required review of an item with no more than 3 submittals. Engineer will record Engineer's time for reviewing subsequent submittals of Shop Drawings, samples or other items requiring review and Contractor shall reimburse Owner for Engineer's charges for such time.

G. In the event that Contractor requests a substitution for a previously approved item, Contractor shall reimburse Owner for Engineer's charges for such time unless the need for such substitution is beyond the control of Contractor.

SC-7.18 *Indemnification*

Add a new paragraph immediately after paragraph 7.18.C.2.

D. Contractor (and any Subcontractor into whose subcontract this clause is incorporated) agrees to assume the entire liability for all personal injury claims suffered by its own employees, including without limitation claims under the Illinois Structural Work Act, asserted by persons allegedly injured on the Project; waives any limitation of liability defense based upon the Worker's Compensation Act, court interpretations of said Act or otherwise; and agrees to indemnify and defend Owner and Engineer and their agents, employees and consultants (the "Indemnitees") from and against all such loss, expense, damage or injury, including reasonable attorneys' fees, that the Indemnitees may sustain as a result of such claims, except to the extent that Illinois law prohibits indemnity for the Indemnitees' own negligence.

ARTICLE 8 – OTHER WORK AT THE SITE

SC-8.02 *Coordination*

Delete Paragraph 8.02.A in its entirety and replace with the following:

A. Owner intends to contract with others for the performance of other work at or adjacent to the Site.

1. Owner shall have authority and responsibility for coordination of the various contractors and work forces at the Site;

ARTICLE 9 – OWNER'S RESPONSIBILITIES

SC-9.12 *Safety Programs*

Delete Paragraph 9.12.A in its entirety.

ARTICLE 10 – ENGINEER'S STATUS DURING CONSTRUCTION

SC-10.03 *Project Representative*

Add the following new paragraphs immediately after Paragraph 10.03.A:

B. The Resident Project Representative (RPR) will be Engineer's representative at the Site, will act as directed by and under the supervision of Engineer, and will confer with Engineer regarding RPR's actions.

1. General: RPR's dealings in matters pertaining to the Work in general shall be with Engineer and Contractor. RPR's dealings with Subcontractors shall only be through or with the full knowledge and approval of Contractor. RPR shall generally communicate with Owner only with the knowledge of and under the direction of Engineer.

2. Schedules: Review the progress schedule, schedule of Shop Drawing and Sample submittals, and Schedule of Values prepared by Contractor and consult with Engineer concerning acceptability.

3. Conferences and Meetings: Attend meetings with Contractor, such as preconstruction conferences, progress meetings, job conferences, and other Project-related meetings, and prepare and circulate copies of minutes thereof.

4. Liaison:

a. Serve as Engineer's liaison with Contractor. Working principally through Contractor's authorized representative or designee, assist in providing information regarding the provisions and intent of the Contract Documents.

b. Assist Engineer in serving as Owner's liaison with Contractor when Contractor's operations affect Owner's on-Site operations.

c. Assist in obtaining from Owner additional details or information, when required for proper execution of the Work.

5. Interpretation of Contract Documents: Report to Engineer when clarifications and interpretations of the Contract Documents are needed and transmit to Contractor clarifications and interpretations as issued by Engineer.

6. Shop Drawings and Samples:

a. Record date of receipt of Samples and Contractor-approved Shop Drawings.

b. Receive Samples which are furnished at the Site by Contractor, and notify Engineer of availability of Samples for examination.

c. Advise Engineer and Contractor of the commencement of any portion of the Work requiring a Shop Drawing or Sample submittal for which RPR believes that the submittal has not been approved by Engineer.

7. Modifications: Consider and evaluate Contractor's suggestions for modifications in Drawings or Specifications and report such suggestions, together with RPR's recommendations, if any, to Engineer. Transmit to Contractor in writing decisions as issued by Engineer.

8. Review of Work and Rejection of Defective Work:

a. Conduct on-Site observations of Contractor's work in progress to assist Engineer in determining if the Work is in general proceeding in accordance with the Contract Documents.

b. Report to Engineer whenever RPR believes that any part of Contractor's work in progress is defective, will not produce a completed Project that conforms generally to the Contract Documents, or will imperil the integrity of the design concept of the completed Project as a functioning whole as indicated in the Contract Documents, or has been damaged, or does not meet the requirements of any inspection, test or approval required to be made; and advise Engineer of that part of work in progress that RPR believes should be corrected or rejected or should be uncovered for observation, or requires special testing, inspection or approval.

9. Inspections, Tests, and System Start-ups:

a. Verify that tests, equipment, and systems start-ups and operating and maintenance training are conducted in the presence of appropriate Owner's personnel, and that Contractor maintains adequate records thereof.

b. Observe, record, and report to Engineer appropriate details relative to the test procedures and systems start-ups.

10. Records:

a. Prepare a daily report or keep a diary or log book, recording Contractor's hours on the Site, Subcontractors present at the Site, weather conditions, data relative to questions of Change Orders, Field Orders, Work Change Directives, or changed conditions, Site visitors, deliveries of equipment or materials, daily activities, decisions, observations in general, and specific observations in more detail as in the case of observing test procedures; and send copies to Engineer.

b. Record names, addresses, fax numbers, e-mail addresses, web site locations, and telephone numbers of all Contractors, Subcontractors, and major Suppliers of materials and equipment.

c. Maintain records for use in preparing Project documentation.

11. Reports:

a. Furnish to Engineer periodic reports as required of progress of the Work and of Contractor's compliance with the Progress Schedule and schedule of Shop Drawing and Sample submittals.

b. Draft and recommend to Engineer proposed Change Orders, Work Change Directives, and Field Orders. Obtain backup material from Contractor.

c. Immediately notify Engineer of the occurrence of any Site accidents, emergencies, acts of God endangering the Work, force majeure or delay events, damage to property by fire or other causes, or the discovery of any Constituent of Concern or Hazardous Environmental Condition.

12. Payment Requests: Review applications for payment with Contractor for compliance with the established procedure for their submission and forward with recommendations to Engineer, noting particularly the relationship of the payment requested to the Schedule of Values, Work completed, and materials and equipment delivered at the Site but not incorporated in the Work.

13. Certificates, Operation and Maintenance Manuals: During the course of the Work, verify that materials and equipment certificates, operation and maintenance manuals and other data required by the Contract Documents to be assembled and furnished by Contractor are applicable to the items actually installed and in accordance with the Contract Documents, and have these documents delivered to Engineer for review and forwarding to Owner prior to payment for that part of the Work.

14. Completion:

a. Participate in Engineer's visits to the Site to determine Substantial Completion, assist in the determination of Substantial Completion and the preparation of a punch list of items to be completed or corrected.

b. Participate in Engineer's final visit to the Site to determine completion of the Work, in the company of Owner and Contractor, and prepare a final punch list of items to be completed and deficiencies to be remedied.

c. Observe whether all items on the final list have been completed or corrected and make recommendations to Engineer concerning acceptance and issuance of the notice of acceptability of the work.

C. The RPR shall not:

1. Authorize any deviation from the Contract Documents or substitution of materials or equipment (including "or-equal" items).

2. Exceed limitations of Engineer's authority as set forth in the Contract Documents.

3. Undertake any of the responsibilities of Contractor, Subcontractors, or Suppliers.

4. Advise on, issue directions relative to, or assume control over any aspect of the means, methods, techniques, sequences or procedures of Contractor's work.

5. Advise on, issue directions regarding, or assume control over security or safety practices, precautions, and programs in connection with the activities or operations of Owner or Contractor.

6. Participate in specialized field or laboratory tests or inspections conducted off-site by others except as specifically authorized by Engineer.

7. Accept Shop Drawing or Sample submittals from anyone other than Contractor.

8. Authorize Owner to occupy the Project in whole or in part.

B. On this Project, by agreement with the Owner, Engineer will not furnish a Resident Project Representative to represent Engineer at the Site or assist Engineer in observing the progress and quality of the Work

ARTICLE 11 – AMENDING THE CONTRACT DOCUMENTS; CHANGES IN WORK

SC-11.04 *Change of Contract price*

Amend Paragraph 11.04.C.1 to read:

"a mutually acceptable fixed fee;"

Delete Paragraph 11.04.C.2 and all subparagraphs in their entirety.

SC-11.06 *Change Proposals*

Delete Paragraph 11.06.A.3 in its entirety and insert the following in its place:

3. Binding *Decision:*

a. In the event the change order causes a change in completion date of increase in contract price exceeding 10% of the original contract price, the decision will only be binding pending approval by Geneva City Council at the next regularly scheduled City Council meeting after Engineer's approval of change order.

b. Change orders causing an increase in the original contract price that does not exceed 10% of the original price will be binding after the approval of the Engineer's approval by the Geneva City Administrator.

ARTICLE 13 – COST OF THE WORK; ALLOWANCES; UNIT PRICE WORK

SC-13.01 *Cost of the Work*

Delete Paragraph 13.01.B.5.c in its entirety and insert the following in its place:

c. Construction Equipment and Machinery:

1) Rentals of all construction equipment and machinery, and the parts thereof, in accordance with rental agreements approved by Owner with the advice of Engineer, and the costs of transportation, loading, unloading, assembly, dismantling, and removal thereof. All such costs shall be in accordance with the terms of said rental agreements. The rental of any such equipment, machinery, or parts shall cease when the use thereof is no longer necessary for the Work.

2) Costs for equipment and machinery owned by Contractor will be paid at a rate shown for such equipment in the Lump Sum Bid. An hourly rate will be computed by dividing the monthly rates by 176. These computed rates will include all operating costs. Costs will include the time the equipment or machinery is in use on the changed Work and the costs of transportation, loading, unloading, assembly, dismantling, and removal when directly attributable to the changed Work. The cost of any such equipment or machinery, or parts thereof, shall cease to accrue when the use thereof is no longer necessary for the changed Work. Equipment or machinery with a value of less than $1,000 will be considered small tools.

SC-13.03 *Unit Price Work*

Delete Paragraph 13.03 and all subparagraphs in their entirety.

ARTICLE 15 – PAYMENTS TO CONTRACTOR; SET-OFFS; COMPLETION; CORRECTION PERIOD

SC-15.01.A *Basis for Progress Payments:*

Amend Paragraph 15.01.A to read as follows:

A. "*Basis for Progress Payments:* The Schedule of Values established as provided in Article 2 will serve as the basis for progress payments and will be incorporated into a form of Application for Payment acceptable to Engineer. Progress payments for cost-based Work will be based on Cost of the Work completed by Contractor during the pay period."

SC-15.01.D *Payment Becomes Due*

Delete subparagraph 15.01.D.1 in its entirety and insert the following in its place:

1. Forty -five days after the presentation to Owner of the Application for Payment and accompanying documentation, the amount recommended by Engineer, less any sum Owner is entitled to set off against Engineer's recommendation, including but not limited to, liquidated damages, will become due and, will be paid by Owner to Contractor.

SC-15.03 *Substantial Completion*

Add the following new subparagraph to Paragraph 15.03.B:

1. If some or all of the Work has been determined not to be at a point of Substantial Completion and will require re-inspection or re-testing by Engineer, the cost of such re-inspection or re-testing, including the cost of time, travel and living expenses, shall be paid by Contractor to Owner. If Contractor does not pay, or the parties are unable to agree as to the amount owed, then Owner may impose a reasonable set-off against payments due under Article 15.

SC-15.06 *Final Payment*

Amend Paragraph 15.06.D by deleting "Thirty" and replacing with "Forty-five".

ARTICLE 16 – SUSPENSION OF WORK AND TERMINATION

SC-16.04 *Contractor May Stop Work or Terminate*

Amend Paragraph 16.04.A by deleting "30" and replacing with "45".

Amend Paragraph 16.04.B by deleting "30" and replacing with "45".

ARTICLE 17 – FINAL RESOLUTION OF DISPUTES

SC-17.01 *Methods of Procedures*

Delete Subparagraph 17.01 Methods of Procedures and replace with the following:

17.01 Dispute Resolution Method

A. Either Owner or Contractor may initiate the mediation of any Claim decided in writing by Engineer under Paragraph 10.07.A or 11.06A before such decision becomes final and binding. The mediation will be governed by the Construction Industry Mediation Rules of the American Arbitration Association in effect as of the Effective Date of the Agreement. The request for mediation shall be submitted in writing to the American Arbitration Association and the other party to the Contract. Timely submission of the request shall stay the Engineer's decision from becoming final and binding. The venue for any mediation proceeding shall be in an agreed upon location in Kane County, IL.

B. Owner and Contractor shall participate in the mediation process in good faith. The process shall be concluded within 60 days of filing of the request. The date of termination of the mediation shall be determined by application of the mediation rules referenced above.

C. If the mediation process does not result in resolution of the Claim, then Engineer's written decision or denial under Paragraph 10.07A. or 11.06.A shall become final and binding 30 days after termination of the mediation unless, within that time period, Owner or Contractor:
1. elects in writing to invoke any dispute resolution process provided for in Article 17, or
2. agrees with the other party to submit the Claim to another dispute resolution process, or
3. if no dispute resolution process has been provided for in Article 17, delivers to the other party written notice of the intent to submit the Claim to a court of competent jurisdiction, and within 60 days of the termination of the mediation institutes such formal proceeding.

SC-17.03 *Attorneys' Fees*

SC-17.03 *Attorneys' Fees*

A. For any matter subject to final resolution under this Article, the prevailing party shall be entitled to an award of its attorneys' fees incurred in the final resolution proceedings, in an equitable amount to be determined in the discretion of the court, arbitrator, arbitration panel, or other arbiter of the matter subject to final resolution, taking into account the parties' initial demand or defense positions in comparison with the final result.

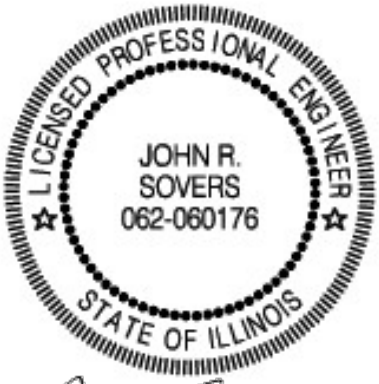
END OF DOCUMENT

Addendum No. 1

for

Bid Proposal No. 23-07
Old Kirk Road Distribution
General Construction

City of Geneva
Geneva, Illinois



Signature

10/19/2023
Date

License Expiration Date: 11-30-2023
Illinois Firm Registration No. 184-001533

Stanley Consultants INC.

A Stanley Group Company
Engineering, Environmental and Construction Services - Worldwide

Stanley Consultants INC.

ADDENDUM NO. 1
October 31, 2023

BID PROPOSAL NO. 23-07
OLD KIRK ROAD DISTRIBUTION
GENERAL CONSTRUCTION

CITY OF GENEVA
GENEVA, ILLINOIS

1. DOCUMENT 00 21 13 – INSTRUCTIONS TO BIDDERS

Article "1.13 SUBCONTRACTORS, SUPPLIERS AND OTHERS"

Delete paragraph C. in its entirety.

2. DOCUMENT 01 40 00 – QUALITY REQUIREMENTS

Delete article "3.03 FIELD PERFORMANCE TESTS" in its entirety.

3. DOCUMENT 01 43 33 – MANUFACTURER'S FIELD SERVICES

Delete Section 01 43 33, page 1, in its entirety.

END OF ADDENDUM NO. 1

1) P. E. Schulz
2) J. R. Sovers

PART 1 GENERAL

1.01 WORK COVERED BY CONTRACT DOCUMENTS

A. Work of this Agreement comprises installation of all materials and equipment for the Old Kirk Road Distribution Geneva, Illinois for The City of Geneva, Owner including:
   1. Furnishing and installing power and communications conduits and concrete encased ductbank.
   2. Furnishing and installing cable pulling vaults and switch vaults.
   3. Pulling and termination of owner supplied medium voltage power cable.
   4. Installing owner supplied pad mount switches.
   5. Survey and staking of existing easements for use during construction.

1.02 AGREEMENT

A. Procure and Construct Work under single lump sum Agreement.

1.03 WORK SEQUENCE

A. Construct Work in stages to provide for public convenience. Do not close off public use of public and private roads.

1.04 CONTRACTOR'S USE OF PREMISES

A. Complete and exclusive use of premises for execution of Work.

B. Limit Contractor's use of premises for Work and for storage, to allow for: Public and private use streets and roads.

C. Coordinate use of premises under direction of Contractor. Contractor shall confine construction equipment, storage of materials and equipment and operations of workers to areas permitted by law, ordinances, permits, or requirements of Contract Documents, and shall not unreasonably encumber premises with construction equipment or other material or equipment.

D. Assume full responsibility for protection and safekeeping of items under this Agreement, stored on Site.

E. Move any stored items, under Contractor's control, which interfere with operations of Owner or separate contractor.

F. Obtain and pay for use of additional storage or Work areas needed for operations.

1.05 OWNER-FURNISHED ITEMS

A. Products furnished and paid for by Owner:
   1. 15kV medium voltage power cable.
   2. 15kV cable terminations and splices.
   3. 15kV padmount switchgear.
   4. See Attachment B for additional details of Owner Furnished materials.

B. Owner's responsibilities:
   1. Arrange for and deliver necessary Shop Drawings and Samples to Contractor.
   2. Arrange and pay for product delivery to Site, in accordance with construction schedule.
   3. Deliver supplier's bill of materials to Contractor.
   4. Inspect deliveries jointly with Contractor.
   5. Submit claims for transportation damage.
   6. Arrange for replacement of damaged, defective, or missing items.

7. Arrange for manufacturer's warranties, Bonds, service, inspections, as required.

C. Contractor's responsibilities:
1. Designate delivery date for each product in Construction Schedule.
2. Receive and unload products at Site.
3. Promptly inspect products jointly with Owner, record shortages, damages, or defective items.
4. Handle products at Site, including uncrating and storage.
5. Protect products from exposure to elements, and from damage.
6. Assemble, install, connect, adjust, and finish products, as stipulated in respective Section of Specifications.
7. Repair or replace items damaged by Contractor.

PART 2 PRODUCTS

NOT USED

PART 3 EXECUTION

NOT USED

END OF SECTION

PART 1 GENERAL

1.01 SCHEDULE OF VALUES

A. Submit a printed schedule on EJCDC C-620 – Contractor's Application for Payment.

B. Submit Schedule of Values in duplicate within 15 days after date established in Notice to Proceed.

C. Format: Use Table of Contents of this Project Manual. Identify each line item with number and title of major specification Section.

D. Include within each line item, a direct proportional amount of Contractor's overhead and profit.

E. Revise schedule to list approved Change Orders, with each Application for Payment.

1.02 APPLICATIONS FOR PAYMENT

A. Submit 3 copies of each application on EJCDC C-620 – Contractor's Application for Payment.

B. Content and format: Use Schedule of Values for listing items in Application for Payment.

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

D. Payment period: Submit at intervals stipulated in Agreement.

E. Submit with transmittal letter as specified for Submittals in Section 01 33 00.

F. Include a Company invoice for the amount listed on the payment application.

G. Substantiating data: When Engineer requires substantiating information, submit data justifying dollar amounts in question. Include following with application:
   1. Current construction photographs.
   2. Partial release of liens from major subcontractors and vendors.
   3. Record documents as specified in Sections 01 32 00 and 01 70 00, for review by Owner which will be returned to Contractor.
   4. Affidavits attesting to off-site stored products.
   5. Construction progress schedules, revised and current as specified in Section 01 32 00.
   6. Certified payroll for Contactor and all Subcontractors.

1.03 CHANGE PROCEDURES

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

B. Engineer will advise of minor changes in Work not involving an adjustment to Contract Price or Contract Time by issuing supplemental instructions on Engineer's Instruction to Contractor (ITC) Form SC2264-1299.

C. Engineer may issue a notice of change which includes detailed description of proposed change with supplementary or revised Drawings and Specifications, change in Contract Time for executing change and period of time during which requested price will be considered valid. Contractor will prepare and submit an estimate within 7 days.

D. Contractor may propose changes by submitting a request for change to Engineer, describing proposed change and its full effect on Work. Include a statement describing reason for change, and

effect on Contract Price and Contract Time with full documentation and a statement describing effect on Work by separate or other contractors.

E. Stipulated price Change Order: Based on notice of change and Contractor's fixed price quotation or Contractor's request for a Change Order as approved by Engineer.

F. Work Directive Change: Engineer may issue a directive, on EJCDC C940 - Work Directive Change signed by Owner, instructing Contractor to proceed with a change in Work, for subsequent inclusion in a Change Order. Document will describe changes in Work, and designate method of determining any change in Contract Price or Contract Time. Promptly execute change.

G. Document each quotation for a change in cost or time with sufficient data to allow evaluation of quotation.

H. Change Order Forms: EJCDC C-941 Change Order.

I. Execution of Change Orders: Engineer will issue Change Orders for signatures of parties as provided in Conditions of Contract.

J. Correlation of Contractor submittals:
   1. Promptly revise Schedule of Values and Application for Payment forms to record each authorized Change Order as a separate line item and adjust Contract Price.
   2. Promptly revise progress schedules to reflect any change in Contract Time, revise sub-schedules to adjust times for other items of work affected by change, and resubmit.
   3. Promptly enter changes in Project Record Documents.

1.04 DEFECT ASSESSMENT

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

B. If, in opinion of Engineer, it is not practical to remove and replace Work, Engineer will direct an appropriate remedy or adjust payment.

C. Individual specification sections may modify these options or may identify a specific formula or percentage price reduction.

D. Authority of Engineer to assess defect and identify payment adjustment, is final.

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

1.05 UNIT ADJUSTMENT PRICES

A. Unit adjustment prices will be used to adjust Contract Price for additions to or deductions from quantities required by Contract Documents.
   1. Additions to Work will be made at 115% of prices submitted.
   2. Deletions from Work will be made at 90% of prices submitted.
   3. Net changes of quantities shall first be determined before price factors are applied.

B. Unit adjustment prices apply only to additions to or deductions from quantities required by Contract Documents made necessary by unforeseen conditions or changes deemed necessary or desirable by

Engineer or Owner during construction. Additions or deductions necessary to accommodate equipment furnished and installed under Agreement shall be made by Contractor at its expense, and unit adjustment prices shall not apply.

PART 2 PRODUCTS

NOT USED

PART 3 EXECUTION

NOT USED

END OF SECTION

PART 1 GENERAL

1.01 SUBSTITUTIONS

A. For period of 30 days after effective date of Agreement, Engineer will consider formal requests from Contractor for substitution of products in place of those specified. After end of that period, requests will be considered only in case of product unavailability or other conditions beyond control of Contractor.

B. Submit 3 copies of request for substitution for consideration using attached Product Substitution Request Form. Limit each request to one proposed Substitution. Support each request with:
   1. Complete data substantiating compliance of proposed substitutions with requirements stated in Contract Documents. Burden of proof is on proposer.
      a. Product identification, including manufacturer's name and address.
      b. Manufacturer's literature; identify:
         1) Product description.
         2) Reference standards.
         3) Performance and test data.
      c. Samples, as applicable.
      d. Name and address of similar projects on which product has been used, and date of each installation.
   2. Itemized comparison of proposed substitution with product specified; list significant variations.
   3. Data relating to changes in construction schedule.
   4. Any effect of substitution on separate contracts.
   5. List of changes required in other work or products.
   6. Accurate cost data comparing proposed substitution with product specified. Amount of any net change to Contract Price.
   7. Designation of required license fees or royalties.
   8. Designation of availability of maintenance services, sources, or replacement materials.

C. Substitutions will not be considered for acceptance when:
   1. They are indicated or implied on Shop Drawings.
   2. They are requested directly by Subcontractor or supplier.
   3. Acceptance will require substantial revision of Contract Documents.

D. Substitute products shall not be ordered or installed without written notification from Engineer of Owner's acceptance.

E. Engineer will determine acceptability of proposed substitutions.

1.02 CONTRACTOR'S REPRESENTATION

A. In making formal request for substitution Contractor represents that:
   1. It has investigated proposed product and has determined that it is equal to or superior in all respects to that specified.
   2. It will provide same warranties or Bonds for substitution as for product specified or as required by Owner.
   3. It will coordinate installation of accepted substitution into Work, and will make such changes as may be required for Work to be complete in all respects.
   4. It waives claims for additional costs caused by substitution which may subsequently become apparent.
   5. Cost data is complete and includes related costs under its Agreement, but not:
      a. Costs under separate contracts.
      b. Engineer's costs for redesign or revision of Contract Documents.
   6. It will reimburse Owner for charges of Engineer or Engineer's consultants for evaluating any proposed substitute, whether proposed substitute is accepted or rejected.

1.03 ENGINEER DUTIES

A. Review Contractor's requests for substitution with reasonable promptness and advise Owner.

B. Notify Contractor in writing of Owner's decision to accept or reject requested substitution.

PART 2 PRODUCTS

NOT USED

PART 3 EXECUTION

NOT USED

END OF SECTION

PRODUCT SUBSTITUTION REQUEST FORM

To: _____

Project: _____

Specified Item: _____ _____ _____ _____
Section Page Paragraph Description

The undersigned request consideration of the following:

PROPOSED SUBSTITUTION _____

_____

Attached data includes product description, specifications, drawings, photographs, performance, and test data adequate for evaluation of the request; applicable portions of the data are clearly identified.

Attached data also includes a description of changes to the Contract Documents that the proposed substitution will require for its proper installation.

The undersigned certifies that the following paragraphs, unless modified by attachments are correct:

1. The proposed substitution does not affect dimensions shown on Drawings.
2. The undersigned will pay for changes to the building design, including engineering design, detailing, and construction costs caused by the requested substitution.
3. The proposed substitution will have no adverse affect on other trades, the construction schedule, or specified warranty requirements.
4. Maintenance and service parts will be locally available for the proposed substitution.

The undersigned further states that the function, appearance, and quality of the proposed substitution are equivalent or superior to the specified item.

Submitted by:

Signature _____

Firm _____

Address _____

_____

Date _____

Telephone _____

Attachments

For use by Engineer/Architect

☐ Approved ☐ Approved as noted

☐ Not Approved ☐ Received too late

By _____

Date _____

Remarks _____

PART 1 GENERAL

1.01 COORDINATION AND PROJECT CONDITIONS

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.

B. Verify utility requirements and characteristics of 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.

C. Coordinate space requirements, supports, and installation of electrical Work which is 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.

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

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

1.02 COPIES OF DRAWINGS AND PROJECT MANUALS

A. After Notice of Award, Contractor may obtain, at no charge, up to 3 printed or hard copies of the Drawings and Project Manual and one set in electronic format. Additional copies will be furnished upon request at the cost of reproduction plus handling charge.

B. Additional copies of project manuals may be obtained under following conditions:
   1. Furnished at Engineer's reproduction cost plus handling charge.
   2. If Contractor's requirement for additional project manuals necessitates reprinting of project manuals, Contractor shall pay entire cost of such reprinting.
   3. Partial sets of project manuals will not be provided.

