



### AGENDA ITEM EXECUTIVE SUMMARY

Agenda Item:	Consider draft resolution awarding contract to Kelso-Burnett Co. for Western Avenue Substation General Construction														
Presenter & Title:	Hal Wright, Superintendent of Electrical Services														
Date:	June 25, 2018														
<b><i>Please Check Appropriate Box:</i></b>															
<input checked="" type="checkbox"/>	Committee of the Whole Meeting		Special Committee of the Whole Meeting												
<input checked="" type="checkbox"/>	City Council Meeting		Special City Council Meeting												
<input type="checkbox"/>	Public Hearing		Other -												
Estimated Cost: \$330,000.00		Budgeted? <input checked="" type="checkbox"/> Yes <input type="checkbox"/> No	Other Funding? <input type="checkbox"/> Yes <input type="checkbox"/> No												
<i>If "Other Funding," please explain how the item will be funded:</i>															
<b>Executive Summary:</b>															
<p>City of Geneva Electric Division has identified the Western Ave Substation transformer as needing replacement due to abnormal oil samples and preventive maintenance testing.</p> <p>The bid to construct a new transformer was awarded in November 2017. The purpose of the bid for General Construction is to remove the old transformer, demolition of the current transformer pad, construction of a new transformer pad and oil containment and connection of the new transformer after delivery. An option was included for disposal of the old transformer.</p> <p>Bids were opened on June 11, 2018.</p> <table style="width: 100%; margin-top: 20px;"> <thead> <tr> <th style="width: 40%;"></th> <th style="width: 30%; text-align: center;">Construction</th> <th style="width: 30%; text-align: center;">Transformer disposal option</th> </tr> </thead> <tbody> <tr> <td style="padding-left: 40px;">Kelso-Burnett Co</td> <td style="text-align: center;">\$344,000.00</td> <td style="text-align: center;">(\$14,000.00)</td> </tr> <tr> <td style="padding-left: 40px;">Trice Construction Co</td> <td style="text-align: center;">\$650,000.00</td> <td style="text-align: center;">\$79,500.00</td> </tr> <tr> <td style="padding-left: 40px;">Energis</td> <td style="text-align: center;">\$368,792.54</td> <td style="text-align: center;">\$13,991.16</td> </tr> </tbody> </table>					Construction	Transformer disposal option	Kelso-Burnett Co	\$344,000.00	(\$14,000.00)	Trice Construction Co	\$650,000.00	\$79,500.00	Energis	\$368,792.54	\$13,991.16
	Construction	Transformer disposal option													
Kelso-Burnett Co	\$344,000.00	(\$14,000.00)													
Trice Construction Co	\$650,000.00	\$79,500.00													
Energis	\$368,792.54	\$13,991.16													

Kelso-Burnett Co was the lowest bidder and also included, as an option, a credit of \$14,000.00 to remove and dispose of the old transformer, for a total price of \$330,000.00.

**Attachments:** *(please list)*

- Resolution 2018-62
- Recommendation Letter from Stanley Consultants dated June 19, 2018
- Bid Tabulation
- Western Ave Transformer Capital Request
- Contract for Western Avenue Substation Transformer Replacement General Construction

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

Award contract to Kelso-Burnett Co. for Western Avenue Substation General Construction in an amount not to exceed \$330,000.00

**RESOLUTION NO. 2018-62**

**RESOLUTION AUTHORIZING EXECUTION OF  
Contract to Kelso-Burnett for Western Avenue Substation General Construction in an amount  
not to exceed \$330,000.00**

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**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 award, on behalf of the City of Geneva, a contract with Kelso-Burnett Co. for the General Construction at Western Avenue Substation, the form attached hereto.

**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 9th day of July, 2018

**AYES: \_\_ NAYS: \_\_ ABSENT: \_\_ ABSTAINING: \_\_ HOLDING OFFICE: \_\_**

Approved by me this 9th day of July, 2018.

\_\_\_\_\_  
City Administrator

ATTEST:

\_\_\_\_\_  
City Clerk



June 19, 2018

Mr. Aaron Holton  
Electric Division Manager  
City of Geneva Public Works  
1800 South Street  
Geneva, IL 60134

**RE: Engineer's Recommendation for Award of Contract  
Bid Proposal No. 18-01 – Western Avenue Substation  
General Construction**

Dear Aaron:

On June 11, 2018, three bids were opened at the City of Geneva (Geneva). A bid tabulation is enclosed for your review.

Each bidder provided a base bid and an alternate for disposal of the existing transformer.

Of the three bids that were received, Kelso-Burnett was the apparent low bid. Below is the breakout of their bid:

<u>Item</u>	<u>Cost</u>
Bid Price	\$344,000.00
<u>Alternate</u>	<u>(\$14,000.00)</u>
Total with Alternate	\$330,000.00

A draft conformed contract for your reference is attached to the bid.