C. Revised Drawings and project manuals, if required, will be provided by Engineer to show authorized changes or extra Work under following conditions:
   1. Project manuals: Furnished at no charge, in same quantity as original issuance.
   2. Half-size Drawings:
      a. Half-size Drawings will be available as revised Drawings.
      b. One revised, complete set of half-size Drawings will be issued, at no charge, for each half-size set originally issued and for each half-size set purchased by Contractor after Notice of Award.
   3. Full-size Drawings:
      a. One revised, complete set of full-size Drawings will be issued, at no charge, for each full-size set originally issued.
      b. One revised, complete set of full-size Drawings will be issued, at no charge, for each full-size set originally issued, and for each full-size set purchased by Contractor after Notice of Award, up to 4 copies maximum.
   4. One full-size reproducible set will be issued to accommodate fifth and subsequent sets purchased by Contractor. Contractor shall use reproducible set to complete printing for additional Drawings in its possession.

1.03 PROJECT SITE ADMINISTRATION

A. Contractor shall provide competent, suitably qualified personnel to survey and lay out Work and perform construction as required by Contract Documents. Contractor shall at all times maintain good discipline and order at site.

B. Except in connection with safety or protection of persons or Work or property at site or adjacent thereto, and except as otherwise indicated in Contract Documents, all Work at site shall be performed during regular working hours, and Contractor shall not permit overtime work or performance of Work on Saturday, Sunday, or any legal holiday without Owner's written consent given after prior written notice to Engineer.

C. Incompetent or incorrigible employees shall be dismissed from Work by Contractor or its representative when requested by Engineer or Owner, and such persons shall not again be permitted to return to Work without written consent of Engineer or Owner.

D. Workmanship shall be of best quality.

1.04 PRECONSTRUCTION MEETING

A. Engineer will schedule a meeting 15 days after Notice to Proceed.

B. Attendance Required: Owner, Engineer, and Contractor.

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

D. Record minutes and distribute copies within 2 days after meeting to participants, with 1 copy to those affected by decisions made.

1.05 PROGRESS MEETINGS

A. Schedule and administer meetings throughout progress of the Work at maximum monthly intervals.

B. Attendance Required: Job superintendent, major subcontractors and suppliers, Owner, Engineer, as appropriate to agenda topics for each meeting.

C. 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.

D. Record minutes and distribute copies within 2 days after meeting to participants, with 1 copy to those affected by decisions made.

PART 2 PRODUCTS

NOT USED

PART 3 EXECUTION

3.01 CUTTING AND PATCHING

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

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

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

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

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

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

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

H. Maintain integrity of wall, ceiling, or floor construction; completely seal voids.

I. At penetrations of fire rated walls, partitions, ceiling, or floor construction, completely seal voids with material to full thickness of the penetrated element.

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

K. Identify hazardous substances or conditions exposed during the Work to the Engineer for decision or remedy.

END OF SECTION

PART 1 GENERAL

1.01 CONSTRUCTION PROGRESS SCHEDULES

A. Promptly after Notice of Award, prepare and submit to Engineer estimated construction progress schedules for Work, with subschedules of related activities which are essential to its progress.

B. Submit revised progress schedules with each Application for Payment.

1.02 FORM OF SCHEDULES

A. Prepare schedules in form of horizontal bar chart.
   1. Provide separate horizontal bar for each trade or operation.
   2. Horizontal time scale: Identify first work day of each week.
   3. Scale and spacing: To allow space for notations and future revisions.
   4. Minimum sheet size: 11 x 17.

B. Format of listings: Chronological order of start of each item of Work.

C. Identification of listings: By major Specification Section numbers.

1.03 CONTENT OF SCHEDULES

A. Construction Progress Schedule show:
   1. Complete sequence of construction by activity, with Contract Price breakdown at each stage.
   2. Dates for beginning, and completion of, each major element of construction specifically listing:
      a. Equipment ordering and shipping.
      b. Site utilities.
      c. Subcontractor Work.
      d. Equipment installations.
      e. Finishings.
   3. Projected percentage of completion for each item, as of first day of each month.

B. Provide subschedules to define critical portions of prime schedules.

1.04 PROGRESS REVISIONS

A. Indicate progress of each activity to date of submission.

B. Show changes occurring since previous submission of schedule:
   1. Major changes in scope.
   2. Activities modified since previous submission.
   3. Revised projections of progress and completion.
   4. Other identifiable changes.

C. Provide narrative report as needed to define:
   1. Problem areas, anticipated delays, and impact on schedule.
   2. Corrective action recommended, and its effect.
   3. Effect of changes on schedules of other prime contractors.

1.05 SUBMISSIONS

A. Submit initial schedules within 15 days after Notice of Award.
   1. Engineer will review schedules and return review copy within reasonable time after receipt.
   2. If required, resubmit within 7 days after return of review copy.

B. Submit revised progress schedules with each Application for Payment.

C. Submit number of opaque reproductions which Contractor requires, plus 5 copies which will be retained by Engineer.

1.06 DISTRIBUTION

A. Distribution copies of reviewed schedules to:
   1. Job site file.
   2. Subcontractors.
   3. Other concerned parties.

B. Instruct recipients to report promptly to Contractor, in writing, any problems anticipated by projects shown in schedules.

PART 2 PRODUCTS

NOT USED

PART 3 EXECUTION

NOT USED

END OF SECTION

PART 1 GENERAL

1.01 SUBMITTAL PROCEDURES

A. Submit electronically when required by Specification Sections. Contact Engineer as listed below for submittal instructions. An FTP/FTA site or direct posting site will be provided after award to post submittals and to receive return submittals:

Mr. Philip Schulz
Email: schulzphil@stanleygroup.com
Office Phone: 563-264-6461
Stanley Consultants, Inc.
Stanley Building
225 Iowa Avenue
Muscatine, Iowa 52761-3764

B. Engineer will make internal distribution to the Owner and other interested parties.

C. Submittals shall be in English language.

D. Weights, measures, and units shall be English units with SI metric values following in parenthesis.

E. Symbols and drawings shall conform to ANSI Y32.2/IEEE 315/CSA Z99.

1.02 CONTRACTOR RESPONSIBILITIES

A. Review submittals prior to submission.

B. Determine and verify:
1. Field measurements.
2. Field construction criteria.
3. Catalog numbers and similar data.
4. Conformance to Specifications.

C. Coordinate each submittal with other submittals and with requirements of Work and of Contract Documents.

D. Notify Engineer in writing, at time of submission, of any deviations in submittals from requirements of Contract Documents. Any such deviations permitted by Engineer will require modifications of Contract Documents.

E. Provide space on Shop Drawings for Contractor and Engineer stamps.

F. When Shop Drawings are revised for resubmission, identify all changes made since previous submission.

G. Submittals containing language imposing duties on others (such as verification of dimensions or supply of related information) inconsistent with contract language shall be null and void.

H. Submittals shall not be used as media for inquiries for information or for verification of information that must be supplied by others to Contractor. Inquiries or verification of information shall be made by separate Contractor submittal using Request for Information (RFI) process.

I. Begin no fabrication or Work which requires submittal review until return of submittals by Engineer with stamp, as either "Reviewed", “Reviewed as Noted", or “Reviewed as Noted-Resubmit.”

J. Distribute copies of reviewed submittals that carry Engineer stamp as either "Reviewed" or "Reviewed as Noted" as appropriate. Instruct parties to promptly report any inability to comply with requirements.

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

1.03 ENGINEER DUTIES

A. Review required submittals with reasonable promptness and in accord with schedule, only for general conformance to design concept of Project and compliance with information given in Contract Documents. Review shall not extend to means, methods, sequences, techniques, or procedures of construction or to safety precautions or program incident thereto. Review of a separate item as such will not indicate approval of assembly in which item functions.

B. Affix stamp and initials or signature, and indicate requirements for resubmittal, or review of submittal. Engineer's action on submittals is classified as follows:
1. Reviewed: Submittal has been reviewed and appears to be in conformance to design concept of Project and Contract Documents. Contractor may proceed with fabrication of work in submittal.
2. Reviewed As Noted: Submittal has been reviewed and appears to be in conformance to design concept of Project and Contract Documents, except as noted by reviewer. Contractor may proceed with fabrication of work in submittal with modifications and corrections as indicated by reviewer.
3. Reviewed As Noted-Resubmit: Submittal has been reviewed and appears to be in conformance to design concept of Project and Contract Documents, except as noted by reviewer. Contractor may proceed with fabrication of work in submittal with modifications and corrections as indicated by reviewer. Contractor shall make any corrections indicated by reviewer and resubmit for review.
4. Resubmit: Submittal has been reviewed and appears not to be in conformance to design concept of Project or with Contract Documents. Contractor shall not proceed with fabrication of work in submittal, but instead shall make any corrections required by reviewer and resubmit for review.
5. Returned without Review: Submittal is being returned without having been reviewed because: 1) not required by Contract Documents; 2) grossly incomplete; 3) indicates no attempt at conformance to Contract Documents; 4) cannot be reproduced; 5) lacks Contractor's completed approval stamp; or 6) lacks design professional's seal when required by law or Contract Documents. If submittal is required by Contract Documents, Contractor shall not proceed with Work as detailed in submittal, but instead shall correct defects and resubmit for review.
6. For Information Only: Submittal has not been reviewed but is being retained for informational purposes only.
7. Void: Submittal is voided because it is no longer required or has been superseded by another submittal.

C. Return one electronic copy of submittals to Contractor. Contractor shall make additional distribution as required.

D. Review of submittals shall not relieve Contractor from responsibility for any variation from Contract Documents unless Contractor has, in writing, called Engineer's attention to such variation at time of submission, and Engineer has given written concurrence pursuant to Contract Documents to specific variation, nor shall any concurrence by Engineer or other reviewer relieve Contractor from responsibility for errors or omissions in submittals.

1.04 SHOP DRAWINGS SUBMITTALS

A. Submit for review for limited purpose of checking for conformance to information given and design concept expressed in Contract Documents. Produce copies and distribute in accordance with article “Submittal Procedures” and for record documents purposes as described in Section 01 70 00.

B. Designate in construction schedule, or in separate coordinated submittal schedule, dates for submission and dates that reviewed submittals will be needed.

C. Do not ship equipment until return of shop test results by Engineer as “Reviewed” or “Reviewed as Noted”

D. Make submittals promptly in accordance with approved schedule, and in such sequence as to cause no delay in Work or in work of other contractors.

E. Present in clear and thorough manner, complete with respect to dimensions, design criteria, materials of construction, and like information to enable review of information as required.

F. Details shall be identified by reference to sheet and detail, schedule or room numbers shown on Drawings.

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

H. Equipment which is identified on Contract Documents with tag number or name shall be identified on Shop Drawing with same tag.

I. Schedule submittals to expedite Project. Coordinate submission of related items.

J. For each submittal for review, allow 15 days to complete review process.

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

L. Shop Drawings shall be submitted in electronic format.
1. Submittal Transmittal form (see pdf attached) shall be provided in Word format for each submittal. MSWord template will be provided after award.
2. Text documents shall be submitted in .pdf or .doc format except for the shop drawing Transmittal Form.
3. Drawings shall be submitted in .pdf or .tif format.
4. Electronic submittal shall be suitable for reproduction in black and white.
5. Samples may be submitted to Engineer at address given above.

M. Submittals shall contain:
1. Date of submission and dates of any previous submissions.
2. Project title and number.
3. Contract identification.
4. Names of:
   a. Contractor.
   b. Supplier.
   c. Manufacturer.
5. Identification of product, with Specification section number and article number.
6. Field dimensions, clearly identified as such.
7. Relation to adjacent or critical features of Work or materials.
8. Applicable standards, such as ASTM or Federal Specification numbers.
9. Identification of deviations from Contract Documents.
10. Identification of revisions on resubmittals.
11. An 8" x 3" blank space for Contractor and reviewer stamps.
12. Indication of Contractor's approval, initialed or signed, with wording substantially as follows:

> "Contractor represents to Owner and Engineer that Contractor has either determined and verified all quantities, dimensions, field construction criteria, materials, catalog numbers, and similar data, or assumes full responsibility for doing so and has reviewed or coordinated each submittal with requirements of Work and Contract Documents."

13. If Contract Documents include performance specifications stating required results which can be verified as meeting stipulated criteria, so that further design by Contractor prior to fabrication is

necessary, Submittal depicting such design must be prepared under seal of professional engineer registered in appropriate state and Submittal shall be signed and sealed in accordance with applicable regulations and with following certification statement:

> "I hereby certify that this engineering document was prepared by me or under my direct personal supervision, that I am a duly licensed professional engineer under laws of state of Iowa and I accept responsibility for adequacy of this document to meet criteria stipulated in Contract Documents."

N. Product Data:
   1. Mark each copy to identify applicable products, models, options, and other data. Supplement manufacturers' standard data to provide information specific to this Project.
   2. Indicate product utility and electrical characteristics, utility connection requirements, and location of utility outlets for service for functional equipment and appliances.

O. Design data:
   1. Submit for Engineer's knowledge as contract administrator or for Owner.
   2. Submit for information for limited purpose of assessing conformance with information given and design concept expressed in Contract Documents.

P. Data sheets:
   1. Data sheets may require information not known until Contractor’s engineering is complete. Furnish estimated values based on good engineering judgment. Estimated values shall be identified by placement of “(est.)” next to value.
   2. Data Sheets shall be updated and resubmitted by Contractor once final values are known.
   3. Do not leave items blank or labeled “To Be Determined” or “Later.”
   4. Do not submit manufacturer Product Data instead of completed data sheets.

Q. Test reports:
   1. Submit for Engineer's knowledge as contract administrator or for Owner.
   2. Submit test reports for information for limited purpose of assessing conformance with information given and design concept expressed in Contract Documents.

R. Certificates:
   1. When specified in individual specification sections, submit certification by manufacturer, installation/application subcontractor.
   2. Indicate material or product conforms to or exceeds specified requirements. Submit supporting reference data, affidavits, and certifications as appropriate.
   3. Certificates may be recent or previous test results on material or product, but must be acceptable to reviewer.

S. Manufacturer's instructions:
   1. When specified in individual specification sections, submit printed instructions for delivery, storage, assembly, installation, adjusting, and finishing, to Engineer for delivery to Owner in quantities specified for Product Data.
   2. Indicate special procedures, perimeter conditions requiring special attention, and special environmental criteria required for application or installation.

T. Samples:
   1. Samples for selection as specified in product sections:
      a. Submit for aesthetic, color, or finish selection.
      b. Submit samples of finishes from full range of manufacturers' standard colors, textures, and patterns for selection.
   2. Submit to illustrate functional and aesthetic characteristics of product, with integral parts and attachment devices. Coordinate sample submittals for interfacing work.
   3. Include identification on each sample, with full Project information.
   4. Submit number specified in individual Specification Sections; one of which will be retained by Engineer.

5. Reviewed Samples which may be used in Work are indicated in individual Specification Sections.
6. Samples will not be used for testing purposes unless specifically stated in specification section.

U. Proposed products list:
1. Within 15 days after date of Notice to Proceed, submit list of major products proposed to Engineer for use, with name of manufacturer, trade name, and model number of each product.
2. For products specified only by reference standards, give manufacturer, trade name, model or catalog designation, and reference standards.

V. Operations and maintenance manuals:
1. Designate in construction schedule, or in separate coordinated schedule, dates for submission and dates that reviewed operations and maintenance manuals will be needed.
2. Operations and maintenance manuals shall be presented in clear and thorough manner, complete with respect to dimensions, design criteria, materials of construction, and like information to enable reviewer to review information as required. Details shall be identified by reference to sheet and detail, schedule or room numbers shown on Drawings.

1.05 RESUBMISSION REQUIREMENTS

A. Make any corrections or changes in submittals required by Engineer and resubmit until stamped as either "Reviewed," "Reviewed as Noted," or “For Information Only.”

B. Text and depictions changed on Submittal shall be back-circled (clouded).

C. Engineer will assume that portions of Submittal not back-circled have not been changed by Contractor from previous submission.

D. Indicate revision number and date in document revision block.

1.06 DISTRIBUTION

A. Distribute reproductions of Shop Drawings which carry Engineer stamp as either "Reviewed" or "Reviewed as Noted" to:
1. Record Documents file.
2. Other affected contractors.
3. Subcontractors.
4. Supplier or fabricator.

B. Distribute Samples which carry Engineer stamp as either "Reviewed" or "Reviewed as Noted" as directed by Engineer.

1.07 CONSTRUCTION PROGRESS DOCUMENTATION

A. Construction progress schedules: Submit initial schedules to Engineer within 15 days after date of Notice to Proceed. After review, resubmit required revised data within ten days.

B. Form of schedules:
1. Prepare schedules in form of horizontal bar chart.
a. Provide separate horizontal bar for each trade or operation.
b. Horizontal time scale: Identify first work day of each week.
c. Scale and spacing: To allow space for notations and future revisions.
d. Minimum sheet size: 11 x 17.
2. Format of listings: Chronological order of start of each item of Work.
3. Identification of listings: By major Specification Section numbers.

C. Submittal schedule shall show dates for Contractor’s submittals.

D. Progress revisions:
   1. Indicate progress of each activity to date of submission.
   2. Show changes occurring since previous submission of schedule:
      a. Major changes in scope.
      b. Activities modified since previous submission.
      c. Revised projections of progress and completion.
      d. Other identifiable changes.
   3. Provide narrative report as needed to define:
      a. Problem areas, anticipated delays, and impact on schedule.
      b. Corrective action recommended, and its effect.
      c. Effect of changes on schedules of other prime contractors.

E. Distribution copies of reviewed schedules to:
   1. Subcontractors.
   2. Other concerned parties.

F. Instruct recipients to report promptly to Contractor, in writing, any problems anticipated by projects shown in schedules.

1.08 SUBMITTAL TRANSMITTAL FORM PROCEDURES

A. Submittals shall be accompanied by completed copies of Submittal Transmittal form, bound herein. An electronic version of transmittal form is available and may be obtained from Engineer. Reproduce additional copies required.

B. Submit one copy of transmittal form for initial submittals and resubmittals. Sequentially number transmittal form. Revise submittals with original number and sequential alphabetic suffix.

C. Prior to submittal, complete information under heading “Contractor's Transmittal.”

D. Engineer will complete information under “Reviewer's Action.”

E. Do not include submittals for more than one section of Specifications on Submittal Transmittal form.

F. Identify project title, location, and number and contract title and number.

G. Identify preparer name and, submittal number, including preparer’s submittal revision number.

H. A brief description under "Title" should clearly identify specific application of equipment or material covered by Submittal, utilizing where possible same title used in Drawings and Specifications.

I. Identify Specification Section number.

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

PART 2 PRODUCTS

NOT USED

PART 3 EXECUTION

NOT USED

END OF SECTION

SUBMITTAL TRANSMITTAL

Transmittal No. _____ **Project Location** _____

Project No. _____ **Date Received** _____ **Contract Title** _____

Contract No. _____ **Date Distributed** _____ **Project Title** _____

CONTRACTOR'S TRANSMITTAL

ENGINEER'S/ARCHITECT'S ACTION

STATUS ABBREVIATIONS

R - Reviewed
RN - Reviewed as Noted
RNR - Reviewed as Noted Resubmit
RS - Resubmit
RET - Returned Without Review
FIO - For Information Only
V - Void

Preparer		Preparer Submittal No.		Rev No.	Title			Section	Dwg No.	Status

CONTRACTOR's Remarks

Address

By Date

Action of any kind on drawings by ENGINEER/ARCHITECT does not relieve CONTRACTOR from responsibility for errors, correctness of details, or conformance to the Contract.

ENGINEER'S/ARCHITECT'S Remarks

By

Date

Stanley Consultants

PART 1 GENERAL

1.01 QUALITY CONTROL AND CONTROL OF INSTALLATION

A. Monitor quality control over suppliers, manufacturers, products, services, site conditions, and workmanship, to produce Work of specified quality.

B. Comply with manufacturers' instructions, including each step in sequence.

C. If manufacturers' instructions conflict with Contract Documents, request clarification from Engineer before proceeding.

D. Comply with specified standards as minimum quality for the Work except where more stringent tolerances, codes, or specified requirements indicate higher standards or more precise workmanship.

E. Perform Work by persons qualified to produce required and specified quality.

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

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

1.02 TOLERANCES

A. Monitor fabrication and installation tolerance control of products to produce acceptable Work. Do not permit tolerances to accumulate.

B. Comply with manufacturers' tolerances. Should manufacturers' tolerances conflict with Contract Documents, request clarification from Engineer before proceeding.

C. Adjust products to appropriate dimensions; position before securing products in place.

1.03 BUILDING CODES AND PERMITS

A. Obtain and pay for all construction permits and licenses. Owner shall assist Contractor, when necessary, in obtaining such permits and licenses.

B. Pay all governmental charges and inspection fees necessary for prosecution of Work, which are applicable at time of opening of Bids. Pay all charges of utility service companies for connections to Work. Owner will pay all charges of such companies for capital costs related thereto.

C. Give all notices and comply with all laws, ordinances, building and construction codes, rules, and regulations applicable to Work. If Contractor observes that Specifications or Drawings are at variance therewith, give Engineer prompt written notice thereof, and any necessary changes shall be adjusted by appropriate Modification.

D. If Contractor performs any Work knowing or having reason to know that it is contrary to such laws, ordinances, rules, and regulations, and without such notice to Engineer, Contractor shall bear all costs arising therefrom; however, it shall not be Contractor's primary responsibility to make certain that Specifications and Drawings are in accordance with such laws, ordinances, rules, and regulations.

1.04 TAXES

A. Contractor shall pay all sales, consumer, use and other similar taxes required to be paid by it in accordance with law of place of Project.

1.05 REFERENCES

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

B. Conform to reference standard by date of issue current on date for receiving bids, except where a specific date is established by code.

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

D. If specified reference standards conflict with Contract Documents, request clarification from the Engineer before proceeding.

E. Neither contractual relationships, duties, nor responsibilities of the parties in Contract nor those of the Engineer shall be altered from the Contract Documents by mention or inference otherwise in any reference document.

F. Abbreviations used in Drawings and Specifications are as specified in ASME Y14.38 and IEEE 260.

G. Schedule of references:
1. AA - Aluminum Association
2. AAMA – Architectural Aluminum Manufacturer's Association
3. AAN – American Association of Nurserymen
4. AAR –Association of American Railroads
5. AASHTO - American Association of State Highway and Transportation Officials
6. ACI - American Concrete Institute
7. ACGIH - American Conference of Governmental Industrial Hygienists
8. ACIL - American Council of Independent Laboratories
9. AI - Asphalt Institute
10. AIAO-BAR – American International Accredtation Organization Bureau of Accredited Registrars
11. AIChE – American Institute of Chemical Engineers
12. AISC - American Institute of Steel Construction
13. AISI - American Iron and Steel Institute
14. ANSI - American National Standards Institute
15. AREMA - American Railway Engineering and Maintenance-of-Way Association
16. ARRA - Asphalt Recycling and Reclaiming Association
17. ASCE – American Society of Civil Engineers
18. ASPA - American Sod Producers Association
19. ASTM – International Standards Worldwide
20. AWI - Architectural Woodwork Institute
21. AWS - American Welding Society
22. BOCA - Building Officials & Code Administrators International, Inc.
23. CFR - Code of Federal Regulations
24. CMAA - Crane Manufacturers Association of America
25. CRSI - -Concrete Reinforcing Steel Institute
26. CSI – Construction Specificaitons Institute
27. ECTC - Erosion Control Technology Council.
28. EJMA - Expansion Joint Manufacturers Association
29. EPA - Environmental Protection Agency
30. ETL - Electrical Testing Laboratory
31. FM – FM Global
32. IAS - International Approval Services
33. IBC - International Building Code
34. IEEE - Institute of Electrical and Electronics Engineers
35. NAA - National Arborist Association
36. NCMA - National Concrete Masonry Association
37. NCTA - National Cable Television Association
38. NDT - American Society for Non-Destructive Testing

39. NEBB - National Environmental Balancing Bureau
40. NECA - National Electrical Contractors Association
41. NIOSH - National Institute for Occupational Safety and Health
42. NIST - National Institute of Standards and Technology
43. NRMCA – National Ready Mixed Concrete Association
44. NRTL - Nationally Recognized Testing Laboratories
45. NSF – NSF International
46. NUCA – National Utility Contractors Association
47. NVLAP - National Voluntary Laboratory Accreditation Program
48. OSHA – U. S. Department of Labor, Occupational Safety and Health Administration
49. PCA - Portland Cement Association
50. PCI – Precast/Prestressed Concrete Institute
51. PFI - Pipe Fabrication Institute
52. PPI – Plastic Pipe Institute
53. PS - Product Standard
54. PTI – Post Tensioning Institute
55. RCSC – Research Council on Structural Connections
56. RUS – U. S. Department of Agriculture, Rural Utilities Services
57. SSPC – The Society for Protective Coatings
58. STI – Steel Tank Institute
59. SWRI – Sealant, Waterproofing, and Restoration Institute
60. TABB – Testing Adjusting and Balancing Bureau
61. TPI – Turfgrass Producers International
62. UL - Underwriters' Laboratories, Inc.
63. USACE – United States Army Corps of Engineers
64. USDA - United States Department of Agriculture.
65. USDOJ/USDOT ADA – United States Department of Justice / United States Department of Transportation Americans with Disabilities Act
66. USDOT - United States Department of Transportation.

1.06 WELDING CERTIFICATES

A. Promptly after Notice of Award, submit to Engineer one copy, unless specified otherwise, for each person, by name, assigned to do field welding of materials installed under this Agreement.

B. Show on certificates that each person has passed tests specified by AWS

C. Submit certificates prior to execution of any welding. Certificates not required for nonstructural tack welding.

1.07 TESTING AND INSPECTION SERVICES

A. Contractor shall employ and pay for services of an independent testing agency or laboratory acceptable to the Owner to perform specified testing.
   1. Prior to start of Work, submit testing laboratory name, address, and telephone number, and names of full time registered Engineer and responsible officer.
   2. Submit copy of report of laboratory facilities inspection made by Materials Reference Laboratory of National Bureau of Standards during most recent inspection, with memorandum of remedies of any deficiencies reported by the inspection.

B. The independent firm will perform tests, inspections and other services specified in individual specification sections and as required by the Engineer.
   1. Laboratory: Authorized to operate in location in which Project is located.
   2. Laboratory staff: Maintain a full time registered Engineer on staff to review services.
   3. Testing equipment: Calibrated at reasonable intervals with devices of accuracy traceable to either National Bureau of Standards or accepted values of natural physical constants.

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

D. Reports will be submitted by the independent firm to the Engineer and Contractor, in duplicate, indicating observations and results of tests and indicating compliance or non-compliance with Contract Documents.

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

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

G. Re-testing or re-inspection required because of nonconformance to specified requirements shall be performed by the same independent firm on instructions by the Engineer. Payment for re-testing or re-inspection will be charged to the Contractor by deducting testing charges from the Contract Sum/Price.

H. Agency responsibilities:
   1. Test samples of mixes submitted by Contractor.
   2. Provide qualified personnel at site. Cooperate with Engineer and Contractor in performance of services.
   3. Perform specified sampling and testing of products in accordance with specified standards.
   4. Ascertain compliance of materials and mixes with requirements of Contract Documents.
   5. Promptly notify Engineer and Contractor of observed irregularities or non-conformance of Work or products.
   6. Perform additional tests required by Engineer.
   7. Attend preconstruction meetings and progress meetings.

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

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

1.08 MANUFACTURERS' FIELD SERVICES

A. When specified in individual specification sections, require material or product suppliers or manufacturers to provide qualified staff personnel to observe site conditions, conditions of surfaces and installation, quality of workmanship, and as applicable, and to initiate instructions when necessary.

B. Submit qualifications of observer to Engineer 30 days in advance of required observations. Observer subject to approval of Engineer and Owner.

C. Report observations and site decisions or instructions given to applicators or installers that are supplemental or contrary to manufacturers' written instructions.

D. Refer to Section 01 33 00, paragraph “Manufacturers' Field Reports.”

PART 2 PRODUCTS

NOT USED

PART 3 EXECUTION

3.01 EXAMINATION

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

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

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

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

3.02 PREPARATION

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

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

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

END OF SECTION

PART 1 GENERAL

1.01 SERVICE ENGINEER RESPONSIBILITIES

A. Contractor shall provide qualified Service Engineer(s), as necessary to:
   1. Supervise assembly of equipment.
   2. Inspect equipment after it is installed to assure that all details of installation are correct and that equipment is prepared for operation in accordance with manufacturer's instructions and recommendations.
   3. Check connections to equipment and adjust, or supervise adjustment of, control and indicating devices after equipment has been installed and connected.
   4. Fully instruct Owner's operating personnel in operation and maintenance of equipment.

B. Presence of Service Engineer will in no way relieve Contractor of any responsibility assumed under Agreement.

C. Work and abilities of Service Engineer shall be subject to review of Engineer. If Engineer determines that any Service Engineer is not properly qualified, Contractor shall replace Service Engineer upon written notification by Engineer.

D. Contractor shall provide continuity in assignment of Service Engineer to Work. In event substitution of Service Engineer is made which is not at request of Engineer, substitute's time for "familiarization" shall be at Contractor's expense.

PART 2 PRODUCTS

NOT USED

PART 3 EXECUTION

NOT USED

END OF SECTION

PART 1 GENERAL

1.01 PRODUCTS

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

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

C. Provide interchangeable components of the same manufacturer for components being replaced.

1.02 PRODUCT DELIVERY REQUIREMENTS

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

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

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

1.03 RECEIVING, UNLOADING AND STORING

A. Contractor shall take custody of equipment and materials received and shall be solely responsible for damage and shortages until acceptance of Contractor’s work by Owner.

B. Unload equipment as soon as possible after arrival. Contractor shall pay freight railcar and truck demurrage, detention, and any other costs which may be billed to Owner due to failure to unload railcars or trucks within time required by freight companies.

C. Use of bare wire rope slings for unloading and handling equipment and materials is prohibited without Owner approval.

D. Equipment and materials shall be stored and maintained in accordance with manufacturer’s recommendations and these specifications.

E. Provide physical protection for equipment placed in storage.
   1. Stored equipment shall be supported above ground and shall be covered with canvas or other heavy-duty sheeting. Cover shall be securely fastened and shall be replaced if torn or otherwise damaged during storage period.
   2. Following items shall be stored in weatherproof, heated (minimum 50ºF) building complete with bins for storage of small pieces of equipment. Storage inside of existing plant will not be available.
      a. Electronic instruments and cabinets.
      b. Electrical equipment with general purpose enclosures.
      c. Insulation materials.
      d. Rotating equipment.
      e. Miscellaneous electronic equipment, gaskets, and small machined parts.
      f. Instruments and controls.
      g. Protection panels.
      h. Batteries.

F. Inspect stored equipment weekly and document activities performed. Renew protective coatings as necessary to preserve fitness of equipment.

G. Contractor shall provide materials, equipment, and labor required for such storage and maintenance. Contractor shall be accountable for any deterioration of materials or equipment occasioned by improper storage or maintenance, and shall recondition, repair, or replace any such materials or equipment without additional cost to Owner.

H. Electrical equipment or equipment with any electrical components stored outdoors shall be supported at least 12” above ground.

1.04 GENERAL STORAGE

A. Store products immediately on delivery in accordance with manufacturer's instructions, with seals and labels intact. Protect until installed.

B. Arrange storage in manner to provide access for maintenance of stored items and for inspection.

1.05 ENCLOSED STORAGE

A. Store products subject to damage by elements in substantial weathertight enclosures.

B. Maintain temperature and humidity within ranges required by manufacturer's instructions.

C. Provide humidity control and ventilation for sensitive products, as required by manufacturer's instructions.

D. Store unpacked and loose products on shelves, in bins, or in neat groups of like items.

1.06 EXTERIOR STORAGE

A. Provide substantial platforms, blocking, or skids, to support fabricated products above ground; slope to provide drainage. Protect products from soiling and staining.

B. For products subject to discoloration or deterioration from exposure to elements, cover with impervious sheet material. Provide ventilation to avoid condensation.

C. Store loose granular materials on clean, solid surfaces such as pavement, or on rigid sheet materials, to prevent mixing with foreign matter.

D. Provide surface drainage to prevent flow or ponding of rainwater.

E. Prevent mixing of refuse or chemically injurious materials or liquids.

1.07 MAINTENANCE OF STORAGE

A. Periodically inspect stored products on scheduled basis. Maintain log of inspections, make available to Engineer on request.

B. Verify storage facilities comply with manufacturer's product storage requirements.

C. Verify manufacturer required environmental conditions are maintained continually.

D. Verify surfaces of products exposed to elements are not adversely affected and if weathering of finishes is acceptable under requirements of Contract Documents.

1.08 MAINTENANCE OF EQUIPMENT STORAGE

A. For mechanical and electrical equipment in long-term storage, manufacturer's service instructions shall accompany each item, with notice of enclosed instructions shown on exterior of package.

B. Service equipment on regularly scheduled basis, maintaining log of services; submit as record document.

1.09 PRODUCTS LIST

A. Within 30 days after effective date of Agreement, submit complete list of major products which are proposed for installation electronically to Engineer.

B. Tabulate products by Specification section number and title.

C. For products specified only by reference standards, list for each such product:
   1. Name and address of manufacturer.
   2. Trade name.
   3. Model or catalog designation.
   4. Manufacturer's data:
      a. Reference standards.
      b. Performance test data.

1.10 PRODUCT OPTIONS

A. For products specified only by reference standard, select product meeting that standard, by any manufacturer.For products specified by naming several products or manufacturers, select any one of products and manufacturers named which complies with Specifications.

C. For products specified by naming one or more products or manufacturers and stating "or equal," submit request as for substitutions for any product or manufacturer which is not specifically named in accordance with Section 01 25 13.

D. For products specified by naming only one product and manufacturer, there is no option and no substitution will be allowed.

E. Whenever Specifications call for item by manufacturer's name and type and additional features of item are specifically required by Specifications, additional features specified shall be provided whether or not they are normally included in standard manufacturer's item listed.

PART 2 PRODUCTS

NOT USED

PART 3 EXECUTION

NOT USED

END OF SECTION

PART 1 GENERAL

1.01 CLOSEOUT PROCEDURES

A. 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 Engineer's review.

B. Provide submittals to Engineer that are required by governing or other authorities.

C. Submit final Application for Payment identifying total adjusted Contract Sum, previous payments, and sum remaining due.

1.02 PROJECT RECORD DOCUMENTS

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

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

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

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

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

F. Record Drawings and Shop Drawings: Legibly mark each item to record actual construction including:
1. Field changes of dimension and detail.
2. Details not on original Contract Drawings.

G. Submit documents to Engineer for final Application for Payment.

1.03 SPARE PARTS AND MAINTENANCE PRODUCTS

A. Provide spare parts, maintenance, and extra products in quantities specified in individual specification sections.

B. Deliver to Project site; obtain receipt prior to final payment.

PART 2 PRODUCTS

NOT USED

PART 3 EXECUTION

NOT USED

END OF SECTION

PART 1 GENERAL

1.01 OPERATING AND MAINTENANCE DATA REQUIREMENTS

A. Operating and maintenance data shall be in English language.

B. Compile product data and related information appropriate for Owner's maintenance and operation of products furnished under Agreement.

C. Prepare operating and maintenance data as specified in this section and as referenced in other pertinent sections of Specifications.

D. Instruct Owner's personnel in maintenance of products and in operation of equipment and systems.

1.02 QUALITY ASSURANCE

A. Preparation of data shall be done by personnel:
1. Trained and experienced in maintenance and operation of described products.
2. Familiar with requirements of this section.
3. Skilled as technical writers to extent required to communicate essential data.
4. Skilled as draftsmen competent to prepare required drawings.

1.03 FORM OF SUBMITTALS

A. Prepare data in form of an instructional manual for use by Owner's personnel.

B. Format:
1. Sheet size: 8-1/2" x 11" minimum.
2. Paper: 20 lb minimum, white, for typed pages.
3. Text: Manufacturer's printed data, or neatly typewritten.
4. Drawings:
   a. Provide reinforced punched binder tab, bind in with text.
   b. Larger size drawings shall be folded to 8-1/2” x 11”, and inserted into pockets.
5. Provide fly-leaf for each separate product, or each piece of operating equipment.
   a. Provide typed description of product, and major component parts of equipment.
   b. Provide indexed tabs.
6. Cover: Identify each volume with typed or printed title "OPERATING AND MAINTENANCE INSTRUCTIONS." List:
   a. Title of Project.
   b. Identity of separate structure as applicable.
   c. Identity of general subject matter covered in manual.
7. Binders:
   a. Commercial quality 3-ring binders with durable and cleanable plastic covers.
   b. Maximum ring size: 3".
   c. When multiple binders are used, correlate data into related consistent groupings.

1.04 CONTENT OF MANUAL

A. Neatly typewritten table of contents for each volume, arranged in systematic order.
1. Contractor, name of responsible principal, address, and telephone number.
2. List of each product required to be included, indexed to content of volume.
3. List, with each product, name, address, and telephone number of:
   a. Subcontractor or installer.
   b. Maintenance contractor, as appropriate.
   c. Identify area of responsibility of each.
   d. Local source of supply for parts and replacement and list of recommended spare parts.

4. Identify each product by product name and other identifying symbols as set forth in Contract Documents, including nameplate information and shop order numbers for each item of equipment furnished.

B. Product data:
   1. Include only those sheets which are pertinent to specific product.
   2. Annotate each sheet to:
      a. Clearly identify specific product or part installed.
      b. Clearly identify data applicable to installation.
      c. Delete references to inapplicable information.

C. Drawings:
   1. Supplement product data with Drawings as necessary to clearly illustrate:
      a. Relations of component parts of equipment and systems.
      b. Control and flow diagrams.
   2. Coordinate Drawings with information in Project record documents to assure correct illustration of completed installation.
   3. Do not use Project record documents as maintenance Drawings.

D. Written text, as required to supplement product data for particular installation.
   1. Organize in consistent format under separate headings for different procedures.
   2. Provide logical sequence of instructions for each procedure.

E. Copy of each warranty, Bond, and service contract issued.
   1. Provide information sheet for Owner's personnel, giving:
      a. Proper procedures in event of failure.
      b. Instances which might affect validity of warranties or Bonds.

1.05 MANUAL FOR MATERIALS AND FINISHES

A. Submit 4 copies of complete manual in final form (3 hard copies and one electronic copy).

B. Contents, for architectural products, applied materials and finishes:
   1. Manufacturer's data, giving full information on products.
      a. Catalog number, size, composition.
      b. Color and texture designations.
      c. Information required for re-ordering special-manufactured products.

C. Contents, for moisture protection and weather-exposed products:
   1. Manufacturer's data, giving full information on products.
      a. Applicable standards.
      b. Chemical composition.
      c. Details of installation.
   2. Instructions for inspection, maintenance, and repair.

D. Additional requirements for maintenance data: Respective sections of Specifications.

1.06 MANUAL FOR EQUIPMENT AND SYSTEMS

A. Submit 4 copies of complete manual in final form (3 hard copies and 3 electronic copies)

B. Contents, for each unit of equipment and system, as appropriate:
   1. Description of unit and component parts:
      a. Function, normal operating characteristics, and limiting conditions.
      b. Performance curves, engineering data, and tests.
      c. Complete nomenclature and commercial number of replaceable parts.
   2. Operating procedures:
      a. Startup, break-in, routine, and normal operating instructions.
      b. Regulation, control, stopping, shutdown, and emergency instructions.

c. Summer and winter operating instructions.
d. Special operating instructions.

3. Maintenance procedures:
   a. Maintenance schedule:
      1) Show required maintenance for all equipment in package on one document, broken out by day, week, month, year, 5 years, etc.
      2) Set up as a checklist to be used by owner to verify maintenance is being completed.
   b. Routine operations.
   c. Guide to "trouble-shooting."
   d. Disassembly, repair, and reassembly.
   e. Alignment, adjusting, and checking.
4. Servicing and lubrication schedule: List of lubricants required.
5. Manufacturer's printed operating and maintenance instructions.
6. Description of sequence of operation by control manufacturer.
7. Original manufacturer's parts list, illustrations, assembly drawings, and diagrams required for maintenance.
   a. Predicted life of parts subject to wear.
   b. Items recommended to be stocked as spare parts.
8. As-installed control diagrams by controls manufacturer.
9. List of original manufacturer's spare parts, manufacturer's current prices, and recommended quantities to be maintained in storage.
10. Other data as required under pertinent sections of Specifications.

C. Content, for each electrical and electronic system, as appropriate.
1. Description of system and component parts:
   a. Function, normal operating characteristics, and limiting conditions.
   b. Performance curves, engineering data, and tests.
   c. Complete nomenclature and commercial number of replacement parts.
2. Circuit directories of panelboards:
   a. Electrical service.
   b. Controls.
   c. Communications.
3. As-installed color-coded wiring diagrams.
4. Operating procedures:
   a. Routine and normal operating instructions.
   b. Sequences required.
   c. Special operating instructions.
5. Maintenance procedures:
   a. Routine operations.
   b. Guide to "trouble-shooting."
   c. Disassembly, repair, and assembly.
   d. Adjustment and checking.
6. Manufacturer's printed operating and maintenance instructions.
7. List of original manufacturer's spare parts, manufacturer's current prices, and recommended quantities to be maintained in storage.
8. Other data as required under pertinent sections of Specifications.

D. Prepare and include additional data when need for such data becomes apparent during instruction of Owner's personnel.

E. Additional requirements for operating and maintenance data: Respective sections of Specifications.

1.07 SUBMITTAL SCHEDULE

A. Preliminary draft:
1. Provide 2 copies with shipped equipment.
2. Submit 2 copies to Owner.
3. Submit 2 copies to Engineer of proposed formats and outlines of contents prior to start of Work. Engineer will review draft and return 1 copy with comments.

B. Submit 1 copy of completed data in final form 15 days prior to final inspection or acceptance. Copy will be returned after final inspection or acceptance, with comments.

C. Submit specified copies of approved data in final form 10 days after final inspection or acceptance.

PART 2 PRODUCTS

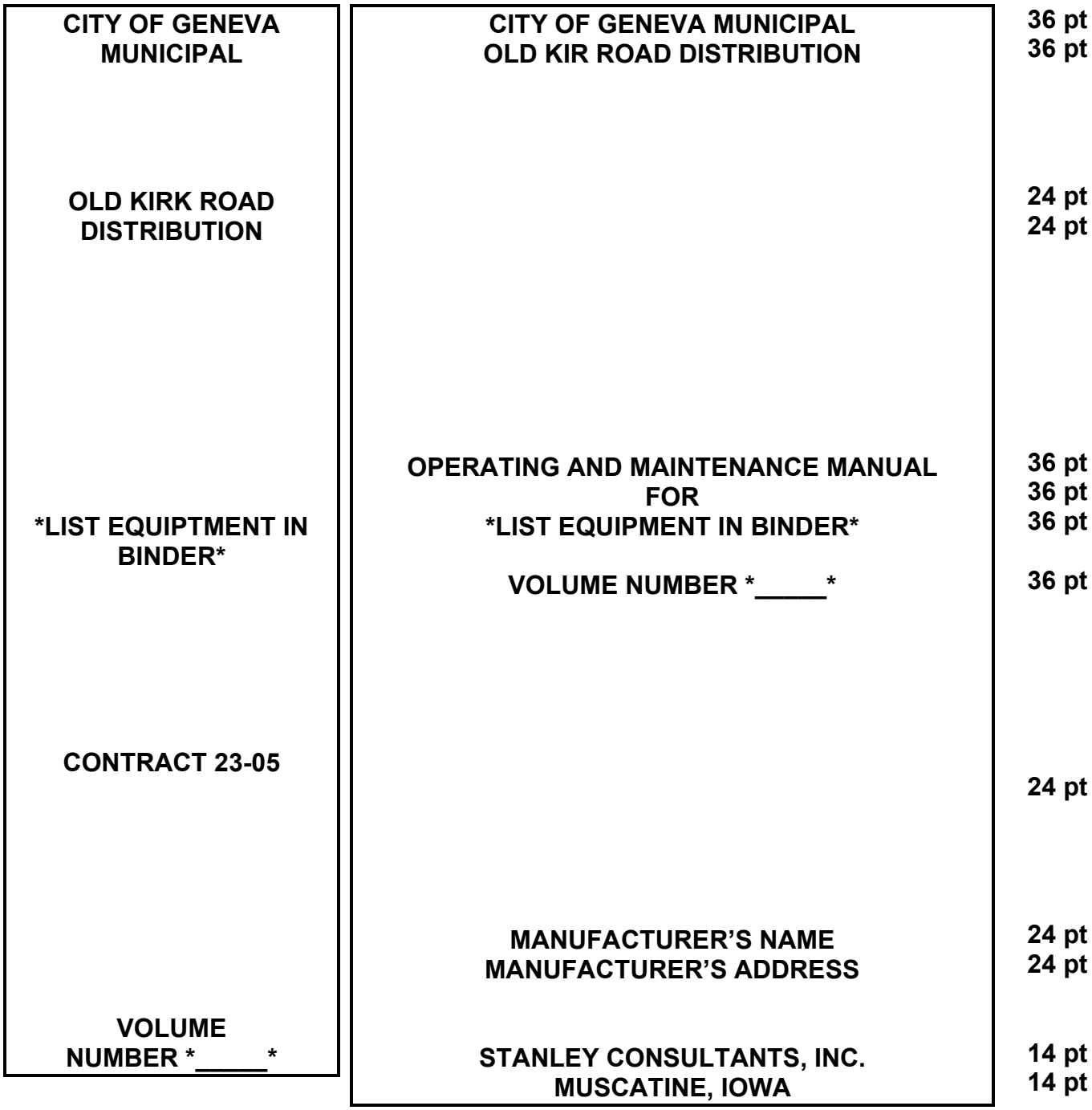
NOT USED

PART 3 EXECUTION

NOT USED

END OF SECTION

OPERATING AND MAINTENANCE MANUAL COVER DIAGRAM



SPINE **COVER**

1. **Imprinting shall be in Arial font.**
2. **Spine printing shall be 12-point.**
3. **Cover printing shall be in point sizes indicated.**

* **If more than one volume is necessary, imprint cover with volume numbers.**

PART 1 GENERAL

1.01 SECTION INCLUDES

A. Cast-in-place concrete including formwork, reinforcing steel and miscellaneous materials.

1.02 INFORMATIONAL SUBMITTALS

A. Product data. Unless otherwise indicated, submit for each type of product provided under work of this Section:

B. Quality assurance data:
   1. Tests, or certificates of compliance with standards specified in this Section at least 14 days prior to commencing concrete placement for:
      a. Cement: From each car from which cement will be used.
      b. Fly ash: From each separate shipment from which fly ash is being used.
      c. Aggregates: For each size aggregate from each source of aggregate, for grading, deleterious substances and soundness.
   2. List of admixtures, joint fillers, sealants, curing compounds, and other manufactured materials proposed identifying manufacturer and type. Provide data on specific items when requested by Owner's Representative.
   3. Testing laboratory reports required at least 14 days prior to commencing concrete placement for each class of concrete and each size aggregate:
      a. Proposed concrete design mix.
      b. Tests on concrete cylinders from trial batch of proposed mix.
   4. Testing laboratory reports for tests on concrete cylinders taken in field.
   5. Maintain drilled pier records. Daily logs shall show drilled pier placement including pier number, shaft diameter, casing placement and removal if necessary, water table, cleaning, inspection, reinforcing and anchor bolt placement, concrete placement, top and bottom elevation of shaft and casing, conditions encountered, and deviations from contract documents. Records shall be signed and dated by person performing work.

C. Submit to Owner's Representative unless noted otherwise.

1.03 ACTION SUBMITTALS

A. Shop Drawings on reinforcing steel. Submit to Owner's Representative unless noted otherwise.

1.04 QUALITY ASSURANCE

A. Contractor shall retain services of qualified independent testing laboratory to perform the following tests:
   1. Obtaining, making samples and trial batches and performing laboratory testing specified.
   2. Establish proposed concrete design mix proportions on basis of either field experience and/or trial mixtures in accordance with ACI 318, Chapter 26, except specific requirements shall conform to requirement of these specifications. Determine and submit supporting data, standard deviation, trial batch tests, required average strength, proportions, air content, and slump range for each mix.
   3. Provide reports to Owner's Representative giving information on materials, concrete design mixes and testing performed.

B. Perform Work in accordance with ACI 117 and 301.

C. Contractor shall retain services of qualified independent testing laboratory to perform the following tests:
   1. Obtaining, making samples and performing laboratory and field testing specified.
   2. Provide reports to Owner's Representative giving information on materials and testing performed.
   3. Reports shall indicate whether or not materials meet specifications.

4. Concrete strength tests:
   a. Comply with ASTM C39/C39M for testing and ASTM C31/C31M or C192/C192M for preparation of cylinders.
   b. Field tests: Sample in accordance with ASTM C172; make and test 3 cylinders from each sample on basis of not less than:
      1) One sample from each day's placement for each class of concrete.
      2) One sample from each 50 cu yd (38 cu m).
      3) One sample for each 5,000 sq ft (460 sq m) of surface area for slabs or walls.
      4) For a given class of concrete, if frequency of testing specified above would provide less than 3 samples, sample at least 3 randomly selected batches or each batch if 3 batches or fewer are required.
   c. Cylinders shall be laboratory cured. Test one laboratory cured cylinder at 7 days and other two at 28 days for average strength.
   d. If tests indicate deficient strength as defined by ACI 318, Contractor shall immediately adjust mix to increase average of subsequent test results and, when directed, perform drilled core testing, ASTM C42/C42M. Testing and remedial work shall be at no additional cost to Owner.
5. Slump tests:
   a. Sample on basis specified above for field strength tests; comply with ASTM C172 and C143/C143M.
   b. If slump exceeds Specifications, promptly remove batch from Work and dispose of off-site at location selected by Contractor. Do not add water in excess of specified water-cement ratio to batch to achieve desired slump.
6. Air content tests:
   a. Sample on basis specified above for field strength tests.
   b. Obtain samples from concrete at point of discharge from chute or pumper hose.
   c. Determine air content by pressure method; comply with ASTM C231.
   d. If air content does not meet Specifications, remove deficient concrete from Work.
7. Temperature tests:
   a. Sample on basis specified above for field strength tests.
   b. Comply with ASTM C1064/C1064M.
   c. If temperature does not meet Specifications, remove deficient concrete from Work.

1.05 DELIVERY, STORAGE, AND HANDLING

A. Cement: Keep clean, dry, and free from weather damage.

B. Aggregates: Stockpile each gradation separately on clean, noncontaminating surface.

PART 2 PRODUCTS

2.01 CEMENT

A. Portland cement: ASTM C150, Type I.

B. High-early-strength portland cement: ASTM C150, Type III. May be used instead of Type I cement at Contractor's option, unless specified otherwise, to achieve 28-day strength at 7 days.

C. White cement: Nonstaining, ASTM C150, Type I.

D. Use only 1 brand of each type of cement.

E. At Contractor’s option, ASTM C595 cement can be used if prior approval from Owner and Engineer is obtained. Contractor shall submit shop drawings for the mix design for approval.

2.02 AGGREGATE

A. Regular aggregate: Strong, durable, well-graded minerals conforming to ASTM C33 requirements for grading, deleterious substances and soundness.

B. Aggregates not conforming exactly to above specifications may be used provided:
   1. Special tests or actual service establish that such aggregates will produce concrete of quality specified.
   2. An Addendum to Specifications is issued prior to receipt of Bids; no deviations will be permitted after receipt of Bids.

C. Coarse aggregate nominal size:
   1. 1-1/2" to No. 4 (38 mm to 4.75 mm): Use for all concrete unless specified otherwise.
   2. 3/4" to No. 4 (19 mm to 4.75 mm): Use for slabs and thin sections and areas where clear spacing between reinforcing bars is less than 3" (75 mm).

2.03 FLY ASH

A. Comply with ASTM C618; Class C including Supplementary Optional Physical Requirements in Table 3. Report chemical analysis of fly ash in accordance with ASTM C311. Evaluate and classify fly ash in accordance with ASTM D5759.

B. Fly ash for total Project shall be obtained from single source.

C. Design concrete mixes to include fly ash in amount of approximately 15% to 20% of cement by weight.

D. May be used at Contractor's option for all concrete.

2.04 WATER

A. Clean, fresh, free from injurious amounts of oil, alkali, acid, salts, organic materials, or other substances that may be deleterious to concrete or steel. Mix water shall comply with ASTM C1602.

2.05 ADMIXTURES

A. Water-reducing and set-controlling admixture, ASTM C494/C494M, type as required. Use for all concrete.

B. Air entraining agent, ASTM C260. Use in accordance with manufacturer's recommendations. Use for all concrete except control building floor slab.

2.06 REINFORCING

A. Bars:
   1. ASTM A615/A615M, Grade 60 (420) deformed bars.
   2. Bend bars cold to conform to required details.

2.07 FORMWORK

A. Wood forms:
   1. Douglas fir, exterior type, concrete form plywood, 5/8" (15 mm) thick minimum, conforming to DOC PS 1, Grade B-B, Class I or II.
   2. Removable metal forms with surfaces equal to Douglas fir, exterior type, concrete form plywood.
   3. Fiber tube forms: Cylindrical fiber reinforced forms.

B. Form ties: Type leaving no metal within 1" (25 mm) of finished surface after removal of forms.

C. Form coating:
   1. Wood forms: Nonstaining mineral oil or commercially produced form-release agent that will not bond with, stain, or adversely affect concrete surfaces and curing, and will not impair bond or adhesion of subsequent treatment of concrete surfaces, "Nox-Crete Form Coating," by Nox-Crete Chemicals, or equal.

2. Metal forms: Treat surfaces as recommended by manufacturer before placing reinforcing.
3. Fiber tube forms: Treat surfaces as specified for wood forms or as recommended by manufacturer.
4. Toxicity/IEQ: Low VOC.

2.08 JOINT MATERIALS

A. Expansion and isolation joint filler: Preformed nonextruding and resilient bituminous type, ASTM D1751; use where shown on drawings.