Kelso-Burnett had some clarifications and exceptions having to do with the cable bus that is being provided by this contract. We feel that these clarifications are acceptable. We recommend awarding to Kelso-Burnett the bid with the alternate included for a total contract price of \$330,000.00.

Please review and if Geneva agrees with this recommendation, prepare a Notice-to-Proceed letter for Kelso-Burnett, and sign three copies of the draft conformed contract Agreement Page (section 00 42 13 page 5). Once you have signed the agreement pages, please mail back to me along with the original signed pages from Kelso-Burnett bid. I will then proceed with getting final signatures from Kelso-Burnett and prepare the conformed contract.

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

Sincerely,

Stanley Consultants, Inc.

A handwritten signature in blue ink, appearing to read "Philip E. Schulz".

Philip E. Schulz  
Project Manager

cc: Mr. Hal Wright

Attachments: Final Bid Tab  
Draft Conformed Contract

27824 Construction REC ltr 06192018



## BID TABULATION SHEET

BID NUMBER	1	2	3		
NAME OF BIDDER	Kelso- Burnett Co.	Trice Construction Co.	Energis		
BID SECURITY	10%	10%	10%		
ADDENDA	1	1	1		
Concrete per cu. Yd.	\$897.00	N/A	\$181.50		
Serv. Eng. per Day	\$2,000.00	N/A	N/A		
Serv. Eng. Travel per round trip	\$4,000.00	N/A	N/A		
Total Bid	\$344,000.00	\$650,000.00	\$368,792.54		
Alternate No. 1	(\$14,000.00)	\$79,500.00	\$13,991.16		
Exceptions	2.03.B.3 – Cable Bus cable to have EPR insulation 2.03.C.3-Cable Bus cable to have EPR insulation 2.03.C.4-Low voltage cable has TS-CPE jacket 2.04.I-Splice plates for Cable Bus to match cable bus housing: aluminum	1. Oil Separator to be cast into 4 sections 2. Lines on East side of substation to be deenergize and grounded 3. No analytical testing of soils by others 4. Pricing was based on the soil going to subtitle "D" facility	-Article 4.5 -Waiver of Consequential Damages -Article 5.5A -Section 6.5 -Section 7.17 -Article SC-7.18		
Comments	With alt no. 1 as a deduct, the bid price would go down if the alternate was accepted.	Many items listed as to be determined or will provide with other submittals.	Did not submit a price for Service Engineer on the basis that the contract did not define it.		

Remarks:

**TABULATED** G. P. Askren      **DATE** 6/12/2018      **NO.**  
**CHECKED** P. E. Schulz      **DATE** 6/12/2018

I hereby certify that this is a true and correct tabulation of the bids received at 10:00am On 6/11/2018 by City of Geneva



## FY 2019 Capital Request

**Instructions:** Use this form to request capital expenditures if the item has a value of at least \$5,000 and a useful life over one year. Complete a separate form for each item or group of identical items. If the requested expenditure is replacing an existing item, be sure to check Replacement Item below. Use actual cost data where possible.

**Capital Item Requested:**

	FY 2019	FY 2020	FY 2021	FY 2022	FY 2023
<b>Cost:</b>					
Department: Fund Number: Account Number:			Priority Ranking: Submitted By: Date:		
<b>Check One:</b>	New Item	Maintenance	Replacement Item		

**Summary for budget book** (Limit 2-3 sentences):

**Justification for Item** (Attach separate sheet if needed):

**Funding source for project:**

**Impact on annual operating expenses:**

**Estimated operating budget annual dollar** (Check one):

Increase    
  Decrease    
  No impact    
 Amount:

# **Conformed Contract**

**for**

## **Bid Proposal No. 18-01 Western Avenue Substation Transformer Replacement General Construction**

**between**

**City of Geneva  
Geneva, Illinois**

**and**

**Kelso-Burnette Company  
Rolling Meadows, Illinois**

**August 3 2018**

# Project Manual

for

## Bid Proposal No. 18-01 Western Avenue Substation Transformer Replacement General Construction

City of Geneva  
Geneva, Illinois



*John R. Sovers*  
\_\_\_\_\_  
Signature  
*5-17-2018*  
\_\_\_\_\_  
Date

License Exp. Date: 11-30-2019



*Greg S Shuger*  
\_\_\_\_\_  
Signature  
*5-17-2018*  
\_\_\_\_\_  
Date

License Exp. Date: 11-30-2019



*Nathan J. Pierson*  
\_\_\_\_\_  
Signature  
*5-17-2018*  
\_\_\_\_\_  
Date

License Exp. Date: 11-30-2018

Illinois Firm Registration No. 184-001533

Issued for Bid



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

BID PROPOSAL NO. 18-01  
WESTERN AVENUE SUBSTATION TRANSFORMER REPLACEMENT  
GENERAL CONSTRUCTION

CITY OF GENEVA  
GENEVA, ILLINOIS

**PROCUREMENT AND CONTRACTING REQUIREMENTS GROUP**

DIVISION 00      PROCUREMENT AND CONTRACTING REQUIREMENTS

Resp. Charge	Document	Title	Page	
JRS	00 01 15	Drawing List	1	
JRS	00 21 14	Attachment A – Certification of Compliance	1	to 2
JRS	00 52 13	Agreement between Owner and Contractor – EJCDC C-520 (2013 Edition)	1	to 5
		Exhibit A	1	to 15
JRS	00 61 13-13	Performance Bond – EJCDC C-610 (2013 Edition)	1	to 3
JRS	00 61 13-16	Payment Bond – EJCDC C-615 (2013 Edition)	1	to 3
JRS	00 72 13	Standard General Conditions of the Construction Contract – EJCDC C-700 (2013 Edition)	1	to 38
JRS	00 73 00	Supplementary Conditions – EJCDC C-800 (2013 Edition)	1	to 12
JRS	00 91 13	Addendum No. 1 – June 6, 2018	1	

**SPECIFICATIONS GROUP**

**GENERAL REQUIREMENTS SUBGROUP**

Resp. Charge	Section	Title	Page	
DIVISION 01      GENERAL REQUIREMENTS				
JRS	01 11 00	Summary of Work	1	to 2
JRS	01 20 00	Price and Payment Procedures	1	to 3
JRS	01 23 00	Alternates	1	
JRS	01 25 13	Product Substitutions Procedures	1	to 2
		Product Substitution Request Form	1	
JRS	01 30 00	Administrative Requirements	1	to 3
JRS	01 32 00	Construction Progress Documentation	1	to 2
JRS	01 33 00	Submittal Procedures	1	to 6
		Submittal Transmittal Form	1	
JRS	01 40 00	Quality Requirements	1	to 3
JRS	01 43 30	Welding Qualifications	1	
JRS	01 50 00	Temporary Facilities and Controls	1	to 5
JRS	01 60 00	Product Requirements	1	to 2
JRS	01 70 00	Execution and Closeout Requirements	1	to 3
JRS	01 78 23	Operating and Maintenance Data	1	to 3
		Operating and Maintenance Manual Cover Diagram	1	

**FACILITY CONSTRUCTION SUBGROUP**

DIVISION 02      EXISTING CONDITIONS

JRS	02 41 00	Demolition	1	to 5
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DIVISION 03      CONCRETE

NJP	03 00 10	Concrete Work	1	to 8
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Resp. Charge	Section	Title	Page
<b>DIVISION 05 METALS</b>			
NJP	05 50 00	Metal Fabrications	1 to 2
<b>FACILITY SERVICES SUBGROUP</b>			
<b>DIVISION 26 ELECTRICAL</b>			
JRS	26 05 00	Common Work Results for Electrical	1 to 20
JRS	26 25 10	Cable Bus System	1 to 4
<b>SITE AND INFRASTRUCTURE SUBGROUP</b>			
<b>DIVISION 31 EARTHWORK</b>			
NJP	31 32 16-16	Structural Excavation	1 to 4
<b>DIVISION 32 EXTERIOR IMPROVEMENTS</b>			
GSS	32 92 19	Seeding	1 to 4
<b>DIVISION 33 UTILITIES</b>			
JRS	33 72 40	Substation Equipment	1 to 6
JRS	33 79 00	Site Grounding and Bonding	1 to 4

Drawing No.	Title	Rev. No.
GG01	Coversheet and Drawing Index	0
8108D30A-D	Schematic Diagram Voltages and Currents	0
8108D30J-D	Transformer Control Schematic	0
8108D30L-D	One Line Diagram	0
8108D30O-D	Simplified Ann Schematic	0
WESTAVE3-D	Unit Number 3 – Wiring Diagram	0
EP1-D	Substation Plan	0
EP2-D	Electrical Sections	0
EP04-D	Control building Equipment Layout, Conduit and Cable Plan	0
EU1-D	Conduit and Grounding Plan	0
EW4-D	Terminal Cabinet Wiring Diagram – Sheet 1 of 2	0
EW5-D	Terminal Cabinet Wiring Diagram – Sheet 2 of 2	0
SF1-D	Foundation Plan	0
EO01	One-Line Diagram	0
EO02	Three-Line Diagram	0
EO03	T1 LTC Schematic Motor Drive & Control MD-III	0
EO04	Simplified Ann Schematic	0
EO05	DC Schematic T1	0
EO06	LTC Schematic Motor Drive & Control MD-III	0
EO07	Class ONAN/ONAF/ONAF AC Schematic Transformer Devices	0
EO08	Class ONAN/ONAF/ONAF DC Schematic Transformer Devices	0
EP01	Substation Plan	0
EP02	Electrical Sections	0
EP03	Bill of Materials	0
EP04	Control Building Equipment Layout, Conduit and Cable Plan	0
EP05	Front Elevation View	0
EU01	Conduit and Grounding Plan	0
EU02	Conduit Details and Conduit Schedule	0
EU03	Grounding Details	0
EW01	Cabinet Wiring Backwall	0
EW02	Cabinet Wiring Right Side & Right Swing Panel	0
EW03	RTU Wiring Diagram	0
EW04	Terminal Cabinet Wiring Diagram – Sheet 1 of 2	0
EW05	Terminal Cabinet Wiring Diagram – Sheet 2 of 2	0
EW06	Unit Number 3 Wiring Diagram	0
EW07	Cubicle 300 (Top Section) Swing Door Wiring	0
SF01	Foundation Plan	0
SF03	Transformer Foundation	0
SF04	Oil Separator Tank	0
	REFERENCE ONLY DRAWINGS	
SF02	Foundation Details and Schedule	0