B. Expansion and isolation joint sealant:
1. Horizontal joints: “Sonolastic SL2,” multi-component polyurethane base by BASF Construction Chemicals, or equal.
2. Vertical joints: “Sonolastic NP-2,” multi-component polyurethane base by BASF Construction Chemicals, or equal.
3. Provide primer as recommended by manufacturer.
4. Use where shown on drawings.

C. Sawed control joint sealant:
1. "Masterfill 300," 2-part flexible 100% solids epoxy joint filler, by BASF Construction Chemicals, or equal.
2. Use for sawed control joints.

2.09 BENTONITE WATERSEALS

A. Size: 1" x 3/4" (25 mm x 19 mm).

B. Use: Where specifically shown.

C. Manufacturer: American Colloid Company "Waterstop-RX Cold Joint Water Stop Volclay Waterproofing Systems," or equal.

2.10 CURING MATERIALS

A. Liquid membrane-forming compound:
1. ASTM C309, Type 1 with fugitive dye, except Type 2 with white pigment for surfaces exposed to direct rays of sun.
2. Do not use compounds containing wax, oil, resin, varnish, or other bases that will prevent bonding of finishes.
3. Use for curing at Contractor's option except where other products are specified for particular application.

B. Plastic film:
1. Polyethylene plastic film, white, nonstaining, conforming to ASTM D2103.
2. Minimum 4-mil (0.1 mm) thickness.
3. Use for curing at Contractor's option except where other products are specified for particular application.

C. Absorptive mat:
1. Cotton fabric, burlap fabric, or burlap-polyethylene material woven or bonded to prevent separation.
2. Material shall be clean and nondetrimental to concrete or finish.
3. Use for curing at Contractor's option except where other products are specified for particular application.

2.11 GROUT

A. Regular grout:
1. One part portland cement to 3 parts fine aggregate with sufficient water to maintain adequate workability. Substitute white cement for normal portland cement to match color of adjacent concrete.
2. Minimum strength: 4,000 psi (28 Mpa) at 28 days.
3. Use for patching.

B. Nonshrink grout:
1. Nonmetallic and free of chloride, gypsum or corrosive-type materials; ASTM C1107, Grade C; formulation suitable for application.
2. Minimum strength: 5,000 psi (34.5 Mpa) at 28 days.
3. Use for grouting beneath baseplates, equipment bases, and where shown.

2.12 CONCRETE DESIGN AND USE

A. Each concrete design mix shall be established in strict accordance with ACI 318 by proportioning on basis of either experience and/or trial mixtures.

B. Strength classifications:

Class	Specified Compressive Strength, f'c	Required Average Compressive Strength, f'cr
B	3,000 psi	4,200 psi
D	4,500 psi	5,700 psi

C. Required average compressive strengths: Produce concrete of average strengths noted above unless test results substantiate a lower permissible average strength based on standard deviation criteria set forth in ACI 318. Strengths listed above are 7-day strengths for concrete using high-early-strength cement and 28-day strengths for concrete using other type cements.

D. Maximum water-cement ratio: 0.48 by weight except for Class B concrete. Where pozzolan fly ash is used, water-cement plus pozzolan ratio shall not exceed specified ratio.

E. Air entrainment: Concrete shall contain entrained air within following limits.

Nominal Maximum Aggregate Size, in.	Total Air Content, Percent By Volume	
	Exposure Class F1	Exposure Classes F2 and F3
3/8	6	7.5
1/2	5.5	7
3/4	5	6
1	4.5	6
1-1/2	4.5	5.5
2	4	5
3	3.5	4.5

F. Workability:
1. Proportions of concrete shall produce a mixture, suited to placement methods, which will work readily into corners and angles of forms and around reinforcement and embedded items. Segregation of materials or presence of free water will not be permitted.
2. Slump of concrete: Use minimum practical; vary within limits given to suit placement conditions; in no case is slump to be increased by addition of water in excess of design mix quantity:

Type of Construction	Slump, in.	
	Minimum	Maximum
All concrete unless noted otherwise	2	5
Caissons	5	7
Tremie placement	7	9
Building columns	3	5

G. Concrete use:
1. Class D: Use for all concrete unless specified otherwise.
2. Class B: Use for fill concrete and thrust blocks.

H. Water-soluble chloride ion content, maximum: Exposure Categories C0, C1, and C2 shall comply with requirements of Chapter 4 of ACI 318.

I. Concrete subject to Exposure Class F3: Comply with requirements for maximum percent of total cementitious materials by weight as provided in Chapter 4 of ACI 318.

J. Concrete Encased Duct Banks:
1. All power raceway concrete, or where shown on drawings, shall use concrete as noted in this specification, except it shall be installed with an air content not to exceed 2%, have a slump of 7” to 9” (175 mm to 225 mm), have a design compressive strength no less than 4,000 psi at 28 days, and shall not have any air entrainment added. Concrete for duct banks shall have a thermal resistivity Rho (ρ) of less than 70.
2. The concrete Supplier shall provide the thermal resistance properties with the mix design submittals; or provide test batches to determine the thermal resistance.

2.13 READY-MIX CONCRETE

A. Provide concrete from an established, approved ready-mix plant. Ready-mix plant equipment and facilities shall be certified in accordance with NRMCA QC-3.

B. Equipment and methods: Conform to ASTM C94/C94M.

2.14 ACCESSORIES

A. Curing compounds, sealers, and coatings:
1. Water-based.
2. Toxicity/IEQ: Low VOC.

B. Isolation joints: Rubber.

PART 3 EXECUTION

3.01 PREPARATION

A. Construct forms strong, straight, adequately braced and securely fastened.

B. Remove laitance from previously placed or existing concrete; thoroughly clean surface before placing additional concrete.

C. Apply form coating on formwork in accordance with manufacturer's instructions. Apply prior to placing reinforcing steel, anchoring devices, and embedded items.

D. Do not apply form coating where concrete surfaces are scheduled to receive special finishes which may be affected by agent.

3.02 CONCRETE CONSTRUCTION TOLERANCES

A. Foundation location and dimension:
   1. Centerlines of slabs and drilled pier foundations shall be within ±1” (±25 mm) of location specified on foundation location plan.
   2. Horizontal distances between center to center of adjacent piers for same structure shall be within ±1” (±25 mm).
   3. Elevation of piers shall be within ±1/4” of elevations shown on drawings.
   4. Elevation of piers within a group of piers, for an individual structure shall be within ±1/8” (±3 mm).
   5. Maximum deviation of axis of pier excavation from vertical shall not be greater than 1-1/2” (38 mm) in 10’ (3 m).
   6. Slabs shall be true planes within 1/4” in 10’ (3 m), as determined by a straight edge placed anywhere on slab in any direction.

B. Anchor bolt and bolt clusters:
   1. Horizontal distance between centers of adjacent anchor bolts shall be within ±1/16” (±2 mm).
   2. Horizontal distance between diagonally opposite anchor bolts shall be within ±1/8” (±3 mm).
   3. Horizontal distance between centers of adjacent clusters, for same structure, shall be within ±1/4” (±6 mm).
   4. Centers of individual anchor bolts shall not deviate from lines parallel with faces of structure by more than 1/8” (3 mm) in 12” (300 mm) due to rotation of set or from other causes.
   5. Elevation of top of lowest anchor bolt in a set shall not be less than specified, and that of highest bolt shall not exceed specified elevation by more than 1/4” (±6 mm).

C. Reinforcement:
   1. Spacing between adjacent bars and distance between layers of bars shall not vary from position shown on Drawings by more than tolerances specified in ACI 117.
   2. Concrete cover: Minimum concrete cover of main reinforcing shall be as shown or specified. Allowable variation for minimum cover shall be as specified in ACI 117.

3.03 PLACING CONCRETE

A. Clean transporting equipment, reinforcing, and embedded items before placing concrete. Remove water and debris from places to be occupied by concrete.

B. Place no concrete until forms, reinforcing, and embedded items have been verified as adequately supported and accurately placed. Place no concrete over water-covered, muddy, or frozen soil.

C. Immediately remove concrete where water, soils, or other deleterious substances are permitted to mix with concrete, form or embedded item movement occurs, or inadequate consolidation is obtained.

D. Hot weather concreting:
   1. Applies to concrete placed when ambient temperature exceeds 90°F (32°C).
   2. Conform to ACI 305R recommendations and requirements.

E. Cold weather concreting:
   1. Applies to concrete placed when ambient temperature is below 40°F (4°C).
   2. Conform to ACI 306R recommendations and requirements.
   3. If temporary heating facilities used are of type which produce an atmospheric condition of high carbon dioxide content, seal off concrete in such manner that no damage will result to concrete surface.

F. Employ best industry practices to prevent segregation during placing. Do not drop concrete more than 5' (1500 mm). Use tremied or pumped concrete to provide proper placement. Place in layers approximately 18" (450 mm) deep.

G. Place concrete continuously in each section until completed. Permit not more than 30 minutes between depositing adjacent layers of concrete within each section, unless an acceptable set retarder is used in concrete mix.

H. Thoroughly compact, puddle, and vibrate concrete into corners and around reinforcing and embedded items. Use internal vibration where size of section permits.

I. Maintain concrete placing temperature between 50°F (11°C) and 90°F (32°C) except as specified for hot and cold weather concreting.

J. Place sections of concrete in sequence that eliminates shrinkage effects to greatest extent practicable.

K. Protect concrete from injury due to sun, cold weather, running water, construction operations, and other causes until properly cured.

3.04 REINFORCEMENT PLACEMENT

A. Remove scale, loose flaky rust, dirt, grease, curing compound, and other coatings that would impair bond.

B. Install slab-reinforcing bars in correct position by use of preformed bolsters and spacers, except concrete blocks may be used to position bars in concrete placed on grade. Concrete block shall have compressive strength equal to that of surrounding concrete.

C. Space bars properly and tie securely in position before placing concrete. Tack welding to keep reinforcing in place is not permitted.

3.05 DRILLED CAISSON INSTALLATION

A. Following requirements shall be met before placing reinforcing and concrete:
   1. Drilled caisson excavation has been inspected by Owner’s Representative.
   2. Foreign materials such as mud, sand, debris, or ice have been removed from hole. Water has been removed from hole or provisions have been made to place concrete seal under water by standard tremie or pumped concrete.
   3. Temporary steel casing, if required, has been installed.
   4. Accuracy of placement has been verified by Contractor.

B. After inspection by Owner's Representative, place reinforcing immediately and place concrete without unnecessary delay. No hole shall be permitted to stand overnight after being prepared for concrete placement.

C. Reinforcing cages shall be assembled above ground and inspected prior to being installed in holes. Exercise care to prevent deformation of reinforcing steel cage or dislodgement of material into hole. Promptly remove material "knocked" into hole.

D. Support reinforcing steel away from sides of shaft by suitable means to assure concentric alignment in shaft.

E. Place concrete in following manner:
   1. "Free-fall" method of concrete placement through a hopper with short downpipe will be permitted if concrete does not strike sides of shaft or reinforcing cage. Otherwise, place concrete by tremie or long downpipe to prevent segregation and to prevent disturbing reinforcing.
   2. It is anticipated that caissons will be in a completely dry condition when concrete is placed, and every effort shall be made to establish such a condition. If inflow of water from bottom or sides of excavation cannot be shut off, add additional fines and cement to mix and place concrete through still water by means of standard tremie or concrete pump to height sufficient to perfect seal. Remove water and place remainder of concrete in caisson using acceptable method. Under no circumstances shall concrete be allowed to drop directly on water. Notify Engineer of proposed method prior to placement of concrete under water.
   3. Concreting for any caisson shall be a continuous operation.
   4. Steel casing pipe may be withdrawn as concrete rises. Exercise extreme care that casing withdrawal does not cause disturbance of surrounding soil or lifting of concrete section. Maintain

bottom elevation of casing pipe a minimum of 3'-0" (1 m) below top elevation of concrete or as required to prevent displacement of concrete by surrounding soil or ground water as withdrawal progresses.

5. Extraction of casing shall be performed keeping casing continuously plumb and shall proceed to allow continuous observation of interior slumping of concrete.
6. Vibrate concrete in top 5' (1.5 m) of each caisson but only after casing has been removed or when casing is permanent.
7. Install forms to prevent unstable soil at top of shaft from contaminating upper concrete and to form top portion of piers which are above grade.

3.06 CONSTRUCTION JOINTS

A. Install only where shown or where specifically permitted.

B. Provide keyway 1-1/2" (38 mm) deep covering approximately 1/3 area of construction joint, unless shown otherwise.

C. Location where not shown:
1. Contractor shall locate joints using the following guide for Owner's Representative's review.
2. Near center of self-supported slabs, beams, and girders unless beam intersects girder at this point, in which case joints in girders shall be offset a distance equal to twice beam width.
3. Underside of deepest beam at walls and piers.
4. At other places least likely to impair strength and appearance.
5. Provide additional shear reinforcement where requested by Owner's Representative.
6. Maximum pour unit shall be less than 50' (15 m) in any dimension unless specified otherwise.

D. A delay, until concrete is no longer plastic, shall occur after placing concrete for columns or walls before placing concrete for slabs, beams, or girders supported thereon.

3.07 EXPANSION AND ISOLATION JOINTS

A. Formed joints: Make exposed edge of concrete slightly rounded with edger at joints to contain joint sealant.

B. Install materials in accordance with manufacturers' instructions. Set preformed material securely in place before placing concrete.

C. Install joint filler to within joint width (1/2" (12 mm) minimum) of exposed surface. Fill remainder of joint with joint sealant.

3.08 WATERSTOPS

A. Hold securely in proper position by tying with wire, clamping between members, or other method to prevent waterstop from being moved out of position or bent over due to placement of concrete.

B. Join ends by heat-sealing in accordance with manufacturer's recommendations.

3.09 EMBEDDED ITEMS

A. Install items required under this contract to be embedded in concrete. Install items required by others for embedding in concrete, if so instructed before placing concrete.

B. Fasten embedded items securely in proper position before placing concrete.

C. Conduit or pipe embedded in slabs or walls:
   1. Locate in center of slab or wall and space not closer than 3 diameters on center; locate to avoid impairing strength of concrete.
   2. Coordinate placing of reinforcing with conduit or pipe location. Do not cut reinforcing to clear conduit or pipe.

D. Anchor bolt placement:
   1. If excavations are completed without casings installed, or if the soils will hold open the upper portions where the anchor bolts are to be set, the anchor bolts shall be installed prior to placement of concrete around them.
   2. If excavation require that temporary casings be removed when concrete has been poured past the lower level of the anchor bolts, some portion of the anchor bolt assembly is 'pushed' into the concrete to the required embedment depth. To ensure proper consolidation around the anchor bolts:
      a. The height at which the concrete is poured before removing the last casing should be limited as much as possible, thereby minimizing how much of the anchor bolt assembly is pushed in.
      b. Concrete inside the anchor bolt assembly should be vibrated to help re-consolidate around the bottom of the anchor bolts, prior to the final pour.

E. Aluminum pipe shall not be embedded in concrete. Where aluminum projects into or rests against surface of concrete, coat surfaces of aluminum to prevent direct contact with concrete.

3.10 GROUTING

A. Roughen concrete surfaces by light chipping to remove laitance to approximately 1/2" (12 mm). Do not expose reinforcing steel.

B. Remove materials which might interfere with bond; prepare surfaces in strict conformance to manufacturer's instructions.

C. Mix, place, and cure grout in strict accordance to manufacturer's instructions.

D. Remove shims after grout is placed. Fill shim voids with grout.

3.11 FINISHING

A. Flatwork:
   1. Tamp concrete to force coarse aggregate down from surface.
   2. Screed with straightedge, eliminate high and low places, bring surface to required finish elevations; slope uniformly to drains.
   3. Dusting of surface with dry cement or sand during finishing operations is not permitted.
   4. Apply curing compounds and similar materials in accordance with manufacturer's instructions during or after finishing.
   5. Finish surfaces within following tolerances as measured with a 10' (3 m) straightedge:
      a. Sidewalks: 5/16" (8 mm).
      b. Other slabs: 3/16" (5 mm).
      c. Top surfaces of structures other than slabs: In accordance with ACI 117.
   6. Trowel finish:
      a. Float surface to true, even plane.
      b. Steel trowel to smooth, uniform finish, free of defects; steel trowel second time to final burnish finish; use edger on exposed edges.
      c. Use on floor slabs.
   7. Float finish:
      a. Float surface to true, even plane.
      b. Float second time to uniform finish with wood or cork float; use edger on exposed edges.
      c. Use on tops of structure foundations.

8. Roughened finish:
   a. Roughen surface with rake or stiff broom to minimum depth of 1/4" (6 mm).
   b. Use on surfaces to receive additional concrete or grout.
9. Broomed or belted finish:
   a. Float surface to true, even plane.
   b. Steel trowel to smooth, uniform surface.
   c. Broom with fiber brush or drag burlap belt across surface in direction transverse to traffic flow.
   d. Use on sidewalks, paving, and exterior slabs at door entrances.

B. Formed surfaces:
1. Remove fins, projections, and loose material.
2. Clean surfaces of form oil.
3. Patch honeycomb, aggregate pockets, voids, and holes as follows:
   a. Chip out until sound concrete is exposed to minimum depth of 1" (25 mm).
   b. Prepare patching mortar with approximately 2 parts normal portland cement, one part white cement, 9 parts fine aggregate; vary proportions of cement as necessary to match color of adjacent concrete.
   c. Saturate surfaces with water and fill cavities with patching mortar.
4. Fill holes left by form ties with patching mortar.
5. Cure patches as specified for concrete.

3.12 FORM REMOVAL

A. Minimum time before removal after placing concrete, unless permitted otherwise:
1. Footings: 24 hours.
2. Walls, piers, and columns: 48 hours (24 hours for metal-lined forms).
3. Self-supported beams and slabs: 14 days.
4. Time specified above represents cumulative time during which temperature of concrete is maintained above 50°F (11°C) and for concrete without set-controlling admixtures.

B. Reduce removal time by half for high-early-strength cement concrete.

C. In any event, do not remove supporting forms and shoring until concrete has acquired sufficient strength to safely support own weight plus construction loads.

D. Take care when removing forms that concrete is not marred or gouged and that corners are true, sharp and unbroken.

E. Reshoring and backshoring: Conform to requirements of Section 2, ACI 301.

3.13 CURING

A. Cure all concrete; begin curing as soon as possible after placement of concrete.

B. Use of liquid membrane-forming curing compound permitted for all concrete except where product would impair bond of other applied materials to surface, or where other method of curing is specified for particular use.

C. Plastic film curing:
1. Dampen surface of concrete and lay plastic film with minimum 6" (150 mm) side laps and free of wrinkles; tape side laps.
2. Hold film in place with lumber or use similar provisions to prevent exposure of concrete for 7 days after placing.
3. Immediately repair tears in film.

D. Water curing:
1. Keep concrete continuously wet for 7 days after placing.
2. Use on concrete surfaces not receiving compound or plastic film curing.

3. Clean, nonstaining absorptive mat may be used with water curing.
4. Do not use for curing cold weather concrete.

3.14 CURING AND SEALING COMPOUND

A. Initial curing and sealing application shall be applied immediately after concrete has sufficiently set to allow application without damaging surface.

B. Second application shall be applied 28 days after slab is cast.

C. Final application shall be applied immediately before turning the slab area over to Owner.

3.15 WASTE MANAGEMENT

A. Formwork: Reuse forms to greatest extent possible without damaging structural integrity of concrete and without damaging aesthetics of exposed concrete.

B. Mixing equipment: Return excess concrete to supplier; minimize water used to wash equipment.

C. Moisture curing: Prevent water run-off.

3.16 SITE CLEANUP

A. All excavated materials from installation of foundations shall be removed to a suitable fill site obtained by the Contractor, in accordance with all environmental and permitting requirements.

B. Excess concrete shall be disposed of in accordance with environmental and permitting requirements.

C. Foundation work outside of the Company property shall be restored to original conditions or as defined by the Contract documents.

END OF SECTION

1) A. Klimisch
2) J. Varone

PART 1 GENERAL

1.01 SECTION INCLUDES

A. General electrical requirements for equipment and services including, but not limited to:
1. Equipment safety grounding.
2. Alarm and trip contacts.
3. Outlet, pull, and junction boxes.
4. Plates and covers.
5. Packaging, identification, and tagging.
6. Nameplates.
7. Trip setting coordination.
8. Grounding and bonding.
9. Fireproofing and fire ratings.
10. Testing and demonstration.

1.02 INFORMATIONALSUBMITTALS

A. Submit with Bid: Description of manufacturer’s standard factory test procedure for logic systems.

B. Product Data:
1. List of proposed material identifying manufacturer, type and model number for equipment to be provided for complete job.
2. Manufacturer’s catalog sheets marked to indicate specific type, model or catalog number of equipment to be provided.
3. Equipment drawings, elementary diagrams, schematics, wiring, performance curves, instruction manuals, and all other documentation necessary for complete description of material being supplied and as required to support installation, commissioning and maintenance of equipment. Manufacturer's standard connection diagram or schematic showing more than one scheme of connection will not be accepted.
4. Manufacturer’s technical descriptions, product data sheets, and applicable manuals for use in protective device system coordination including:
a. Fuse manufacturer, type, ratings, and protection curves.
b. Circuit breaker manufacturer, type, trip setting ranges, and protection curves.
c. Relay trip device ranges, curves, and setting manuals.
d. Transformer damage curves.
e. CT ratios and saturation curves.
f. VT ratings.
5. List of recommended spare parts required for equipment start-up, commissioning and operation.
6. List of special maintenance tools required for installation and operation of equipment.
7. If necessary, provide additional data to clearly demonstrate that proposed alternate equipment meets or exceeds equipment as specified.
8. When requested by Engineer, submit system information, including but not limited to, utility feeders, existing relays, circuit breakers, fuses, and transformers.

1.03 CLOSEOUT SUBMITTALS

A. Operation and maintenance manuals. Provide at minimum:
1. Itemized equipment list.
2. General description and technical data.
3. Receiving, storage, installation, and testing instructions.
4. Operating and maintenance procedures.
5. Complete set of final drawings requiring no further action.
6. Complete documentation of inspections and tests performed, including logs, curves, and certificates. Documentation shall note any replacement of equipment or components that failed during testing.
7. Spare parts list.

8. Lubrication recommendations.
9. Warranty information.

1.04 MAINTENANCE MATERIALS

A. Extra materials: Provide touchup paint in same type and color to repair at least 25% of finish-painted equipment surface. Paint shall be sufficient to perform touch-up painting in accordance with shop-applied material instructions for repair painting.

B. Each piece of equipment shall be furnished with special tools as required for installation, maintenance, and dismantling of equipment.
   1. Furnish in quantities as necessary to complete work on schedule.
   2. Tools shall be new and shall become property of Owner.
   3. Tools and intended use shall be identified in assembly instructions. Tools shall only be used for their intended purpose.

1.05 QUALITY ASSURANCE

A. Manufacturer qualifications:
   1. Manufacturer of equipment specified shall be recognized in industry for normally supplying this type of equipment.
   2. Manufacturer shall be ISO certified.
   3. When requested by Engineer, provide list of similar equipment installations that have employed identical equipment from manufacturer.

B. Installer qualifications:
   1. Installer shall be skilled in trade and shall have thorough knowledge of products and equipment specified.
   2. Cutting, drilling, trenching, or channeling necessary to properly install equipment shall be performed by competent skilled crafts people in safe, professional manner.

C. Regulatory requirements: Perform electrical construction in accordance with NEC, local and state codes as applicable to job site.

D. Materials and equipment furnished for permanent installation shall be new, unused, and undamaged.

E. Asbestos not allowed.

F. Parts shall be manufactured to American industry standard sizes and gages to facilitate maintenance and interchangeability. Metric sized components not allowed unless specifically requested and approved.

1.06 DELIVERY, STORAGE, AND HANDLING

A. Pack, ship, handle, and store in accordance with manufacturer’s requirements.

B. Ship equipment completely factory assembled unless physical size, arrangement, configuration, or shipping and handling limitations make this impracticable. Shipping splits and required field assembly shall be identified with equipment submittals.

C. Costs associated with sections, accessories, or appurtenances requiring field assembly shall be Contractor’s responsibility.

D. Separately packaged parts and accessories shall be consolidated and shipped together with equipment. Mark each container clearly to identify contents and as belonging with main equipment.
   1. Provide individual weatherproof itemized packing slips attached to outside of each container for contents included. Provide duplicate inside each container.
   2. Attach master packing list, covering accessory items for equipment, to main piece of equipment.

3. Mark each container with project identification number for equipment and container number followed by total number of containers.

E. Equipment shall be suitably protected during shipment, handling, and storage. Damage incurred during shipment shall be repaired at no cost to Owner.

F. Protect coated surfaces against impact, abrasion, and discoloration.

G. Electrical equipment and insulation systems shall be protected against ingress of moisture. Use space heaters if necessary to protect against moisture.

H. Exposed threads shall be greased and protected.

I. Pipe, tube, and conduit connections shall be closed with rough usage plugs. Seal and tape open ends of piping, tubing, and conduit.

J. Equipment openings shall have covers, and taped to seal equipment.

K. Store materials in clean, dry place. Protect from weather, dirt, water, construction debris, and physical damage in accordance with manufacturer's instructions.

1.07 SCHEDULING

A. Coordinate with Owner early and late shipping and delivery schedules for items requiring storage and handling at Site.

1.08 WARRANTY

A. Electrical equipment shall be provided with manufacturer's standard warranty, but not less than 1 year.

PART 2 PRODUCTS

2.01 DESIGN CRITERIA

A. Service conditions: Provide equipment and material suitable for intended service and installation at location indicated.

2.02 EQUIPMENT SAFETY GROUNDING

A. Install exposed raceway electrically continuous. Conduit and tray shall not be considered to be only ground conductor.

B. Furnish equipment that is part of integral shipping unit or assembly with bare copper ground conductor extending to central ground connection lug. Lug shall be suitable for field connection to local ground. Electrical equipment shall be considered any device that is energized.

C. Single-point ground connections required for proper operation of electronic equipment shall be insulated from equipment safety ground. Such connections shall be extended, using insulated cable, to single insolated termination point suitable for field connection to appropriate ground system.

D. Conduits containing power circuits shall have ground conductor installed inside conduit. Ground conductor shall be bonded to equipment or tray or duct ground at both ends.

E. Provide ground bushing on each conduit containing power circuit. Connect ground bushings together inside enclosure and to enclosure ground lug or ground bus.

1. Use No. 8 AWG conductor for ground bushings trade size 1-1/2” (38 mm) and smaller.
2. Ground bushings larger than 1-1/2” (38 mm) shall be sized in accordance with requirements of NEC, but in no case shall bushings be smaller than No. 8 AWG.

F. Ground conductor: Uninsulated, Class B standard, round soft drawn uncoated copper as defined in ICEA S-19-81, unless specified otherwise.

G. Hardware: Clamps, bolts, washers, nuts, and other hardware used with grounding conductor shall be copper, copper alloy, high copper alloy, or silicon bronze.

2.03 IDENTIFICATION AND TAGGING

A. Conduits inside manholes, hand holes, building entrance pull boxes, and junction boxes shall be provided with 19-gage (1 mm) stainless steel identification tags, with 1/2” (13 mm) stamped letters and numbers.
1. Attach conduit Identification tags with stainless steel banding. Tag position shall be readily visible for inspection.
2. Tags shall provide, as minimum:
a. Circuit origination and destination.
b. Voltage.
c. Number of conductors in accordance with phase.
d. Number of phase conductors.

B. Cables passing through or terminating in manholes, hand holes, and pull boxes shall have 19-gage (1 mm) stainless steel identification tags with stamped lettering that provides circuit identification information.

C. Provide power, control, and instrumentation cables with permanent type identification markers with typed cable numbers and from/to information at each point of termination. Cable numbers and from/to information will be provided for circuits not associated with low-voltage panelboards.
1. Position cable markers to be readily visible for inspection.
2. Cable numbers shall match those as shown on Drawings.
3. Provide wire tags at each termination point for each conductor. Tags shall be permanent, wrap around, heat-shrinkable type with typewritten information.

D. Color-code power conductors with electrical tape or provide with colored jacket.
1. Source voltage of 12.47Y/7.2 kilovolts:
a. Phase A: Red.
b. Phase B: White.
c. Phase C: Blue.

2.04 HARDWARE

A. Provide hardware including, but not limited to, anchor bolts, nuts, washers, expansion anchors, wire nuts needed for installation.

B. Hardware smaller than 3/4” (19 mm) shall match NEMA standard size bolt holes on motors and electrical equipment.

2.05 SOURCE QUALITY CONTROL

A. Factory-test cables in accordance with AEIC CS8.

B. Submit certificate of compliance and manufacturer’s test reports showing results of tests required by AEIC CS8. Reports shall include reel numbers for tests performed on each length of completed cable.

C. Include manufacturer's flame test data in test reports. Prototype data is acceptable instead of flame testing, as long as conductor size, insulating and jacketing materials, and insulation and jacket thickness are same as worst-case flame test configuration being provided.

PART 3 EXECUTION

3.01 EXAMINATION OF SITE

A. Contractor shall be responsible for familiarity with Project Site conditions. Equipment furnished and installed shall be capable of withstanding most severe conditions that will be encountered.

3.02 PROTECTION OF WORK

A. Protect installed Work and provide temporary and removable protection for installed products. Control activity in immediate work area to prevent damage.

B. Damage occurring to building or equipment during installation shall be repaired or replaced to conditions existing prior to damage at no additional cost or delay to project or Owner.

3.03 INSTALLATION

A. Install equipment and materials in accordance with manufacturer's recommendations and Drawings.

B. Details for equipment and systems installed in accordance with industry standard techniques will not be furnished.

C. Installation details furnished on Drawings shall be followed unless found to be unsafe, inappropriate for equipment specified, or unachievable due to site conditions.

D. Substations, switchgear, motor control centers, and similar equipment located outdoors shall be permanently sealed at base. Openings into equipment shall be screened or sealed as to prevent entrance of birds, rodents, and insects the size of wasps and mud daubers.
   1. Sealing material at base shall be concrete grout.
   2. Small cracks and openings shall be sealed from inside with silicone sealant.
   3. Large openings shall use galvanized screen mesh.

3.04 CABLE

A. Prior to installation of each cable or cable group into assigned raceway, verify that raceway has been correctly sized.
   1. Where raceway is not indicated in circuit schedule or on Drawings, size in accordance with requirements of NEC.
   2. If raceway size indicated on Contract Documents is inadequate, notify Engineer.
   3. Perform visual inspection for flaws, breaks, or abrasions in cable sheath as cable leaves reel. Pulling speed shall be slow enough to permit inspection.
   4. Damage to sheath or finish of cable shall be sufficient cause for rejecting cable.
   5. Cable damaged during installation shall be replaced at no expense to Owner.

B. Replace cables pulled into wrong raceway or cut too short to rack and train.

C. Do not reinstall cables installed in wrong raceway and removed. Discard cables unless inspected and accepted by Owner's Representative in writing.

D. Carefully lay or pull circuits in cable tray so neither cables nor tray is damaged.

E. Protect cables from dirt, water, oil, damaging chemicals, and from physical injury prior to, and during installation.

F. Cables shall be cut sufficiently long to conform to contour of trays, with particular attention paid to vertical inside bends.

G. Perform fishing and pulling with flexible round metal tape, CO2 propelled polyethylene cord, nylon rope, or manila rope.

H. Cable damage caused by improper pulling tension and excessive sidewall pressures shall be considered for any cable pulls that require use of mechanized cable pulling machine, whether installed underground or overhead.
   1. NEC requirements shall be used as guideline. Calculations shall be performed for duct bank runs over 300’ (90 m), and for installations in conduit over 100’ (30 m).
   2. Monitor pulling tension during installation of cable. Tension shall not exceed maximum recommended by cable manufacturer.
   3. To avoid damage from excessive sidewall pressure at bends, pulling tension shall not exceed cable manufacturer’s recommendation.
   4. Pulling mechanisms, manual or power type, shall have rated capacity in tons legibly marked on mechanism.
   5. During installation, observer shall constantly watch dynamometer and record maximum tension achieved during pull.
      a. If excessive strain develops, stop pulling operation at once. Determine difficulty and correct.
      b. Provide records of dynamometer readings to Engineer.
      c. Inform Owner prior to cable pulls.
   6. Do not use woven wire cable grips. Only use pulling eyes for pulling cables.
   7. As soon as cable is pulled into place, remove pulling eyes and reseal cable.

I. Insert reliable nonfreezing type of swivel or swivel connection between pulling rope and eye to prevent twisting under strain.

J. Only use lubricants as recommended by cable manufacturer. Water-based lubricants not allowed.

K. Outside of each cable reel shall be carefully inspected. Remove protruding nails, fastenings, or other objects that might damage cable.
   1. Perform visual inspection for flaws, breaks, or abrasions in cable sheath as cable leaves reel. Pulling speed shall be slow enough to permit inspection.
   2. Damage to sheath or finish of cable shall be sufficient cause for rejecting cable.
   3. Cable damaged during installation shall be replaced at no expense to Owner.

L. Permanent radius of each bend after cable installation shall be in accordance with manufacturer's recommendations.

M. Cable supports and securing devices shall have bearing surfaces located parallel to surfaces of cable sheath. Install to provide adequate support without deformation of cable jackets or insulation.

N. Provide adequate cable end lengths. Properly install in junction boxes and manholes to avoid longitudinal strains and distorting pressures on cable at conduit bushings and duct end bells.

O. Final inspection shall be made after cables are in place. Where supports, bushings, and end bells deform cable jacket, provide additional supports.

P. Splices, joints, and connections shall be made only in accessible junction boxes in accordance with methods specified and instructions of cable manufacturer. Splices not allowed unless shown on Drawings.

3.05 GROUNDING AND BONDING

A. Electrical system and equipment grounding shall be installed in accordance with NEC and shall conform to following, where applicable:
   1. Ground conductors shall be bare or green-insulated in accordance with NEC.

2. Cable shall be soft-drawn copper or copper bar, sized in accordance with drawings and NEC, but not smaller than No. 12 AWG.
3. Ground cable splices and joints inaccessible upon completion of construction shall meet requirements of IEEE 837 and shall be exothermic weld or compression system type.
4. Ground cable near base of structure shall be in undisturbed earth and as far from structure as excavation permits, but not closer than 6” (150 mm).
5. Copper ground conductor in addition to conduit connection shall ground each piece of electrical equipment.
6. Copper or high-conductivity copper alloy ground lugs or clamps shall make ground connections to equipment and ground buses. Connections to enclosures not provided with ground buses or ground terminals shall be made by clamp-type lugs added under permanent assembly bolts or under new bolts drilled and added through enclosures other than explosionproof, or by grounding locknuts or bushings. Ground cable connections to anchor bolts; against gaskets, paint, or varnish; or on bolts holding removable access covers not permitted.
7. Ground conductors on equipment shall be formed to contour of equipment and firmly supported.
8. Ground rods not described elsewhere shall be minimum 5/8” (16 mm) diameter by 10’ (3.0 m) long, with copper jacket bonded to steel core.
9. Make connections to ground grid where shown on Drawings.
10. Verify connections by performing continuity checks.

B. Cable racking shall be connected to ground.

3.06 STARTUP AND TESTING

A. Clean equipment interiors and exteriors prior to start-up and testing.

B. Unless specified otherwise, tests performed shall be standard tests listed by ANSI/IEEE for intended equipment.

C. Equipment shall be checked and placed in service ready for operation.

D. Circuits shall be electrically tested after installation. Test power and motor circuits prior to final connection to equipment. Splices shall be complete prior to testing.
1. Provide equipment and labor required for testing.
2. Circuit failing to test satisfactorily shall be replaced or repaired, and retested at no additional cost to Owner.
3. Check power and motor circuits, dc power, and control circuits for:
   a. Correct terminations.
   b. Continuity.
   c. Unintentional shorts and grounds.
4. Check power conductors for correct phasing.
5. Motor circuits shall be checked for proper rotation and motors "bumped" to verify correct machine rotation.
6. Control, instrumentation, and thermocouple wire shall be checked for correct termination, continuity, freedom from shorts or grounds, and identification.
7. Current transformer wiring shall be loop checked by injecting current at one end of loop and checking with clip-on ammeter at each field termination point to assure continuity and phase identification.
8. Voltage transformer wiring shall be tested by applying voltage at one point and checking with voltmeter phase rotation meter and phase angle meter at each field termination point to assure continuity, identification and phase shift.

3.07 DEMONSTRATION

A. Final start-up and check out shall be completed prior to Owner acceptance of project.

B. Electrical installation shall be complete in every detail and capable of normal operation in presence of Owner or Owner's Representative to verify its readiness.

END OF SECTION

1) E. Cole
2) W. Ullom

PART 1 GENERAL

1.01 SECTION INCLUDES

A. Below-grade conduit, boxes, and associated accessories for support, securing, and protection of electrical wiring.

1.02 INFORMATIONAL SUBMITTALS

A. Product Data:
1. List of proposed materials identifying manufacturer and type to be furnished.
2. Manufacturer's catalog sheets, marked as necessary to indicate specific type, model or catalog number for equipment to be furnished for project.

B. Quality assurance data:
1. Component and accessories data sheets.
2. Installation information.

C. Such other similar information as Engineer may request.

1.03 ACTION SUBMITTALS

A. Shop Drawings: Manhole and hand hole dimensional layouts.

1.04 QUALITY ASSURANCE

A. Manufacturer’s qualifications:
1. Manufacturer shall be manufacturer of major components within assembly and shall be ISO certified.
2. Manufacturer shall have produced similar equipment for a minimum period of 5 years.

B. Regulatory requirements
1. Equipment shall be designed and manufactured in accordance with applicable requirements of following; NFPA 70; ANSI C80.1, C80.3, C80.4, C80.5; UL 1, UL 6, UL 360, UL 651, UL 797, UL 870, UL 1242; and NEMA TC2, TC3, TC6, TC9, and RN1.
2. Standards of foreign organizations shall not be used without written approval from Engineer.

PART 2 PRODUCTS

2.01 SYSTEM DESCRIPTION

A. Raceway systems and accessories include, but shall not be limited to:
1. Direct buried ducts.
2. Concrete encased ducts.
3. Cable trench.
4. Elbows, fittings, and accessories.
5. Hardware for support, securing, and protection.
6. Pulling and switch vaults and handholes.
7. Trenching and backfilling.

2.02 RIGID METAL CONDUIT, STEEL (RGS)

A. Material: Mild steel tube with continuous welded seam in accordance with ANSI C80.1 and UL 6.

B. Exterior and Interior protective coating: Metallic zinc applied by hot-dip galvanizing or electro-galvanizing. Apply final coat of transparent zinc chromate to exterior. Exterior and interior coatings applied to conduit shall afford sufficient flexibility to permit field bending without cracking or flaking.

C. Conduits shall be available in standard trade sizes, 3/4” (21 mm) minimum.

D. Thread pitch shall conform to ANSI/ASME B1.20.1. Taper shall be 3/4”/ft (62.5 mm/m).

E. Each length of conduit shall have UL listing label.

F. In areas designated as corrosive, conduit shall meet NFPA 70.

G. Couplings, unions, and fittings: Threaded-type, galvanized steel.

H. Conduit bodies: Threaded-type, cast metal or malleable iron type with zinc or cadmium coating. Covers shall have solid gaskets and captive screw fasteners.

I. Running thread not acceptable.

2.03 RIGID NONMETALLIC CONDUIT, POLYVINYL CHLORIDE (PVC)

A. Material: PVC Schedule 40, and Schedule 80. Schedule 40 shall be rated for underground installation; underground shall be either direct buried or encased in concrete. When encased in concrete, underground conduits shall be rated for cables operating up to 90ºC installed within.

B. Fittings, elbows, and accessories: Connect to conduit by solvent-type cement process. Material shall be same as conduit. Provide belled end fittings at each manhole and wall entrance.

C. Transition for connection of plastic conduit to rigid metal conduit shall be threadless solvent-type cement connection to PVC, with threaded connection to rigid metal conduit.

2.04 RIGID NONMETALLIC UNDERGROUND CONDUIT (EB)

A. Material: PVC, designed for concrete encased applications. Comply with NEMA TC-6 and TC-8, and ASTM F512 for utility duct, and ETL-listed.

B. No special cutting or tapering devices required.

C. Joints shall be made with solvent-type cement.

D. Provide duct end bells for termination into pulling and switch vaults.

E. Fittings, elbows, and accessories, shall be manufactured by conduit manufacturer, and be of same material.

2.05 PULLBOXES AND JUNCTION BOXES

A. Hazardous areas: UL-approved for area classification.

B. Where required for elbows, fittings, and accessories to be furnished by same manufacturer as conduit, boxes shall also be furnished by conduit manufacturer or by supplier approved by manufacturer.

2.06 PULLING AND SWITCH VAULTS

A. Refer to Section 33 05 16-13 for precast pulling and switch vaults requirements.

B. Pulling and switch vaults shall meet requirements of NEC.

C. Insulators not required.

2.07 HANDHOLES

A. Use: Airfield lighting circuits, unshielded medium-voltage circuits, and low-voltage power and communication circuits. Do not use for splicing multipair communication cables or shielded power cables.

B. Size to accommodate splices and equipment contained within handhole.

C. If acceptable to Engineer, open bottom handholes may be used.

PART 3 EXECUTION

3.01 EXAMINATION OF SITE

A. Contractor shall be responsible for familiarity with Project Site conditions. Equipment furnished and installed shall be capable of withstanding most severe conditions that will be encountered.

3.02 PROTECTION OF WORK

A. Protect installed Work and provide temporary and removable protection for installed products. Control activity in immediate work area to prevent damage.

B. Damage occurring to building or equipment during installation shall be repaired or replaced to conditions existing prior to damage at no additional cost or delay to project or Owner.

3.03 INSTALLATION - GENERAL

A. Coordinate timing of installation and locations of raceway with other trades. Do not block access or impede construction.

B. Locations of raceway indicated on Drawings are approximate. Coordinate actual locations in field to avoid conflicts with other equipment.

C. Areas designated for, but not limited to; access, maintenance, hatchway, equipment removal, and expansion shall be kept clear of field-routed raceway.

D. Use expansion fittings where necessary. When expansion or deflection will be greater than 6” (152 mm) or greater than fitting is designed to accommodate, provide junction boxes solidly mounted on each side of expansion joint and connect with flexible, liquidtight conduit, or adjust conduit sections to limit expansion to less than 6” (152 mm).

E. Support raceway independently from equipment, and temporary or movable structures.

F. At minimum, identify raceways at both ends with raceway numbers provided by Engineer. Markers shall be adhesive, UV-resistance type with 1” (25 mm) high lettering.

3.04 USES AND LIMITATIONS

A. Refer to NEC for guidelines regarding use, and limitation of each type of conduit. Follow NEC except as specified otherwise herein, or as shown on Drawings.

B. RGS: Do not use underground except as stub-ups and apply corrosion protection. Do not mix aluminum fittings with steel conduit and vice versa.

C. PVC-RGS: May be used for conduits installed underground, direct buried, or for slab-on-grade construction. Acceptable for corrosive areas. Install conduit system in accordance with

manufacturer's installation manual. Installer shall be certified by manufacturer to install coated conduit.

D. PVC and EB: Use Schedule 80 PVC conduit encased in concrete for installation under heavy traffic areas.

3.05 RIGID CONDUIT

A. Conduits not shown on Drawings shall be sized in accordance with NEC. Minimum size: 3/4" (19 mm).

B. Conceal conduit in finished areas.

C. Drainage: Avoid water pockets in conduit runs; provide suitable fittings at low spots in exposed conduit where pockets cannot be avoided. Weep holes not permitted in conduit.

D. Conduit ends:
1. Cap spare conduits with fittings designed for intended use.
2. Conduit terminating in panels or enclosures where exposed to entrance of foreign material shall be plugged with commercial duct-sealing compound around conductors.
3. Cap conduit ends during construction to prevent entrance of foreign material.

E. Where practicable, provide 3" (75 mm) stubbed up conduit for conduit entering into bottom of freestanding equipment. Coordinate locations with equipment. Terminate with grounding bushings.

F. Clean and swab inside of conduit by mechanical means to remove foreign materials and moisture before wires or cables are installed. Cleaning method shall not damage interior surface of conduit.

G. Bushings: Provide at termination of conduit not terminated in hubs and couplings. Insulating bushings with 150˚C rated insulating inserts in metal housings shall be provided on conduit 1-1/4" (31 mm) and larger. Insulating bushings shall be grounding type. Standard bushings shall be galvanized.

H. Apply coat of zinc chromate to zinc-coated conduits where protective coating is damaged.

I. Couplings and unions:
1. Threaded conduit couplings shall join metal conduit with conduit ends butted. Where standard threaded couplings cannot physically be used, join metal conduit using conduit unions or split couplings.
2. Use ground-seat type, watertight unions where union may be submerged.

J. Bends: Run of conduit shall not contain more than equivalent of three 90º bends, including offsets unless specified by Engineer on drawings. Use only manufacturer-approved conduit bending equipment. Do not use deformed or crushed conduits.

K. Threads: Cut ends of conduit with saw; do not use wheel cutter. Conduit end shall have same number of threads as present from factory. Apply coat of zinc chromate to steel conduit threads and apply anti-seize compound containing powdered zinc or lubricating graphite to aluminum conduit threads.

L. Use expansion joints as required such that no more than 6" (152 mm) allowance for expansion or contraction of conduit occurs.

3.06 CONDUIT SUPPORTS

A. Supports of structural steel or manufactured framing members shall be fabricated from lightweight channel approved by manufacturer for intended use, provide required rods, anchors, inserts, clamps, spacers, shims, bolts and accessories.

B. Clamps: Galvanized malleable iron 1-hole straps, beam clamps, or other device with necessary bolts and expansion shields.

C. Adjustable hangers: Use to support horizontal runs only. Use trapeze-type supports for parallel runs of conduit. Install U-bolts at end of each run and at each elbow. Install conduit clamps every third intermediate hanger for each conduit. Hanger rods shall be 3/8" (10 mm) minimum diameter threaded galvanized steel rods.

D. Conduits supports mounted on concrete surfaces: Fasten with self-drilling tubular expansion shell anchors with externally split expansion shells, single cone expanders, and annular break-off grooved chucking cones.

3.07 PENETRATIONS

A. Provide required penetrations in floors and walls. Penetrations shall be kept to minimum, as small as possible, and installed in neat manner. Surrounding surfaces damaged during installation of penetrations shall be included as part of this work.

B. Seal penetrations in floors and enclosures. Provide fire stops for electrical raceway penetrations. Maintain original fire rating that existed prior to commencement of work. Do not install fire seal for wire openings until interconnecting wiring of equipment is proven to operate properly.

C. Sleeves:
   1. Provide for passage of conduits through walls, floors, or partitions. Set sleeves in masonry during construction; set sleeves through concrete before placement begins.
   2. Material: Rigid conduit or pipe securely fastened in position.
   3. Cut sleeve flush with floor where conduit enters equipment enclosure otherwise extend sleeve 3" (75 mm) above floor.
   4. Sleeves through exterior building walls: Install conduit in center of sleeve. Pack interior and exterior annular space around conduit with plastic backer rod sized to fit annular space in compression as recommended by backing manufacturer. Seal interior and exterior of joint with acrylic polymer sealant.
   5. Sleeves through waterproof construction shall be flanged type.

D. Penetrations required after footings, walls, or floors are constructed shall be provided and grouted or sealed. Openings shall be core-drilled, do not jackhammer.

E. Patch and finish openings made in existing walls and floors to match original material in composition and appearance.

3.08 CONDUIT INSTALLED UNDERGROUND

A. Plastic-coated, rigid steel conduit:
   1. Use procedures recommended by manufacturer to prevent damage to PVC coating.
   2. Use strap wrenches for tightening threaded joints.
   3. If protective coating is damaged, repair by application of patching compound as recommended by manufacturer.

B. Concrete encased underground duct shall be Type FIB, unless noted otherwise. Verify by calculation that hydraulic force on bottom duct does not exceed theoretical collapse pressure of duct. Use thicker wall duct as required, unless a sequential pour technique is used.

C. Elbow that stubs up at end of a conduit run shall be RGS conduit and shall be bonded to grounding system. Provide required fittings and accessories for connection of RGS conduit to nonmetallic conduit.

D. Install duct runs and pulling and switch vaults at elevations consistent with project requirements. Top of duct banks shall be greater than 30" (750 mm) and less than 50" (1270 mm) below finished grade elevation, unless indicated otherwise.

E. Utilize duct spacers, both vertically and horizontally, to support runs of concrete encased ducts. Install duct spacers 8’ (2.4 m) maximum on center, unless specified otherwise. Brace duct runs during concrete placement to prevent floating. Wood spacers or braces in concrete encasement are not acceptable, and iron ties or straps shall not be used around single ducts, but may be used around whole duct run.

F. Crown duct runs between pulling and switch vaults at midpoint of run to allow drainage back into pulling and switch vaults. Slope shall be minimum of 1/32” per foot (0.8 mm per meter) of slope. Duct runs from stub-ups back to pulling and switch vaults shall maintain same slope. Provide end bell fittings at terminations of conduits into pulling and switch vaults.

G. Install ground cable and connect to ground system on both ends of duct bank. Place ground cable in concrete, and above direct buried conduits.

H. Concrete work:
   1. Duct bank concrete shall be poured without forming, provided trench walls do not cave; otherwise, use forms. Make trench no wider than necessary to provide nominal size concrete thickness.
   2. Tie down conduits to prevent floating during concrete pouring.
   3. Remove foreign substances from conduits before pouring concrete.
   4. Use splashboard to divert flow of concrete away from trench sides, and avoid dislodging soil and stones. Prevent loose excavated material from falling into trench during concrete pouring.
   5. Pour each section of duct bank complete in one operation; if this is not feasible, provide construction joint using rigid steel conduit 5’ (1.5 m) on each side of joint.
   6. Begin concrete pouring at one end of duct bank, working toward other end, to allow free end to move. Do not pour concrete from each end toward center.
   7. Do not use mechanical vibrators.
   8. Provide standard concrete with red coloring sprinkled on the top of wet concrete upon pouring. Use Increte Systems CCCB P025 100 integral color or equal.
   9. Use thermal concrete as stated in Section 03 00 10.

I. Adjust duct footage at each tie-in to account for expansion and contraction due to variations in temperature anticipated during installation. Backfill terminated duct runs from tie-in point toward other end. If trench must be left open, do not terminate run. Consult with manufacturer for coefficient of thermal expansion properties.

J. Use expansion joints as required such that no more than 6” (150 mm) allowance for expansion or contraction of conduit occurs.

K. After construction of duct bank is complete, pull mandrel through each duct. Mandrel shall be 1/4” (6 mm) smaller in diameter than duct. If obstruction is encountered, or if there is evidence of water pocket, that section of duct bank shall be located, removed, and rebuilt with no schedule delay and additional cost to Owner.

L. Underground utility marking tape for below grade raceway systems:
   1. Provide solid aluminum foil core tapes for protection, location, and identification of underground utility installations.
   2. Meet or exceed industry standards for APWA color code.
   3. Resist degradation from acids and alkalis found in soil.
   4. Contain environmentally safe lead-free pigments and organic lead-free ink identifying type of utility line it protects.
   5. Provide width of tape appropriate for detection of conduit at required depth of installation.

M. Support wireways and boxes independently of conduits by means of bolts, screws, rod hangers, and other suitable means.

3.09 PULLING AND SWITCH VAULTS AND HANDHOLES

A. Install in accordance with manufacturer’s instructions.

B. Remove material as required for proper alignment and elevation of work. Backfill and grade area to match final grade elevations.

END OF SECTION

1) E. Cole
2) W. Ullom

PART 1 GENERAL

1.01 SECTION INCLUDES

A. Trench excavation.

B. Pipe bedding and backfill requirements.

C. Backfill for manholes, appurtenances and structures.

D. Sidewalk and pavement construction.

E. Construction along or across highways and railroads.

F. Erosion control.

G. Dewatering.

H. Sheeting, shoring and bracing.

I. Surface restoration and cleanup.

1.02 RELATED REQUIREMENTS

A. Section 01 40 00 - Quality Requirements

B. Section 31 23 16.16 - Structural Excavation and Backfill

C. Section 32 11 23 - Aggregate Base Courses

D. Section 32 12 16 - Asphaltic Paving

E. Section 32 16 13 - Curbs and Gutters

F. Section 32 92 19 - Seeding

1.03 INFORMATIONAL SUBMITTALS

A. Quality assurance data:
   1. Submit traffic control plan for activities requiring traffic control not specifically addressed by Drawings.
   2. Provide name, address, and telephone number of person who has access to equipment and is authorized to make emergency repairs to Contractor's Work, such as to correct trench cave-ins, moving excavated material, and correct other problems during weekends and off-work hours, so access can be maintained for fire fighting equipment, and to maintain barricades for public safety.

1.04 SUSTAINABLE SUBMITTALS

A. Erosion Control Plan: Not less than 10 days before Pre-construction meeting, prepare and submit an Erosion Control Plan.
   1. Format: At a minimum, address following elements:
      a. Identification of Project.
      b. Details of Plan, specific to site, that comply with EPA 832/R-92-005 or requirements of authorities having jurisdiction, whichever is more stringent.
      c. Monitoring procedures.
   2. Revise and resubmit Plan as required by Owner. Approval of Contractor’s Plan will not relieve Contractor of responsibility for compliance with applicable environmental regulations.

1.05 SCHEDULING

A. Schedule Work to keep streets, sidewalks, and utilities in usable condition; avoid property owner inconvenience insofar as practicable.

B. Do not trespass on private property. Maintain construction operations on existing right-of-way or easements provided by Owner.

C. Maintain suitable means of access for property owners abutting streets and highways involved in construction, except as specifically permitted otherwise by Owner.

D. Suitable access shall mean a roadway of sufficient width, free from ruts, potholes, and mud holes, and capable of carrying a passenger car without damage to car.

E. When access must be denied due to construction, provide suitable access within 24 hours after responsible construction is completed.

F. Whenever construction is stopped due to inclement weather, weekends, holidays, or other reasons, suitable access shall be provided for property owners.

PART 2 PRODUCTS

2.01 DUCTBANK ENVELOPE

A. Refer to Section 31 23 16.16.

2.02 REMAINING BACKFILL

A. Refer to Section 31 23 16.16.

2.03 SURFACE RESTORATION

A. Refer to Section 32 92 19.

2.04 SIDEWALK AND PAVEMENT MATERIALS

A. Sidewalks:
1. Material: Concrete.
2. Reinforcing: None.
3. Expansion joints: 1/2” (13 mm) preformed expansion joint material.

B. Curb and gutter: Refer to Section 32 16 13.

C. Asphalt streets and drives: Refer to Section 32 12 16.

PART 3 EXECUTION

3.01 PREPARATION

A. Obtain from utility companies exact locations of buried utilities shown on Drawings.

B. House services are not shown on Drawings. Obtain locations of house services from utility companies.

C. Make arrangements with utility companies to temporarily support, brace or remove utility poles either adjacent to or in trench excavation at no cost to Owner.

D. Utility mains shown on Drawings, in conflict with new facilities: Perform relocation or make arrangements with utility to perform Work at no additional cost to Owner.

E. Utility mains not shown on Drawings, in conflict with trench excavation or new facilities:
   1. Notify Engineer immediately.
   2. Authorized relocation performed by Contractor or performed by others at Contractor's expense will be paid for under provisions of Article 11 of General Conditions.

3.02 TRENCH EXCAVATION – GENERAL

A. Classification:
   1. Earth: Materials not classified as rock; includes clay, silt, sand and gravel, hardpan, disintegrated shale and rock, debris, and detached rock less than 1 cu yd in volume.
   2. Rock: Materials that cannot be excavated without use of pneumatic tools, drilling and blasting, or line drilling and wedging, and detached pieces of such materials larger than 1 cu yd in volume.

B. Rock excavation isnot anticipated.

C. Excavation shall be open cut unless otherwise specified or shown.

D. Trenches not requiring select backfill: Pile excavated material, suitable for backfill, in an orderly manner a sufficient distance back from edge of excavation to avoid slides or cave-ins; 2'-0" (600 mm) minimum clear distance.

E. Trenches requiring "select" backfill: Place unsuitable excavated material directly on trucks and haul away. No spoil banks permitted.

F. If granular material suitable for select backfill is encountered in trenches requiring select backfill: Pile in an orderly manner a sufficient distance back from edge of excavation to avoid slides or cave-ins; 2'-0" (600 mm) minimum clear distance.

G. Excavate existing utilities sufficiently in advance of pipe laying to determine crossing arrangement. No payment will be allowed for down time due to utility relocation.

H. Use caution when placing and compacting backfill to avoid placing construction loads on pipe which may damage or displace newly laid pipe.

I. Limit amount of trench open at one time to minimum.

3.03 TRENCH EXCAVATION – EARTH

A. Strip and stockpile topsoil for use in surface restoration.

B. Keep trench width below top of pipe as narrow as practicable; provide adequate width for proper pipe jointing operations and for placing and compacting backfill.

C. Slope walls of trench or provide trench shoring as required to comply with OSHA and safety requirements; maintain walls of excavation vertical below top of pipe. Use trench box or shield as required.

D. Excavate to full depth by machine. Trench bottom shall be suitable for hand working of finely divided, loose, excavated material or for placement of pipe bedding material.

E. If soft, spongy, or otherwise unstable material is encountered which may not provide suitable foundation for pipe:
   1. Notify Engineer immediately.
   2. Engineer will authorize remedial measures in writing as required.

3. Removal and replacement of questionable material will be authorized only if dewatering methods are unsuccessful in stabilizing trench bottom.
4. If removal of unsuitable material is authorized:
   a. Replace with crushed rock or clean gravel having same gradation as pipe bedding material.
   b. Compact replacement material with vibratory or pneumatic tampers.
5. Authorized remedial measures not covered by contract unit prices paid for under provisions of Article 11 in General Conditions.

F. Excavate by hand:
1. Under tree roots 3” (75 mm) and larger.
2. Under and around structures and utilities.

3.04 SHEETING, SHORING, AND BRACING

A. Construct sheeting, shoring, and bracing where shown on Drawings and where required to hold walls of excavation to protect existing utilities, trees, structures, and other similar features and to provide protection of employees.

B. Design of sheeting, shoring, and bracing shall be responsibility of Contractor and shall comply with OSHA requirements.

C. Sheeting which may be removed, in opinion of Engineer, without endangering utilities or structures shall be considered incidental and shall not be paid for.

D. Sheeting and shoring, removal of which, in opinion of Engineer, might cause damage to pipe, utilities or structures shall be left in place and will be paid for in accordance with Section 01 22 00.

E. When movable trench shield is used below centerline of pipe, it shall be lifted prior to any forward movement to avoid pipe displacement, unless moved by rearward thrusting jacks.

3.05 DEWATERING

A. Execute Work in the dry.

B. Provide equipment for handling water encountered.

C. Do not lay pipe or pour concrete on excessively wet soil.

D. Prevent surface water from flowing into excavation; promptly remove any water accumulated.

E. Divert stream flow and/or sewage away from areas of construction.

F. Do not discharge water pumped from excavations to existing sanitary sewers.

G. Methods used shall not cause settlement or damage to adjacent property.

3.06 TREE REMOVAL

A. Notify Engineer prior to removing trees larger than 2” (50 mm) in diameter and hedges and shrubbery.

B. Cut no tree roots larger than 3” (75 mm) diameter.

C. Only trees in direct conflict with trench alignment shall be considered for removal; tunnel or hand excavate under roots of trees close to trench.

D. Removal includes grubbing and removing stump and roots, backfilling, and disposal of debris.

E. Compensation not allowed for approved clearing or removal of trees to provide access to Work or to provide work space adjacent to trench.

3.07 SIDEWALK AND PAVEMENT REMOVAL

A. Where large portions of existing streets are removed, measure and record exact dimensions and elevations before pavement removal. Streets and curbs shall be rebuilt to same widths and elevations as existed prior to construction.

B. Remove pavement, sidewalk, or curb and gutter to minimum of 1'-0" (300 mm) from trench. No undercutting will be permitted.

C. Cut vertically and horizontally; remove on straight lines approximately parallel or perpendicular to center line of pavement.

D. Concrete pavement:
1. Cut with concrete saw; minimum vertical cut 1" (25 mm) or as needed to give clean break.
2. Break out remainder of slab.

E. Sidewalk: Remove to nearest joint beyond minimum distance of 1'-0" (300 mm) from edge of trench.

F. Asphalt pavement: Cut edges neatly, minimum vertical cut 1-1/2" (38 mm).

G. Dispose of waste material in disposal area.

3.08 SIDEWALK AND PAVEMENT REPLACEMENT

A. Sidewalks:
1. Thickness: 5" (125 mm), except use 7" (175 mm) across driveways.
2. Width and finish to match existing sidewalks.
3. Expansion joints: Use joint material at intervals not exceeding 50' (15 m) and at junction with existing Work, and along adjacent curbs.
4. Finish: Provide edge and joint tooling and finish to match existing.

B. Curb and gutter: Refer to Section 32 16 13.

C. Asphalt streets and drives: Refer to Section 32 12 16.

D. Maintenance of surfaces:
1. Pavement damage due to settlement of backfill: Repair to grade.
2. Depressions more than 6" (150 mm) deep in aggregate surfaced areas: Fill to grade.

3.09 CONSTRUCTION ALONG OR ACROSS HIGHWAYS AND RAILROADS

A. Comply with permits obtained by Owner from Illinois Department of Transportation and Union Pacific Railroad.

B. Construction across highways:
1. Use open cut except where tunneling, augering, or jacking is shown on Drawings.
2. Provide warning lights, barricades, and flaggers as required to protect Work and traffic.
3. Maintain 1-way traffic and use methods approved by highway agency.

C. Construction across railroads:
1. Maintain traffic unless specifically permitted otherwise.
2. Provide warning lights, signals, flaggers, or other precautionary measures as required to protect Work and traffic.
3. Use method approved by railroad.
4. Officials of railroad shall have right to inspect and regulate Work.

3.10 INITIAL BACKFILL

A. Refer to Section 31 23 16.16.

3.11 REMAINING BACKFILL

A. Refer to Section 31 23 16.16.

3.12 REPAIR AND RESTORATION

A. Repair, at no additional cost to Owner, existing fences, culverts, and drain tile disturbed by construction.

B. Contractor fully responsible for liaison with utility companies and for repairing, at no expense to Owner, utilities damaged by Contractor. In event of break in existing water main, gas main, sewer, or electric or communication cable, immediately notify responsible official of organization operating utility affected.

C. Restore obstructions removed to accommodate equipment or to facilitate excavation.

D. Lawns and grass areas: Refer to Section 32 92 19.

E. Roadway embankments and field areas: Refer to Section 32 92 19.

F. Trees, hedges, and shrubbery:
1. Minimize damage caused by construction operations.
2. Trim and repair trees, hedges, and shrubbery damaged by construction operations; remove broken branches.
3. Shrubs or trees damaged beyond repair or recovery shall be replaced with new plantings of equal type and quality. Trees and shrubs removed because of conflict with alignment of trench shall not be replaced.

G. Perform restoration work under favorable climatic conditions.

3.13 SOIL AND MATERIAL TESTING

A. Moisture-density tests: ASTM D698; minimum of one determination of optimum moisture for each type of soil incorporated into Work.

B. In-place density tests: ASTM D1556, D2167, or D2922.
1. Perform tests in areas of backfill and where compaction requirements are specified.
2. Provide equipment necessary and perform field density tests during course of Work.
3. Perform tests for fill or backfill at following interval: One test per 500 yd^3 (380 m^3) at random depths.

C. Sieve analysis: ASTM C136; minimum of one test on each source of each material of specified gradation unless otherwise specified or provide certified copy of test report from material supplier.

D. If tests indicate inadequate placement or compaction, Contractor shall correct inadequacies and perform additional tests in same area at no additional cost to Owner.

3.14 CLEANUP

A. Remove brush, rubbish, spoil, excess excavated material, and material not suitable for backfill to off-site location of Contractor’s choice.

B. Remove waste material promptly as it is generated by construction operations; do not permit to accumulate. Cleanup each portion of construction as it is completed.

C. Cleanup operations in public right-of-way shall be kept within 400’ (120 m) of construction operations.

D. Cleanup and remove rubbish, debris, and surplus material.

E. Grade disposal areas periodically to reasonably neat surface to provide for drainage and access by others.

F. Leave Site in neat condition.

G. Reopen to traffic as soon as practicable.

H. All soils removed for site need to be tested and disposed of per State of Illinois statues.

3.15 EROSION CONTROL

A. Take care to minimize soil erosion during and after construction.

B. Cover existing storm water inlets adjacent to construction operations and take additional measures necessary to prevent sediment from entering storm sewers.

C. Disturb only minimum area during construction. Pile excavated material in a manner as to prevent erosion of material. Restore surfaces to prevent erosion.

D. Remove excess excavated material and debris and dispose of these materials in an acceptable manner to prevent erosion and sedimentation.

E. Employ erosion control measures and surface restoration procedures, as appropriate, in borrow and waste disposal areas.

F. Take measures necessary, in addition to those specified herein, to prevent erosion, prevent sediment from entering surface drainage courses, and prevent sediment from being washed onto adjacent areas.

G. Take positive steps for erosion control. Applicable steps will depend upon site characteristics (soil, slope, drainage, etc.), and construction techniques. Following are offered as possible steps which may be taken:
   1. Relative to area drainage, excavated material shall be stored on upstream side of trenches.
   2. Straw or hay bales, sandbags, or silt fences placed in drainage channels or at toe of excavation storage piles to serve as sediment dams.
   3. Earthen dam with controlled discharge such as overflow pipe, used as a sedimentation pond.
   4. Route runoff around excavated areas and excavated storage piles.
   5. Mulching with straw and hay, and jute netting, or other mattings, blankets, and netting.
   6. Sod or riprap.
   7. Temporary seeding.

END OF SECTION

1) PM Johnson
2) RK Thevenot

PART 1 GENERAL

1.01 SECTION INCLUDES

A. Soil and material testing.

B. Excavation, backfilling, and grading for structures.

C. Excavation and backfilling for conduit and cable.

D. Dewatering.

E. Protective and support systems and associated work.

F. Importing backfill and fill materials.

G. Disposal of excess or unsatisfactory materials.

H. Underground obstructions

1.02 DEFINITIONS

A. Support system (per OSHA): Structure such as underpinning, bracing, or shoring, which provides support to adjacent structure, underground installation, or sides of an excavation.

B. Protective system (per OSHA): Method of protecting employees from cave-ins, from materials that could fall or roll from an excavation face or into an excavation, or from collapse of adjacent structures. Protective systems include support systems, sloping and benching systems, and other systems that provide necessary protection.

1.03 QUALITY ASSURANCE

A. Contractor shall retain services of qualified testing laboratory.

B. Responsibilities of testing laboratory shall include:
   1. Sampling and testing of fill or backfill materials prior to and during placement.
   2. Sampling and testing to determine moisture-density and maximum density characteristics of materials in accordance with ASTM D1557. A minimum of one determination of optimum moisture for each type of soil shall be performed.
   3. Observation of placement, selection of test locations, and testing of material during placement to determine that uniformity of compaction and specified compaction requirements are met. Determine in-place densities in accordance with ASTM D1556, D2167, or D2922.
      a. Perform tests in areas of backfill and where compaction requirements are specified.
      b. Provide equipment necessary and perform field density tests during course of Work.
      c. Perform tests for fill or backfill at following interval: One test per 500 yd^3 (380 m^3) at random depths.
   4. Inspection and approval of soil at bottom of excavation, under foundations, considering settlement and load-bearing characteristics of soil and design bearing capacity.
   5. Sieve analysis: ASTM C136; minimum of one test on each source of each material of specified gradation unless otherwise specified or provide certified copy of test report from material supplier.
   6. If tests indicate inadequate placement or compaction, Contractor shall correct inadequacies and perform additional tests in same area at no additional cost to Owner.
   7. Providing reports to Owner's Representative giving information on materials and testing performed.
   8. Making recommendations to Owner's Representative where deviation from Specifications occur or conditions are considered undesirable.

C. Drilled caisson inspection:
   1. Each drilled caisson shall be inspected by Owner's Representative at completion of shaft, and completion of reinforcing steel placement before next stage of construction is continued.
   2. Furnish equipment and personnel and assist in inspection of bottoms of shaft.
   3. Drilled caissons will be inspected from surface.

1.04 INFORMATIONAL SUBMITTALS

A. Samples: Fill and backfill materials to testing laboratory.

B. Quality assurance data:
   1. Material test reports on samples of fill and backfill.
   2. Laboratory compaction test reports establishing moisture-density relationships and maximum densities for all fill and backfill.
   3. Field in-situ compaction test reports.
   4. Test reports and records used to determine adequacy of soils at bottom of excavations.
   5. Recommendations for corrections where deviations from Specifications occur or where conditions are considered undesirable.

1.05 EXISTING CONDITIONS

A. Known underground piping, foundations, and other underground obstructions in vicinity of new construction are shown on Drawings.

B. Protect underground facilities encountered during excavation until it is determined whether they are active or inactive. Repair, without compensation, existing active facilities damaged during operations.

C. Notify Owner's Representative of unexpected subsurface conditions and discontinue Work in area until Owner's Representative provides notification to resume Work.

PART 2 PRODUCTS

2.01 MATERIAL - GENERAL

A. Use material removed from excavations or obtained from off-site borrow areas unless shown or specified otherwise.

B. Exclude debris, large stones, rocks, roots, organic or frozen material, expansive material and other deleterious materials.

C. Type: Excavated or imported material conforming to one of following ASTM D2487 (Unified Soil Classification System) classifications: SW, SP or SP-SM.

D. Use for all backfill except where specified otherwise.

2.02 GRANULAR FILL

A. Type: Sand consisting of clean, well-graded mineral particles.

B. Size and grading: Illinois DOT standards.

C. Material shall be free of earth, clay, or other foreign substances.

D. Use where shown on Drawings.

2.03 STRUCTURAL BACKFILL

A. Type:
   1. Excavated on-site soil with a group symbol of SP is suitable for fill.
   2. Materials shall be nonorganic.

B. Use as backfill adjacent to foundation elements and at other locations shown on Drawings.

C. At Contractor's option, imported Granular Fill may be used in lieu of Structural Backfill.

2.04 CRUSHED ROCK

A. Clean crushed rock.

B. Size and grading: 1" (25 mm) maximum, 10 to 35% passing No. 8 (2.38 mm) sieve, not over 15% passing No. 50 (0.30 mm) sieve, and not over 6% passing No. 200 (0.075 mm) sieve.

C. Material: Free of earth, clay, or other foreign material.

D. Use where shown on Drawings.

2.05 DRAINAGE FILL

A. Type: Clean, rock, no fractured faces.

B. Size and grading: 100% passing 3" (75 mm) and not less than 1-1/2" (38 mm) sieve.

C. Material: Free of earth, clay, or other foreign substances.

D. Where specified on Drawings, provide drainage rock with specified void ratio.

E. Use where shown on Drawings.

2.06 THERMAL BACKFILL

A. Material: native soils excavated from site.

B. Use where specified on drawings.

C. Refer to Drawings for compaction requirements.

D. Material shall be free of foreign materials and rocks greater than 3" (75 mm) in size.

2.07 COHESIVE BACKFILL

A. Not allowed

2.08 SUPPORT AND PROTECTION SYSTEMS

A. Provide support and protection systems where shown and where required to protect public, workers, and existing and new utilities, property and structures.

B. Design of support and protection systems shall be responsibility of Contractor and shall conform to OSHA requirements.

C. Design of system shall include:
   1. Loading effects from:
      a. Soil.
      b. Ground water.
      c. Surcharge loading (construction and public traffic on adjacent roadways).
      d. Existing structures dead load and live load.
   2. Consideration of effects on existing structures including vibration and settlement. Installation and removal of support systems shall not cause damage to existing facilities.

PART 3 EXECUTION

3.01 EARTH EXCAVATION

A. Excavate as required for construction work.

B. Use special care when excavating under and around existing facilities. Support existing facilities and earth under facilities to prevent settlement resulting from construction operations.

C. Excavation for soil supported foundations:
   1. Excavate to elevations shown. Owner's Representative shall inspect and approve soil at foundation levels shown.
   2. Additional payment will be made to Contractor for excavation of unsuitable soils on basis of unit adjustment price set forth in Agreement.
   3. Fill with concrete, at no expense to Owner, unauthorized excavations carried below bottoms of foundation levels shown.
   4. Trim excavations by hand to remove material disturbed by machine excavation; produce neat, plane surface at elevation of bottom of footing.

D. Excavation for conduit and cable:
   1. Excavate to depths indicated or specified.
   2. Use special care when excavating near existing foundations and utilities. Excavate by hand in such areas.
   3. After installation of conduit or cable, backfill with materials from excavation. Exclude large stones, organic material, rubbish, and frozen material from backfill.
   4. Compact to density of adjacent soil.

3.02 DRILLED CAISSON EXCAVATION

A. Excavate drilled caissons in manner that will produce depths and diameters shown. Furnish and install temporary steel casing in hole as necessary for protection of personnel and adjacent construction, to prevent cave-ins and displacement of earth, and for exclusion of ground water. Casings shall be smooth steel cylinders having an outside diameter greater than or equal to required diameter of caisson shaft. Wall thickness shall be sufficient to withstand collapsing pressures.

B. Diameter of drilled caissons at Contractor's option, may be larger diameter, provided there is no additional cost to Owner.

C. Seal off groundwater by seating casing below bottom of wet strata into impervious material.

D. Remove ground water and drilling debris to produce clean hole for determination of depth, examination of bearing material, and condition of casing.

E. Should it be determined during inspection that hole drilled to estimated elevation has not reached suitable material, perform additional Work to provide required drilled caisson capacity.

F. Holes shall be drilled in sequence to avoid damage to previously completed work and minimize delay or interruptions to work by others.

G. Fill with concrete, at no additional expense to Owner, unauthorized excavations carried below required bottoms of drilled caisson.

H. Provide cover for caisson shafts for protection of personnel and to prevent entrance of foreign materials.

I. Dispose of excavated material as specified.

J. Do not allow personnel to enter caisson excavation. Perform inspections from surface.

3.03 FILL AND BACKFILL

A. Backfilling around structures:
1. Backfill after concrete has attained sufficient strength to withstand backfill pressures without detrimental effects.
2. Prevent displacement of construction during backfilling operations; backfill opposite sides simultaneously.

B. Fill to elevations or grades shown on Drawings. Maintain surface and slopes for drainage during operations.

C. Placement:
1. Maintain surfaces free of water, debris and excessively wet, frozen, and other deleterious materials.
2. Place backfill and fill materials in successive horizontal layers not more than 9" (225 mm) in loose depth.
3. Place materials at proper moisture content for obtaining densities as specified. Generally, maintain within 2% of optimum.
4. Material too dry or too wet to compact properly shall be moistened or aerated to extent necessary to produce desired results.

D. Compaction:
1. Compact backfill and fill to at least 95% of maximum dry density as determined by ASTM D1557.
2. Sampling and testing shall be performed in each layer of fill and backfill placed to confirm adequacy of compaction.
3. Pneumatic tired rollers, sheepsfoot type heavy mechanical tamping rollers or heavy vibratory compactors shall not be used within 6' of structure, walls, pipes, or other construction which might be damaged by compaction equipment.

3.04 DEWATERING

A. Furnish, install, and remove dewatering equipment necessary to drain and keep excavations free of water under all circumstances.

B. Prevent surface water from flowing into excavations; promptly remove any water accumulated.

C. Maintain dewatering operations until Work area is accepted as complete.

3.05 SUPPORT AND PROTECTION SYSTEMS

A. Where existing utilities are in vicinity of support and protection systems that has components to be drilled or driven into soil, expose existing utilities to verify location prior to start of installation of support and protection systems components to avoid damage to existing utilities.

B. Remove support and protection system in manner to avoid damage or disturbance to Work. Leave support system in place, where removal will endanger Work, public, workers, adjacent utilities, property or structures or where it has been used as permanent formwork for concrete construction.

3.06 SITE GRADING

A. Grade areas disturbed by construction operations.

B. Finish grade to smooth, uniformly sloping surfaces to elevations shown.

C. Fill depressions and provide for positive drainage away from buildings and structures.

3.07 DISPOSAL OF MATERIAL

A. Dispose of excess and unsuitable excavated material off site in disposal area obtained by Contractor.

B. Dispose of debris, large stones, rocks, roots, and organic materials off site in disposal area obtained by Contractor.

C. All soils removed for site need to be tested and disposed of per State of Illinois statutes.

END OF SECTION

1) A. Klimisch
2) J. Varone

PART 1 GENERAL

1.01 SECTION INCLUDES

A. Aggregate base including subgrade preparation, hauling, spreading, moisture control, compacting, and material tests.

1.02 INFORMATIONAL SUBMITTALS

A. Laboratory test results indicating conformance to "Materials," this Section.

PART 2 PRODUCTS

2.01 MATERIALS

A. Aggregate shall be gravel, crushed gravel, crushed stone, crushed concrete, crushed sandstone, or crushed slag meeting Illinois Department of Transportation (IDOT) gradation CA 6.

B. Aggregate shall conform to 2022 IDOT Standard Specifications for Road and Bridge Construction, sections 351 and 1004.04.

PART 3 EXECUTION

3.01 CONSTRUCTION

A. Prior to placing aggregate base, prepare subgrade in as specified herein.

B. Moisture content shall be sufficient to prevent segregation of aggregate and to obtain satisfactory compaction. Use of a central mixing plant to obtain moisture content will be permissible, but wetting aggregate in cars, bins, stock piles, or trucks will not be permitted.

C. Construct base in layers not more than 4" compacted thickness, except that if tests indicate desired results are being obtained, compacted thickness of any layer may be increased to a maximum of 8".

D. Immediately after material has been placed with spreader, compact with tamping roller, vibratory roller, pneumatic-tired roller, or with combination of any roller types to a density of not less than 95% maximum density determined in accordance with ASTM D698.

E. Compaction of top layer shall continue until aggregates are completely interlocked and stable and all movement of material stops. Give top layer final rolling with 3-wheel or tandem roller.

F. If any subgrade material is worked into base material during the compacting or finishing operations, remove granular material within affected area and replace with new aggregate.

END OF SECTION

1) PM Johnson
2) JA Crone

PART 1 GENERAL

1.01 SECTION INCLUDES

A. Asphaltic pavement including prime coat, tack coat, preparation and compaction of asphaltic mixtures, and surface tests.

1.02 RELATED REQUIREMENTS

A. Section 01 33 00 - Submittal Procedures.

B. Section 01 40 00 - Quality Requirements.

1.03 ACTION SUBMITTALS

A. Submit job-mix formula for each mixture prior to pavement construction.

1.04 QUALITY ASSURANCE

A. Provide testing of materials and job-mix formula following the guidance of Asphalt Institute's publication *Mix Design Methods for Asphalt Concrete and Other Mix Types (MS-2).* Refer to Section 01 40 00.

B. Samples of materials proposed for use shall be submitted to an approved testing laboratory for test, analysis, and development of job-mix formulas.

C. Sample materials in accordance with AASHTO T2 (aggregates), T40 (asphaltic material) and T168 (asphaltic paving mixtures).

D. Submit job-mix formula for each mixture. Formulas shall be determined by an approved testing laboratory based on "Marshall Method" and following criteria:

	Base Course Mixture	Binder and Surface Course Mixture
Asphalt Content	3% to 7%	3.5% to 7%
No. of Compaction Blows, Each End	75	75
Stability (pounds), minimum	750	750
Flow	8-16	8-16
Percent Air Voids	3-8	3-5
Percent Voids in Mineral Aggregate, minimum	14	16

1. Following tolerances will be allowed per single test:

Passing Sieve	Percent
No. 4 and larger	±4
No. 8 thru No. 100	±3
No. 200	±2
Asphalt Content	±0.3

PART 2 PRODUCTS

2.01 ASPHALTIC MATERIALS

A. Use following asphaltic materials for purpose indicated:
   1. Prime coat:
      a. Conform to Illinois Department of Transportation (IDOT) 2022 Standard Specifications for Road and Bridge Construction section 406.

2. Tack coat:
   a. Conform to IDOT 2022 Standard Specifications for Road and Bridge Construction section 406.
3. Asphalt Cement Binder for paving mixture:
   a. ASTM D6373 Performance Grade (PG) 64-28

2.02 MINERAL AGGREGATE

A. Mineral filler shall conform to IDOT 2022 Standard Specifications for Road and Bridge Construction section 1011.

B. Fine aggregate shall conform to IDOT 2022 Standard Specifications for Road and Bridge Construction section 1003.03.

C. Coarse aggregate shall conform to IDOT 2022 Standard Specifications for Road and Bridge Construction section 1004.03.

PART 3 EXECUTION

3.01 SEQUENCE OF WORK

A. Construction operations shall be undertaken in following sequence:
   1. Clean aggregate base course, prepare, and apply prime coat.
   2. Prepare, transport, spread, and roll first layer of asphaltic concrete base course.
   3. Prepare and apply tack coat.
   4. Prepare, transport, spread, and roll second layer of base course.
   5. Prepare and apply tack coat.
   6. Prepare, transport, spread, and roll asphaltic concrete binder course.
   7. Prepare and apply tack coat.
   8. Prepare, transport, spread, and roll asphaltic concrete surface course.

3.02 EQUIPMENT

A. Asphalt mixing plant designed to produce a uniform mixture within job-mix tolerances.

B. Self-powered paving machine with electronic level control and long ski-grade follower capable of spreading mixture to thickness and width specified, true to line, grade, and crown shown on Drawings.

C. Sufficient number of smooth, metal-bedded haul trucks to ensure orderly and continuous paving operations.

D. Pressure distributor capable of applying prime and/or tack coats uniformly without atomization.

E. One or more steel-wheeled, self-propelled rollers, weighing 10 to 12 tons.

F. One or more self-propelled, pneumatic-tired rollers capable of producing minimum compression of 300 lb/in. width of tire tread.

G. Power broom or power blower.

H. Hand tools as necessary to complete Work.

3.03 PRIME COAT INSTALLATION

A. After aggregate base course has been prepared, surface shall be made free of all loose material, and when in a warm, dry condition, apply asphaltic material uniformly at rate of 0.3 to 0.5 gal/sq yd.

B. Allow prime coat to cure until it has been absorbed by surface and will not pick up. Minimum curing time shall be not less than 24 hours. Pools of asphalt material occurring in depressions shall be broomed or squeegeed over surrounding surface same day prime coat is applied. At no time during curing period shall traffic be allowed upon primed surface.

C. If primed surface is damaged, it shall be repaired. Prime coat shall be maintained at all times until cover coat is constructed.

3.04 TACK COAT INSTALLATION

A. Prior to placing second layer of base course and prior to placing binder and surface course, clean all exposed surface of loose or foreign material; and then apply tack coat at rate of 0.02 to 0.05 gal/sq yd.

3.05 PREPARING MIXTURE

A. Regulate exact proportions of various materials within limits required by job-mix formula so as to produce satisfactory bituminous coating and mixture. Order of sequence in which several aggregates shall be drawn or weighed may vary under different conditions. Aggregates shall first be mixed dry, then asphalt cement added. Mixer shall be so operated that mixture is of consistently uniform temperature and as discharged from mixer will not vary more than 20°F (-7°C). Temperature of base course mixture shall not exceed 320°F and that of binder and/or surface course mixture shall not exceed 320°F.

B. In batch type mixers, size of batch shall not exceed manufacturer's rated capacity. Dry-mixing time, after all aggregates are in mixer, shall be not less than 5 seconds. Wet-mixing time, after all asphalt has been added and before opening discharge gate, shall be not less than 25 seconds. Length of dry- and wet-mixing periods may vary, but total mixing time shall be not less than 40 seconds.

C. In continuous-type plants, mixing time may be determined by weight method using following formula:

Pugmill contents, lb	=	Mixing time (seconds)
Pugmill output, lb/sec		Mixing time shall be at least 30 seconds.

3.06 PLACING ASPHALTIC CONCRETE MIXTURE

A. Drawings show thickness of various courses. Place a maximum thickness of 3" (75 mm) in any 1 lift.

B. Remove all standing water from surface prior to paving operations.

C. Spread mixture on areas of uniform width with electronically controlled asphalt spreader with long ski-grade follower. Spread mixture at such a rate that when compacted, layer will be substantially of thickness and dimensions specified or shown on Drawings. Use string line as a guide for finishing machine to maintain edge alignment.

D. Asphaltic concrete mixtures shall have a minimum temperature of 265°F for base course and 265°F for binder and/or surface course. Deliver hot asphaltic concrete at a rate sufficient to provide as nearly continuous travel of spreading unit as possible.

E. For irregular areas where use of a finishing machine is not practical, mixtures may be spread by hand methods. Spread hot mixture uniformly with hot shovels and rakes. After spreading hot mixture, carefully smooth mixture to remove all segregated coarse aggregate and rake marks. Rakes and lutes for hand spreading and smoothing shall be of type designed for use on asphalt mixtures.

F. Apply tack coat to edge of paving placed previous day prior to placing adjacent lane.

3.07 COMPACTION

A. Compact each layer thoroughly and promptly. For all rollers, initial contact with hot mixture shall be made by compaction roll. Roll longitudinal joints smooth and even at time of construction.

B. Use mechanical tampers in areas inaccessible to rollers. Use steel-tired finish rollers to smooth out all marks and roughness in surface. Overall rolling procedure shall produce a surface free of ridges, marks, or bumps.

C. Compact each layer to not less than 97% of maximum density obtained by laboratory job-mix formula.

3.08 JOINT CONSTRUCTION

A. Offset longitudinal joints at least 12" (300 mm) for each succeeding layer. Adjust spreading of hot mixture along longitudinal joints to secure complete closure of joint and full compression of mixture with a smooth surface after compaction. Joint in surface course shall be on centerline or lane line.

B. Separate transverse construction joints by not less than 6' (1.8 m). Saw cold mixture layer to a straight line at right angles to center line so that a full thickness, a true surface, and a vertical edge will be provided.

3.09 TOLERANCES

A. After asphaltic mixture has been compacted, test surface for smoothness by means of a 12' (3.6 m) straightedge placed parallel to center line of pavement and touching surface. If ordinates measured from straightedge to pavement surface exceed 1/4" (6 mm), entire area so affected shall be corrected.

3.10 FIELD QUALITY CONTROL

A. Place asphalt paving mixture only when specified density can be obtained. Take precautions at all times to compact mixture before it cools too much to obtain required density. Do not place mixture on any wet or frozen surface or when weather conditions will otherwise prevent its proper handling or finishing.

B. Do not place asphaltic surface course and/or leveling-binder course when air temperature is below 40°F (4°C). If course is 1" or less in thickness, temperature must be 50°F (10°C) or above.

C. Do not place asphaltic base course when air temperature is below 40°F (4°C).

D. Provide one sample of in-place mixture for each days run to laboratory for testing. Sample shall be tested for requirements specified.

E. Provide armored thermometer suitable for asphalt temperature testing prior to placement.

END OF SECTION

1) PM Johnson
2) RK Thevenot

PART 1 GENERAL

1.01 SECTION INCLUDES

A. Forming.

B. Concrete curb or concrete curb and gutter.

PART 2 PRODUCTS

2.01 MATERIALS

A. Curb and gutter: See Section 03 00 10.

PART 3 EXECUTION

3.01 FORMING

A. Wood or metal, free from warp and of sufficient strength to resist springing during process of depositing concrete. Forms shall be securely staked or braced and held firmly to required line and grade.

3.02 CONCRETE CURB OR CONCRETE CURB AND GUTTER

A. Shape: Illinois Department of Transportation (IDOT) Combination Curb and Gutter.

B. Subgrade: Compact and finish to a firm, smooth surface.

C. Subbase: If shown on Drawings, place sand or gravel with maximum size of 3/4" and less than 5% passing No. 200 sieve.

D. Joints:
1. Contraction joints: Form by use of a steel plate or grooving tool, space not more than 20' oc and/or as shown on Drawings.
2. Expansion joints: Preformed joint filler shaped to exact cross section of curb and gutter, locate as shown on Drawings.

E. Finish: Provide light brush finish while concrete is still green.

F. Backfill: After concrete has been cured and forms removed, backfill spaces in back of curb and gutter to required elevation with excavated material. Compact material until firm and neatly grade surface.

3.03 PROTECTION

A. Curing: See Section 03 00 10.

END OF SECTION

1) PM Johnson
2) JA Crone

PART 1 GENERAL

1.01 SECTION INCLUDES

A. Finish grading.

B. Seeding and fertilizing.

C. Erosion control.

D. Maintaining seeded areas until acceptance.

1.02 TEMPORARY FACILITIES

A. Water supply:
   1. Make necessary arrangements, at own expense, to ensure an adequate supply of potable water.
   2. Owner will supply adequate supply of potable water on site.
   3. Furnish necessary hose, equipment, attachments, and accessories for adequate watering of turf areas, as needed.

1.03 QUALITY ASSURANCE

A. Supply producer's guaranteed statement of analysis for percentages of mixtures, purity, germination, weed seed content, inert material, net weight, year of production, and date and location of packaging of seed.

B. Supply manufacturer's guaranteed statement of analysis, types of nutrients, and weight of fertilizer.

C. Test topsoil in accordance with Section 01 45 29.

D. Supply written analysis stating N, P, and K requirements, organic matter content, and pH value of soil.

1.04 DELIVERY, STORAGE, AND HANDLING

A. Deliver grass seed in original sealed packages bearing producer's guaranteed statement of analysis for percentages of mixtures, purity, germination, weed seed content, inert material, year of production, date and location of packaging, and net weight. Packages shall be labeled in conformance to U.S. Department of Agriculture Rules and Regulations under the Federal Seed Act, and seed laws of the State of Illinois. Seed that has become wet, moldy, or otherwise damaged will be rejected.

B. Fertilizer supplied in closed containers shall be delivered in waterproof bags showing weight, types of nutrients, and manufacturer's guaranteed statement of analysis.

C. Fertilizer supplied in bulk shall be accompanied by bill-of-lading giving weight, types of nutrients, and certificate of manufacturer's guaranteed statement of analysis, for each shipment.

PART 2 PRODUCTS

2.01 GROWING MEDIA

A. Fertilizer:
   1. Preplanting fertilizer: Dry commercial ready-mixed material, produced in pelleted or granular form; uniform in composition and free flowing. Fertilizer shall be applied at a rate of 270 lb per acre at a 1:1:1 ratio as follows: nitrogen fertilizer nutrients (90 lb/acre); phosphorus fertilizer nutrients (90 lb/acre); potassium fertilizer nutrients (90 lb/acre).

2.02 SEED

A. Seed shall be seed of latest season's crop, State Certified by the State of Illinois.

B. Seed mixture: Illinois Department of Transportation (IDOT) type 1B Low Maintenance Lawn Mixture.

2.03 ACCESSORIES

A. Excelsior blanket: Mat of interlocking curled wood excelsior, with consistent thickness, and fiber evenly distributed. One side of blanket shall be covered with mesh of woven cotton cord, twisted paper cord, or biodegradable extruded plastic mesh, with openings not less than 5/8" x 5/8" (16 mm x 16 mm), and not exceeding 1" by 2" (25 mm by 50 mm). Minimum weight of blanket shall be 0.63 lb/sq yd. American Excelsior Co., or equal. Staples shall be 11-gage wire, "U" shaped, with minimum crown width of 1" (25 mm) and minimum leg length of 8" (200 mm).

PART 3 EXECUTION

3.01 FINISH GRADING

A. Grade to uniformly sloping surfaces and to elevations shown on Drawings.

B. Slope finish grade to provide positive surface drainage away from buildings and other structures.

C. Thoroughly till soil to a minimum depth of 4” (100 mm) by roto-tilling, disking, harrowing, or other method. Soil shall not be tilled when it is frozen, excessively wet or dry, or otherwise untillable.

D. Remove from site, all rocks, clods, roots, or other foreign materials larger than 1" (25 mm) in any dimension.

E. Finish grade shall be free of all holes, rills, or gullies caused by erosion or construction operations.

F. Finished ground level shall be firm to prevent sinkage pockets when watered.

3.02 FERTILIZING

A. Uniformly apply preplanting fertilizer at rate of 270 lb/acre.

B. Incorporate amendments into soil to an average depth of 1" (25 mm) by raking, rototilling, disking, harrowing, or other method.

C. Do not apply grass seed and fertilizer at same time, in same machine.

3.03 SEEDING

A. Turfed area: Establish turf to limits of graded areas not to be covered by buildings or structures, planting areas, paving, or other surfacing; and on any original turf areas disturbed by new construction.

B. Planting time:
1. Sow seed only at times of year when temperature, moisture, and climatic conditions will promote germination and plant growth.
2. Sow seed during periods from April 1 to June 15 or from August 1 to November 1.
3. No seed shall be sown during high winds, when soil is frozen or snow covered, or when soil is excessively wet or dry, or in any other condition unsatisfactory for planting.
4. Sow seed immediately after preparation of seedbed. At time of seeding, soil shall be friable, and moist but not muddy, with top 2" (50 mm) cleaned of stones or debris over 1" (25 mm) in any dimension. Soil surface shall be smooth and free of irregularities.

C. Sowing:
   1. Sow seed at rate of 200 lb/acre.
   2. Method of sowing shall be Contractor's option.
   3. When broadcast seeder is used, seed shall be uniformly distributed and then covered to an average depth of 1/4" (6 mm) by means of light harrow, cultipacker, hand rake, or other device.
   4. When grass seed drill is used, drill shall be operated generally perpendicular to direction of surface drainage whenever practical. Seed shall be drilled uniformly to average depth of 1/4" (6 mm).
   5. When drop seeder is used, seed shall be uniformly distributed with no gaps. If seeder is not equipped with means to cover seed, seed shall be covered to average depth of 1/4" (6 mm) by means of light harrow, cultipacker, hand rake, or other device.
   6. When hydraulic planter/mulcher is used, it shall have continuous agitation action which keeps seed mixed in uniform distribution in water slurry until pumped from tank.
      a. Apply slurry within one hour after seed is added to tank. Seed which is allowed to remain mixed in slurry for longer than one hour will not be accepted for use.
      b. Application of prilled fertilizer with seed in single operation may be substituted for application of preplanting and postplanting fertilizer.

D. Apply slurry at rate of 1,000 gal/acre evenly in 2 intersecting directions.

3.04 EROSION CONTROL

A. Immediately after seeding has been performed, apply erosion control matting to areas designated on Drawings.

B. Excelsior blanket:
   1. Lay either parallel or perpendicular to slope, with netting on top and fibers in contact with soil.
   2. Stapling:
      a. Strip ends: 1' (300 mm) centers.
      b. Adjoining strip ends: Butted snugly, common row of staples on 1' (300 mm) centers.
      c. Edges: 6' (1,800 mm) centers.
      d. Adjoining edges: Butted snugly, common row of staples on 6' (1,800 mm) centers.
      e. Strip centers: 6' (1,800 mm) centers.

3.05 CLEANUP

A. Clean up daily during progress of Work and at completion.

B. Remove from Project site surplus materials and any debris resulting from turfing Work.

C. Turfed areas shall be neatly dressed and finished. Walks, paved areas, and adjacent walls and windows shall be flushed clean.

3.06 MAINTENANCE

A. Remove excelsior blanket after the seed has germinated (approximately 4-6 weeks after installation), if it is not breaking down and disintegrating. If the seed has not germinated, contractor shall seed again, install new fertilizer, and blanket, and return in 4-6 weeks or as directed by Owner’s Representative.

B. Costs of reseeding or remulching required because of faulty operations or negligence on part of Contractor shall be borne by Contractor. Any areas reseeded shall have turf establishment period beginning upon reseeding or resodding and of duration as hereinbefore specified. Owner will assume risk for loss or damage due to beneficial occupancy of Project in any part, vandalism, damage by animals or fire, or losses due to curtailment of water by local authority, or due to "Acts of God" (floods, winds of 60 mph (100 kmph) or more, or heavy hail).

C. Watering: Water turfed areas immediately after planting and thereafter as necessary to maintain adequate moisture for promotion of deep root growth. Water shall be applied in such a way that ruts will not be made in soil surface.

D. Protection: Provide temporary protective fences, barriers, and signs where deemed necessary by Owner's Representative.

E. Reseeding: When directed by Owner's Representative, reseed areas on which original seed has failed to grow. Reseeding shall be performed as specified herein for seeding, and in manner that will cause minimum disturbance to existing stand of grass.

F. Remulching: When directed by Owner's Representative, remulch areas on which original mulch has eroded, washed, or blown off. Remulching shall be performed as specified herein for mulching, and in manner that will cause minimum disturbance to existing stand of grass.

3.07 ACCEPTANCE

A. Final walkthrough acceptance of landscaping will be performed a minimum of 6 weeks after completion to ensure grass has taken.

B. At time of inspection, turf shall exhibit healthy, vigorous growth, shall be uniform in color and quality, and shall be reasonably free of weeds, diseases, or other visible imperfections.

C. At time of inspection, grassed area shall contain no bare spots greater than 2 sq ft (0.20 m^2) in size.

D. Any turf areas not accepted by Owner's Representative shall be replanted.

E. Upon final acceptance of turf area, remove temporary fences, barriers, and signs installed for protection of that area. Contractor will be relieved of further responsibility for care and maintenance of accepted area.

END OF SECTION

1) Patrick M. Johnson
2) Greg S. Shuger

PART 1 GENERAL

1.01 SECTION INCLUDES

A. Precast concrete utility structures including design requirements, materials, manufacture, and installation.

1.02 INFORMATIONAL SUBMITTALS

A. Quality assurance data:
   1. Certification statement sealed by manufacturer's professional engineer stipulating that design and construction conform to contract documents and referenced standards. Professional engineer shall be licensed in state of Illinois.
   2. Certification statement from manufacturer that materials conform to the applicable specifications.
   3. Welder’s qualifications.

B. Product Data: Provide list of manufactured materials proposed. Identify manufacturer and type for each item. Include applicable configuration information and dimensions.

C. Embedded accessories required for grounding and cast in place channels and cable pulling irons.

D. Submit concrete mix design for each different mix employed in manufacture of structures.

1.03 ACTION SUBMITTALS

A. Shop Drawings of precast concrete utility structures showing dimensions, locations and sizes of block-outs and openings, embedded items, access frame and cover, joint details, and other physical features defined in contract documents. Drawings shall list design loads and required material strengths.

1.04 QUALITY ASSURANCE

A. Regulatory requirements:
   1. Precast utility structures shall be designed and manufactured by precast concrete supplier regularly engaged in design and production of precast concrete items in accordance with ASTM C857 and C858.
   2. Structural design shall be in accordance with ACI 318.
   3. Perform design by or under direction of manufacturer’s professional engineer.
   4. Perform Work in accordance with NPCA Quality Control Manual for Precast Plants.
   5. Conform to following for material and fabrication requirements:
      a. Box culverts: ASTM C1433.
      b. 3-sided structures: ASTM C1504/ASTM C1504M.
      c. Other structures: ASTM C913.
   6. Perform welding in accordance with:
      a. Structural steel: AWS D1.1.
      b. Reinforcing steel: AWS D1.4.
      c. Welders shall be AWS qualified within previous 12 months.

1.05 DELIVERY, STORAGE AND HANDLING

A. Comply with precast concrete manufacturer’s instructions for unloading, storing, and moving precast structures. Lift structures from designated lifting points.

B. Do not deliver products until concrete has attained minimum 75% of specified 28-day compressive strength or according to manufacturer’s requirements.

C. Store precast concrete structures to prevent damage to Owner's property or other public or private property. Repair property damaged due to product storage.

D. Permanently mark each precast structure showing date of manufacture, manufacturer, and identifying symbols and numbers shown on Drawings that indicate intended use.

PART 2 PRODUCTS

2.01 DESIGN CRITERIA

A. Structural design loadings of precast concrete utility structures shall be in accordance with ASTM C857 subject to following load conditions:
   1. Live load: HL93 MOD highway bridge loading.
   2. Top slab soil cover: Height of vault soil cover plus shaft extension (where applicable).
   3. Finish grade profile: See Drawings.
   4. Dry unit weight of soil above water table: 110 lb/ft^3 (1762 kg/m^3).
   5. Saturated unit weight of soil below water table: 130 lb/ft^3 (2082 kg/m^3).
   6. Coefficient of active earth pressure K_a: 0.50.
   7. Wall live load: Accommodate roof live load transferred to walls.
   8. Base live load: Accommodate roof and wall live loads transferred to base.
   9. Equipment loads: Accommodate at location(s) indicated on Drawings.
   10. Dead loads: Actual weight of materials producing static load.
   11. Distance of ground water level below ground surface: five feet.
   12. Factor of safety against flotation due to buoyancy: 1.2. Assume resisting force equal to weight of concrete and prism of soil above base bounded by vault wall and a plane sloping outward at 1 horizontal to 4 vertical.
   13. Cable pulling iron force (applied in direction of any designated conduit): 8,000 lb (3629 kg).
   14. Lifting devices: ASTM C857.

2.02 MATERIALS

A. Cement, aggregate, water, admixtures, reinforcing steel, and curing compounds: Conform to Section 03 00 10.

B. Concrete:
   1. Concrete compressive strength shall be as required by design, but strength at 28 days shall be not less than 5,000 psi (35 MPa) for prestressed, precast concrete. Use minimum water/cement ratio and slump consistent with placement requirements.

C. Base course: Clean, well-graded gravel or crushed rock with maximum size of 1" (25 mm) and not more than 5% passing No. 4 sieve.

D. Dampproofing: Asphalt emulsion dampproofing coating. ASTM D1187, Type I or ASTM D1227, Type III.

E. Joint sealant: Manufacturer's standard for watertight joints.

F. Accessories:
   1. Access frame and cover:
      a. Electric vaults: 30" (760 mm) heavy-duty cast-iron lid and frame for the round vault opening, marked "ELECTRIC". A 1" pick hole shall be located 4" to 6" (100 mm to 150 mm) from the edge of the lid.
      b. Manufacturer: Neenah Foundry Co., or equal.
   2. Cable racking inserts: Galvanized Unistrut 1-5/8" x 1-5/8" (41 mm x 41 mm), 12-gage (2.5 mm), P3262, or equal. Provide with positive anchorages and 12" (300 mm) horizontal brackets at each level of cable. Locations as shown.
   3. Pulling irons: Minimum 1" (25 mm) diameter, galvanized steel. Locate per drawings.

4. Grounding: Provide grounding as shown in the drawings. Connect interior exposed metal to ground.
5. Sump: 14” (356 mm) diameter sump, 6” (150 mm) minimum depth. Slope floor of vault toward sump, located as shown on drawings. The bottom of the sump shall be free of reinforcing steel so that it can, at Owner’s option, be easily knocked out for the installation of a floor drain.

2.03 FABRICATION

A. Fabricate precast concrete utility structures in accordance with ACI 318, ASTM C858 and NPCA Quality Control Manual for Precast Plants.

B. Fabricate precast concrete utility structures to size, configuration, knock out panels, and openings as indicated on Drawings.

C. Construct forms to provide uniform precast concrete units with consistent dimensions.

D. Clean forms after each use.

E. Install reinforcing by tying to form rigid assemblies. Position and secure reinforcing to maintain consistent cover and to prevent displacement when placing concrete.

F. Position and secure embedded items to prevent displacement when placing concrete.

G. Consolidate concrete without segregating aggregate.

H. Curing of structures shall be by an accepted industry method that will develop the required 28-day compressive strength without affecting the long-term durability of the concrete.

I. Remove forms without damaging concrete.

2.04 CONCRETE FINISHES

A. Formed surfaces not exposed to view: As formed.

B. Unformed surfaces: Finish with vibrating screed or hand float.
1. Permitted: Color variations, minor indentations, chips.
2. Not permitted: Major imperfections, honeycomb, or other defects.

C. Exposed to view finishes: Troweled

2.05 SOURCE QUALITY CONTROL

A. Visually inspect completed precast structures for defects.
1. Repair defects affecting exposed to view surfaces to achieve uniform appearance.
2. Repair honeycomb by removing loose material and applying grout to produce smooth surface flush with adjacent surface.
3. Repair major defects only when permitted by Owner’s Representative.

B. Allow witnessing of factory inspections at manufacturer’s facility. Notify Owner at least 7 days before inspections are scheduled.

PART 3 EXECUTION

3.01 EXAMINATION

A. Verify items provided by other sections of Work are properly sized and located.

B. Verify correct size and elevation of excavation.

C. Verify subgrade and bedding is properly prepared, compacted, and ready to receive Work of this section.

3.02 INSTALLATION

A. Excavation and backfill: Refer to Section 31 23 16-16.

B. Base course: Provide minimum of 6" (150 mm) thickness below bottom of vault. Level and compact in accordance with Section 31 23 16-16. Contractors option to use flowable fill under structures in accordance with Section 31 23 16-16.

C. Lifting, handling, and installing: in accordance with ASTM C891 and manufacturer's instructions.

D. When lowering structures into excavations take precautions to ensure interior of structure and adjacent adjoining structure(s) (for multi-section structures) remain clean.

E. Install precast concrete utility structures to elevation and alignment indicated on Drawings.

F. Assemble multi-section structures by lowering each section into excavation.
   1. Clean joint surfaces.
   2. Install watertight joint seals in accordance with manufacturer's instructions.

G. Remove knockouts or cut structure to receive piping without creating openings larger than required to receive pipe. Fill annular space with grout.

H. Connect duct bank to structure and seal watertight.

I. Set frame and cover and access hatch level without tipping, to elevations indicated on Drawings.
   1. Set cover and access hatch 2” (50 mm) above finished grade for structures located within unpaved areas to allow area to be graded away from cover beginning 1” (25mm) below top surface of frame.

J. Touch up damaged galvanized coatings.

K. Backfill excavations for structures in accordance with Section 31 23 16-16.

L. Install Work in accordance with state standards.

M. Waterproofing:
   1. Duct entrances: Apply minimum 1" (25 mm) wide strip of bentonite earth waterstop around joints at outside surface of wall.
   2. Walls: Apply dampproofing over entire outside surface prior to placement of vault.
   3. Joints: Calk with sealant prior to placing upper section. Joints shall be watertight.

END OF SECTION

1) A. Klimisch
2) J. Varone

PART 1 GENERAL

1.01 SECTION INCLUDES

A. Directional drilling and installation of carrier conduit.

B. Conduit and accessories necessary for construction of electrical distribution line and connecting improvements to existing system.

1.02 SUBMITTALS

A. Statement of qualifications of on-site HDD foreman or operator shall be submitted to Owner for review and approval.

B. Submit soil test data prior to commencement of drill/excavation work.

C. Submit manufacturer’s catalog data for conduit materials.

D. Material Safety Data Sheets for drilling fluids, additives, and mixtures.

1.03 QUALITY ASSURANCE

A. Contractor qualifications:
   1. Provide written proof of conducting a horizontal directional drilling (HDD) business for at least 3 years.
   2. Submit list of minimum of 5 installations for which Contractor has provided similar type and quantities of work, including name and telephone number of person responsible for operation, and maintenance of each installation.

B. Owner may conduct investigations as necessary to determine technical qualifications and financial ability of Contractor to perform work on this Project. Submit required and requested information to facilitate and expedite such investigations.
   1. Owner may request Contractor to make presentation of qualifications.
   2. Contractor may be rejected if evidence submitted by, or investigation of, Contractor fails to demonstrate that proposed Contractor is adequately qualified and equipped to carry out obligations under this contract and complete work in timely manner.

C. Provide documentation to prove complete compliance with specified Contractor qualifications and requirements; it is understood that the contract for this Project will not be signed until Owner is satisfied with documentation submitted to prove compliance with specified Contractor qualifications/requirements.

D. Only workers experienced in HDD operation and insertion of specified conduit shall be used in performing work.

E. Inspect material delivered to site for damage. Materials found during inspection or during progress of work having cracks, flaws, surface abrasions, or other defects will be rejected. Remove defective materials from job site.

PART 2 PRODUCTS

2.01 PERFORMANCE REQUIREMENTS

A. Unless otherwise specified, methods and equipment used in directional drilling and installation of specified conduit shall be at Contractor's option, provided that proposed equipment and method is approved by Owner. Such approval, however, shall in no way relieve Contractor of responsibility for making satisfactory installation meeting criteria set forth herein.

B. Contractor shall assume all responsibility for its methods of construction, stability, and accuracy of drilled and reamed hole and pits constructed by it, and all costs for damages resulting from failure thereof. Contractor shall be solely responsible for safety of pits and related structures, and personnel engaged in underground construction throughout duration of Work.

C. Contractor's methods and schedule shall consider overall Project requirements and anticipated ground condition and water conditions as described in geotechnical report. Contractor's selection of inadequate, inappropriate, or inefficient equipment and methods will not be cause for adjustments to Contract Price or Contract Time.

D. Methods of excavation, equipment and procedures for horizontal directional drilling operation and pits shall be selected by Contractor to provide adequate working space and clearances for work to be performed.

E. Pit excavation methods, ground water control and pit support techniques shall be selected by Contractor.

2.02 CONDUIT MATERIALS

A. HDPE
   1. Install 6" (nominal) diameter high density polyethylene conduit (HDPE) with a standard dimension ratio of 13.5 (SDR13.5). Provide conduit conforming to ASTM F714. Conduit is black in color with red striping.
   2. All conduits required to be of sufficient length to complete pull in one section. No splicing of conduit allowed.

B. Drilling Fluids: Use a high-quality bentonite drilling fluid to ensure hole stability, cuttings transport, bit and electronics cooling, and hole lubrication to reduce drag on the drill pipe and the conduit. Use only fluid with a composition which complies with all Federal, State, and local environmental regulations.

C. Additives: Use admixtures as required to address soil conditions and water conditions such as water hardness, acidity, and alkalinity.

D. Tracer Wire: Use a continuous sheathed solid conductor copper wire line, minimum #12 AWG rated for horizontal directional drilling. Sheathing shall be color coded to match the utility.

E. Size drilling tools, i.e.; reamers, drills, bits, drill pipe, pulling eyes and swivels for planned conduit size and drilling location.

PART 3 EXECUTION

3.01 PREPARATION

A. Contractor shall, in advance of undertaking directional boring, expose ("pothole") pipeline, conduits, or tunnels which are to be crossed and which may require changes in vertical alignment to provide minimum clearance of 24" (600 mm).

B. Changes in vertical alignment shall be affected gradually and shall not exceed the manufacturer's recommendation for minimum allowable radius for horizontal bends. Alternatively, appropriate mechanical joint bends shall be installed.

3.02 SOIL TEST DATA

A. Provide written documentation of conformance with AASHTO T 180.

3.03 INSTALLATION

A. Locates: Ensure all utilities are located and clearly marked prior to start of excavation or drilling.

B. Drill Set-Up: Design and construct the drill entrance and exit pits.

C. Drilling Fluids: Mix the bentonite drilling fluid with potable water (of proper pH) to ensure no contamination is introduced into the soil during the drilling, reaming, or conduit installation process. Make any required additive adjustments.

D. Drill Entrance and Exit Pits
1. Submit proposed drilling pit location to Owner prior to construction for Owner's approval.
2. Drill entrance and exit pits are required. Maintain at minimum size to allow only the minimum amount of drilling fluid storage prior to transfer to mud recycling or processing system or removal from the site.
3. Do not allow drilling mud to flow freely on the site or around the entrance or exit pits. Remove spilled mud and restore ground to original condition. Provide shore pits in compliance with OSHA Standards, 29 CFR 1926.652 if required by site conditions.
4. Drilling near wetlands or water courses requires secondary containment to prevent drilling fluids from entering the wetlands. Secure written approval of a secondary containment plan from the Owner.

E. Drill Entrance and Exit Angle: Ensure entrance and exit angles and elevation profile maintains adequate cover to reduce risk of drilling fluid breakouts and ground exit occurs as specified herein. Ensure that entrance and exit angles generate pullback forces that do not exceed 7.5 percent strain on the high density polyethylene pipe.

F. Pilot Hole:
1. Type and size of the pilot string cutting head and the diameter of the drill pipe are at the Contractor's discretion.

2. Drill the pilot hole along the path shown on the plan and profile drawings. Pilot hole tolerances are as follows:
   a. Vertical Tolerance: Provide minimum cover below channel bottom as specified on the plans. Pilot hole may go deeper if necessary to prevent breakout.
   b. Horizontal Tolerance: Plus or minus – 24” from the centerline as specified on plans always within public utility easements.
   c. Curve Radius: No curve is acceptable with a radius less than the conduit manufacture minimum requirement or 48”.
   d. Mandatory conduit cover requirements are as shown on the drawings or as specified.

G. Guidance Systems: Walkover guidance systems are not acceptable for this project; use a magnetic survey tool locator installed behind the pilot string cutting head and an electric grid (tru-tracker) system for this project. Ensure proper calibration of all equipment before commencing directional drilling operation.

H. Reaming: Conduct reaming operations at the Contractor's discretion. Determine the type of back reamer to be utilized by the type of subsurface soil conditions that are encountered during the pilot hole drilling operation. The reamer type is at the Contractor's discretion.

I. Pull Back
1. Fully assemble the entire conduit to be installed via direction drill prior to commencement of pull back operations. Install a continuous length of tracer wire for the full length of each run of nonmetallic conduit in accordance with ANSI Z535.1. Attach wire to top of conduit in such a manner that it will not be displaced during construction operations.
2. Support the conduit during pullback operations in a manner to enable it to move freely and prevent damage. Install the conduit in one continuous pull.
3. Minimize torsion stress by using a swivel to connect the pull section to the reaming assembly.

4. Maximum allowable tensile force imposed on the pull section is not to exceed 90 percent of the conduit manufacturer's safe pull (or tensile) strength. If the pull section is made up of multiple conduit size or materials, the lowest safe pull strength value governs and the maximum allowable tensile force is not to exceed 90 percent of this value.
5. Minimize external pressure during installation of the pullback section in the reamed hole. Replace damaged conduit resulting from external pressure at no cost to the Owner. Buoyancy modification is at the discretion of the Contractor.

J. Drilling Fluids Disposal
1. Collect drilling fluid returns in the entrance pit, exit pit, or spoils recovery pit. Immediately clean up any drilling fluid spills or overflows from these pits.
2. Dispose of fluids in a manner that is in compliance with all permits and applicable Federal, State, and local regulations.
3. Conduct disposal in compliance with all relative environmental regulations, right-of-way and work space agreements, and permit requirements.

3.04 FIELD QUALITY CONTROL

A. Daily Work Log
1. Maintain a work log of construction events and operations including, but not limited to, the following for each day's work:
   a. Log of each drill rod added or withdrawn during drilling, reaming, and pull back.
   b. Groundwater control operations.
   c. Description of soil conditions encountered.
   d. Tools and equipment in use, drilling fluid, fluid pumping rate, and drilling head location.
   e. Any unusual conditions or events.
   f. Reasons for operational shutdown in event work is halted.

B. Drill Logs
1. Maintain drilling logs that accurately provide drill bit location (both horizontally and vertically) at least every 2” along the drill path. In addition, keep logs that record, as a minimum the following, every 15 minutes throughout each drill pass, back ream pass, or conduit installation pass:
   a. Drilling Fluid Pressure
   b. Drilling Fluid Flow Rate
   c. Drill Thrust Pressure
   d. Drill Pullback Pressure
   e. Drill Head Torque
2. Make all instrumentation, readings, and logs available to the Owner at all times during operation.

C. Field Tests
1. Perform field tests and provide labor, equipment, and incidentals required for testing. Submit test results, identifying any results that do not meet requirements, to the Owner within four days of test completion. Provide corrective action and retest conduit not meeting requirements. Provide corrective action as recommended by the conduit manufacturer and subject to approval by the Owner.

D. CLOSEOUT ACTIVITIES
1. Immediately upon completion of work, remove all rubbish and debris from the job site. Remove all construction equipment and implements of service leaving the entire area involved in a neat condition acceptable to the Owner.
2. Immediately clean "blow holes" or "breakouts" of drilling fluid to the surface and return the surface area to its original condition. Dispose of all drilling fluids, soils, and separated materials in compliance with Federal, State, and local environmental regulations.
3. Contractor shall be responsible for restoration of areas uplifted (pavement heaving, sidewalk uplifting, etc.), as a result of the directional drilling conduit installation, for full warranty period for Project.
4. Submit an electronic copy and three hard copies of the record drawings to the Owner within five days after completing the pull back. Include in the record drawings a plan, profile, and all information recorded during the progress of the work. Clearly tie the record drawings to the

project's survey control. Maintain, and submit upon completion, signed complete work logs of guided directional drill operations.

END OF SECTION

1) E. Cole
2) W. Ullom

PART 1 GENERAL

1.01 SECTION INCLUDES

A. Medium-voltage cable and related splices, terminations, and accessories for cables rated at or above 2001 volts and at or below 35 kV.

1.02 WORK BY OTHERS

A. Receiving, unloading and storing of cable.

B. Installation and termination of cable.

C. Quality assurance data:
1. Certified manufacturer test reports in accordance with NEMA, AEIC and ICEA.
2. Cable test data report in accordance with NEMA, AEIC and ICEA for each lot and type of cable.
3. Pulling tension and side wall pressure calculations if requested by Engineer.
4. Submit documented installer experience if requested by Engineer.

1.03 INFORMATIONAL SUBMITTALS

A. Submit with Bid for each cable type supplied:
1. Completed Data Sheets.
2. Cable damage curves.
3. List of recommended cable pulling lubricants.

1.04 ACTION SUBMITTALS

A. Shop Drawings:
1. Completed and updated Data Sheets.
2. Detailed drawings and manufacturer information for accessories.

1.05 CLOSEOUT SUBMITTALS

A. Operation and maintenance manuals. Provide at a minimum:
1. General description and technical data.
2. List accessories supplied, listing manufacturer, model number and operating ranges.
3. Receiving, storage, installation, and testing instructions.
4. Complete documentation of inspections and tests performed, including logs, curves, and certificates.

1.06 QUALITY ASSURANCE

A. Installer qualifications: Installer shall have minimum of 10 years documented experience as an installer of medium-voltage electrical systems, medium-voltage cable, and medium-voltage terminations and splices.

B. Manufacturer’s qualifications:
1. Manufacturer of cable and any accessories shall be ISO certified.
2. Manufacturer shall have produced similar equipment for a minimum period of 5 years.
3. When requested by Engineer, provide acceptable list of similar equipment installations complying with requirements of this Section.

C. Regulatory requirements:
   1. Cables and accessories shall be in accordance with applicable standards.
      a. Concentric neutral cables per ANSI/ICEA S-94-649 and AEIC CS8
      b. IEEE 383, ASTM B3 and B8, UL 1072.
      c. NETA Acceptance Testing Specifications for Electrical Power Distribution Equipment and Systems.
      d. AIEC CS8.
      e. IEEE 48 and IEEE 386.
   2. Standards of foreign organizations shall not be used without written approval from Engineer.

D. Cable shall not have had more than 1 year elapse from date of manufacture to date of delivery to job Site.

E. Testing services: Employ and pay for services of qualified independent testing agency to perform field quality control testing. Test equipment shall be calibrated within 3 months prior to cable test date. Certified test reports shall be furnished to Owner. Interpretation of test results with regards to compliance to this specification shall accompany test reports.

1.07 DELIVERY, STORAGE, AND HANDLING

A. Coordinate transportation with requirements of pertinent authorities.

B. Cover and protect cable and accessories from damage during shipment.

C. Ensure reel lengths accommodate continuous pull lengths required. Splicing not allowed unless specifically shown on Drawings.

D. Cable ends on cable reels shall be available for testing. Cable ends, whether exposed or concealed, shall be sealed with heat shrinkable caps. Cap sizes shall be as recommended by cap manufacturer for cable OD and insulation. Caps shall contain sufficient adhesive so shrinkage of cap during application result in formation of positive water seal capable of withstanding complete immersion or totally exposed storage over a period of several months without permitting entrance of moisture.

E. Prepare detailed packing lists and shipping notification for items shipped.

PART 2 PRODUCTS

NOT USED

PART 3 EXECUTION

3.01 INSTALLATION

A. Install in accordance with manufacturer’s recommendations, IEEE 576 and Section 26 05 00.

B. Perform pulling tension and side wall pressure calculations for each pull. If requested by Engineer, submit data verifying compliance with manufacturer’s recommendations.

C. Support cables in accordance with requirements of NEC.

D. Replace cables pulled into wrong raceway.

E. Do not reinstall cables installed in wrong raceway and removed. Discard cables unless inspected and accepted by Owner’s Representative in writing.

F. Cables in pulling and switch vaults:

1. Arrange cables to avoid crossovers and to provide easy access to unused ducts.
2. Remove trash and debris from pulling and switch vaults during course of construction.
3. CONTRACTOR shall be responsible for any required dewatering of pulling and switch vaults ducts.

G. Protect cables from dirt, water, oil, damaging chemicals, and from physical injury prior to, and during installation.

H. Perform fishing and pulling with flexible round metal tape, CO_2 propelled polyethylene cord, nylon rope, or manila rope.

I. Cable damage caused by improper pulling tension and excessive sidewall pressures shall be considered for any cable pulls that require use of mechanized cable pulling machine, whether installed underground or overhead.
   1. NEC requirements shall be used as guideline. Calculations shall be performed for duct bank runs over 300’ (90 m), and for installations in conduit over 100’ (30 m).
   2. Monitor pulling tension during installation of cable. Tension shall not exceed maximum recommended by cable manufacturer.
   3. To avoid damage from excessive sidewall pressure at bends, pulling tension shall not exceed cable manufacturer’s recommendation.
   4. Pulling mechanisms, manual or power type, shall have rated capacity in tons legibly marked on mechanism.
   5. During installation, observer shall constantly watch dynamometer and record maximum tension achieved during pull.
      a. If excessive strain develops, stop pulling operation at once. Determine difficulty and correct.
      b. Provide records of dynamometer readings to Engineer.
      c. Inform Owner prior to cable pulls.
   6. Do not use woven wire cable grips. Only use pulling eyes for pulling cables.
   7. As soon as cable is pulled into place, remove pulling eyes and reseal cable.

J. Insert reliable nonfreezing type of swivel or swivel connection between pulling rope and eye to prevent twisting under strain.

K. Only use lubricants as recommended by cable manufacturer. Water-based lubricants not allowed.

L. Outside of each cable reel shall be carefully inspected. Remove protruding nails, fastenings, or other objects that might damage cable.
   1. Perform visual inspection for flaws, breaks, or abrasions in cable sheath as cable leaves reel. Pulling speed shall be slow enough to permit inspection.
   2. Damage to sheath or finish of cable shall be sufficient cause for rejecting cable.
   3. Cable damaged during installation shall be replaced at no expense to Owner.

M. Permanent radius of each bend after cable installation shall be in accordance with manufacturer's recommendations.

N. Cable supports and securing devices shall have bearing surfaces located parallel to surfaces of cable sheath. Install to provide adequate support without deformation of cable jackets or insulation.

O. Provide adequate cable end lengths. Properly install in junction boxes and pulling and switch vaults to avoid longitudinal strains and distorting pressures on cable at conduit bushings and duct end bells.

P. Final inspection shall be made after cables are in place. Where supports, bushings, and end bells deform cable jacket, provide additional supports.

Q. Splices, joints, and connections shall be made only in accessible junction boxes in accordance with methods specified and instructions of cable manufacturer. Splices not allowed unless shown on Drawings.

R. Terminations: Install terminations at ends of conductors with standard kits. Comply with kit manufacturer's written instructions and with classes of terminations indicated.

S. Provide cable tagging including phase indication and cable number identification in accordance with Section 26 05 00.

T. In switch vaults, handholes, pull boxes, junction boxes, and cable vaults, train cable through walls by longest route from entry and exit, or as shown on drawings. Support cables at intervals adequate to prevent sag.

U. Install cable accessories in accordance with manufacturer's recommendations and as shown on Drawings.

V. Use heat shrinkable caps for storing unused cable.

3.02 FIELD QUALITY CONTROL

A. Cable insulation test: Conductors with insulation rated 5,000 volts and above shall be given high-voltage dc insulation test (Hi-Pot).
   1. Ampacity of direct current testing equipment shall be at least 2,500 microamperes.
   2. Final test voltages and duration of test shall be in accordance with cable manufacturer's recommendations.
   3. Test procedures shall conform to IEEE STD 400.
   4. Competent personnel specializing in electrical cable testing shall perform tests.
   5. Perform test on completed cable installation. Perform test after installation of termination kits and splice kits. Cable shall be isolated from equipment.

B. If equipment or system fails to function properly, make necessary corrections, including replacement, at no cost to Owner, and after such corrections are completed, demonstrate to Engineer that equipment or system functions properly.

END OF SECTION

1) E. Cole
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PART 1 GENERAL

1.01 SECTION INCLUDES

A. Grounding system requirements providing protection of equipment and personnel.

1.02 INFORMATIONAL SUBMITTALS

A. Submit with Bid:
1. Description of ground system components to be used.
2. Product data sheets for components.

B. Product Data:
1. Final product data sheets for each type of component.
2. Accessories list.
3. Ratings and nameplate information.
4. Special installation tools list.

C. Quality assurance data:
1. Certified shop test reports.
2. Certified field installation data and reports.
3. Manufacturer's installation information.
4. Copies of component warranties.

1.03 MAINTENANCE MATERIALS

A. Provide complete set of special tools as necessary for installation for each piece of equipment. Tools and their intended use shall be identified in assembly instructions.

1.04 QUALITY ASSURANCE

A. Manufacturer qualifications:
1. Grounding assembly manufacturer shall be manufacturer of major components of ground system.
2. Manufacturer shall be ISO certified.
3. When requested by Engineer, provide acceptable list of similar equipment installations complying with this Specification.

B. Regulatory requirements:
1. Design, manufacture, and test ground system and accessories in accordance with applicable requirements of NFPA 70, IEEE STD 80, IEEE STD 81, IEEE STD 142, IEEE STD 837, and applicable state and local codes and regulations.
2. Standards of foreign organizations shall not be used without written approval from Engineer.

1.05 DELIVERY, STORAGE, AND HANDLING

A. Prepare detailed packing lists and shipping notification for all items shipped.

B. During delivery and storage, handle equipment to prevent damage.

C. Store equipment in clean, dry place. Protect from weather, dirt, water, construction debris, and physical damage in accordance with manufacturer's instructions.

PART 2 PRODUCTS

2.01 MANUFACTURERS

A. Erico.

B. FCI-Burndy.

C. Galvan Industries

D. Harger Lightning & Grounding

E. Southern Grounding Products

F. Thompson Lightning Protection, Inc.

2.02 SYSTEM DESCRIPTION

A. Grounding system includes, but is not limited to, rods, cable, connectors and miscellaneous hardware and materials.

B. Owner will provide outline, arrangement, and detail drawings for grounding system.

2.03 MATERIALS

A. Grounding materials shall be new and undamaged.

B. Ground rods: Copper-clad steel not less than 3/4” (19 mm) in diameter and 10’ (3 m) in length. Ground rods shall be UL listed with not less than 10 mils of Copper cladding and stamped near top of rod to show manufacturer, diameter, and length with one end pointed to facilitate driving. Ground rod size shall be as shown on Drawings. If ground rod is longer than 10’ (3 m), use sectional, threaded ground rods.

C. Below and Above-grade bare ground cable: Copper clad copper in accordance with ASTM B3, Class A or B stranding, not less than No. 4/0 AWG (120 mm^2) in accordance with ASTM B8. Ground conductor size shall be as shown on Drawings.

D. Insulated ground conductors shall have green colored insulation.

E. Ground conductors shall be bare or have green colored insulation or marked with green colored tape or adhesive labels at each end and at every point where conductor is accessible.

F. Below-grade connections shall be made using an exothermic welded process or compression system.
   1. Exothermic molds and weld metal shall be selected for connection and be made in strict accordance with manufacturer’s instructions.
   2. Where flush ground plates are to be embedded in concrete, ground cable shall be exothermally welded to plate and plate firmly secured to concrete forms.

G. Above-grade connections shall be provided as shown on Drawings.

H. Above-grade clamps and other hardware used with grounding system shall be bronze or copper alloy.

I. Above ground bolts, washers, and nuts shall be silicon bronze alloy or approved type of cadmium-plated steel.

J. Connections to ground rods and ground cables to be buried in earth or concrete shall be suitable for direct burial and shall be identified for such use.

K. Ground fence components including posts, gates, fabric, and barbed wire.
   1. Ground gates using flexible, tinned copper braid.
   2. Connectors to posts shall be non-corrosive, high-conductivity copper. Connect ground to a maximum of every third post unless indicated otherwise on the drawings.
   3. Cable to fence fabric and barbed wire shall be aluminum.

PART 3 EXECUTION

3.01 EXAMINATION

A. Verify Site conditions are acceptable for installation.

B. Verify grounding system components are in good condition and undamaged.

3.02 INSTALLATION

A. Install at locations shown on Drawings and in accordance with manufacturer's recommendations.

B. Connect electrical equipment to ground grid with ground conductor. Electrical equipment shall be designated as metallic structures including equipment mounted thereon, instrument transformers, surge arrestors, overhead shield wires, transformers, breakers, voltage regulators, enclosures, switchgear, raceways, junction boxes, outlet boxes, cabinets, machine frames, and other conductive items in close proximity with electrical circuits, operate continuously at ground potential, and provide low impedance path for possible ground fault currents.

C. Install separate, green-insulated equipment grounding conductor in conduit with related phase and neutral conductor.

D. Multiconductor power cables shall have dedicated grounding conductor integrated within cable construction.

E. Ground medium-voltage cable shields per manufacturer recommendation using cable termination shield grounding kits supplied with medium voltage terminations. Install in strict accordance with manufacturer's instructions.

F. Ground motors with ground conductor originating at ground lug in equipment where motor power is supplied and connected to motor frame inside motor terminal conduit box. Where motor has separately mounted starter or disconnect switch, ground conductor shall be bonded to starter and disconnect device enclosures and motor frame.

G. Above-grade connections to permanent and removable equipment shall be bolted type.

H. Connections to exposed structural steel within buildings or plants shall be exothermic-welded type, unless noted otherwise. Connections to structural steel within substations shall be bolted type. Connections to galvanized steel shall be by bolting.

I. Above-grade conductors:
   1. Install exposed conductors inconspicuously in vertical or horizontal positions on supporting structures.
   2. When located on irregular supporting surfaces or equipment, conductors shall run parallel to or normal to dominant surfaces.
   3. Conductors routed over concrete, steel, or equipment surfaces shall be kept in close contact with surfaces by using fasteners located at intervals not to exceed 3' (1 m).

J. Conduits extending into equipment shall be grounded through grounding bushings in enclosure where terminated. Grounding bushings shall be wired together and connected internally to enclosure ground lug or ground bus with bare copper conductors.

K. Conduits connected to metal enclosures shall be grounded to enclosure by either grounding bushing or double locknuts, with one conduit locknut on each side of enclosure, to provide continuous ground path back to source voltage. Provide grounding bushing for knockout holes in metal enclosures that are oversized, elongated, or deformed.

L. Install bare grounding conductor for entire length of cable tray, cable bus, and where indicated on Drawings. Connect grounding conductor to each tray/bus section and bond tray/bus grounding system to station ground grid at minimum of every 100' (30 m). Cable tray/bus shall additionally be continuous and rated for carrying fault current in accordance with NEC. Trays/buses shall be bonded either by direct connection to or by bonded conduit or jumper conductor to panels, switchgear, and equipment tray cable serves. Conduit takeoffs from tray shall use UL-approved grounding clamps.

M. Bare conductor, used for the building or facility lightning protection system, shall be connected to the below grade grounding system.

N. Install ground conductor below grade around building perimeters, foundations, and equipment skids as indicated on Drawings. Repair or replace damaged ground system conductors.

O. Exothermic welds shall encompass 100% of cable end being welded and shall resist moderate hammer blows.

P. Connect building and pipe support columns to grid with No. 4/0 AWG (120 mm^2) cable. Equipment skid frames, switchgear and motor control center ground bars, dry-type transformer cases, and other required solid grounds shall be connected to site grid by "stingers" extended from grid. Where indicated on Drawings, stingers shall be same diameter as ground cable. Provide 5' (1.5 m) of coiled cable above grade for equipment connection.

Q. Excavate for grid conductor to depths of 18" (50 mm) minimum or as indicated on Drawings. Use special care for excavation near existing foundations and utilities. Excavate by hand in such areas. After installation of grid conductor, backfill with material from excavation, excluding large stones and organic material. Backfill around conductor completely, thoroughly tamping to provide good contact between earth and ground conductor.

R. Install ground rods in firm soil outside of excavated areas. Drive top of rod to depth of 18" below grade as a minimum to match conductor depth, unless otherwise shown on Drawings. Use driving studs or other suitable means to prevent damage to threaded ends of sectional rods.

S. Maximum resistance-to-ground of single driven ground rod shall not exceed 25 ohms. Maximum resistance-to-ground of ground grid system shall not exceed 2 ohms. If measured resistance exceeds above values, add rods and bond together to achieve desired resistance. Measurements shall be made and data recorded in presence of Owner's Representative.

T. Install ground conductor near bottom of concrete encased duct bank. Connect duct bank ground conductor to substation grounding system. Provide 10' duct bank ground conductors at locations for interface with distribution manholes to provide grounding for metallic noncurrent-carrying cable supports, metallic sheaths of cable, and enclosures. Metallic conduits within duct bank shall be provided with grounding bushings within the switchgear and at interface with distribution manholes. Connect grounding bushings to grid conductor with minimum No. 8 AWG (10 mm^2) conductor.

U. Install ground conductor in cable trenches along with power conductors or other raceway as detailed on the drawings.

V. Ground fence components including posts, gates, fabric, and barbed wire as shown on Drawings.

W. Ground connections to operator platform shall consist of one connection from platform to the equipment being operated.

3.03 FIELD QUALITY CONTROL

A. Ground grid resistance measurements and data recording shall be made by using fall-of-potential method in accordance with IEEE 81.

B. Tests shall be made with approved ground resistance tester in accordance with instrument manufacturer's instructions.
   1. Make measurements made in presence of Owner's Representative and record data.
   2. Volt-ohmeter not acceptable.
   3. Tests shall be performed by personnel knowledgeable in ground system testing.

3.04 MAINTENANCE

A. Grounding system shall not require maintenance after final installation, testing, and acceptance.

END OF SECTION

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