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,  
Kelso-Burnett Company  
(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 or 33E-4 of Chapter 720 of the Illinois Compiled Statutes, 2017.
6. That pursuant to Chapter 65, Section 11-42.1-1 of the Illinois Compiled 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, 820 ILCS 130 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.

Kelso-Burnett Company  
Name of Corporation, Partnership, or Proprietor

5200 Newport Drive  
Address

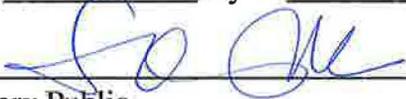
Rolling Meadows Ill                      60008  
City    State    Zip

847-259-0720  
Telephone

 , CFO  
Authorized Signature/Title

SUBSCRIBED AND SWORN to before me

this 8th day of June, 20 18.

  
Notary Public

My commission expires: 08/12/2018



**THIS AGREEMENT** is by and between City of Geneva, Illinois (Owner) and Kelso-Burnette Company (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 described as furnishing and installing a new transformer foundation, transformer oil containment, grounding jumpers to high side bus, 12.47kV cable bus system, wiring to all existing panels (e.g. control, AC & DC), RTU cabinet at the City of Geneva Western Avenue Substation. The project also includes the removal of an existing concrete pad for a transformer and 12.47kV bus support and repairing the rock surfacing. Include separate pricing for the removal and disposal of the existing 34/12.47kV 12.75MVA transformer.

#### **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 Western Avenue Transformer Replacement.

#### **ARTICLE 3 - ENGINEER**

3.1 The Project has been designed by Stanley Consultants, Inc. (Engineer) who is to act as Owner's representative, assume all duties and responsibilities, and have the rights and authority assigned to Engineer in the Contract Documents in connection with 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 **Dates for Substantial Completion and Final Payment.** The Work will be substantially completed on or before November 2, 2018, and completed and ready for final payment in accordance with paragraph 15.06 of the General Conditions on or before December 30, 2018.

4.3 **Milestones.** Equipment procurement may start within 21 days after Notice to Proceed. Construction shall not begin sooner than September 14, 2018.

4.4 The Owner shall be notified 48 hours prior to any shipment of materials or equipment. Please contact Mr. Aaron Holton 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.

4.6 **Liquidated Damages.** Contractor and Owner recognize that time is of the essence of this Agreement and that Owner will suffer financial loss if Work is not completed within the times specified in Paragraph 4.2 above, plus any extensions thereof allowed in accordance with Article 15 of the General Conditions. 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), Contractor shall pay Owner \$750 (seven hundred fifty dollars) for each day that expires after the time specified in paragraph 4.2 for Substantial Completion until the Work is substantially complete. After Substantial Completion, if Contractor shall neglect, refuse, or fail to complete the remaining Work within the Contract Time or any proper extension thereof granted by Owner, Contractor shall pay Owner \$750 (seven hundred fifty dollars) for each day that expires after the time specified in paragraph 4.2 for completion and readiness for final payment until the Work is completed and ready for final payment.

**ARTICLE 5 - CONTRACT PRICE**

5.1 Owner shall pay Contractor for completion of the Work in accordance with the Contract Documents an amount in current funds equal to the sum of the amounts determined pursuant to paragraphs 5.1, A., and 5.1, B. below. Alternates will be exercised at option of Owner 5.1, B. (refer to Section 01 23 00):

A. Lump Sum Bid Price:

Three Hundred Forty-Four Thousand Dollars (\$344,000.00)

B. Deduct - Alternate Bid Price for Disposal of Existing 35/12.47kV 12.5MVA Transformer:

Fourteen Thousand Dollars (\$14,000.00)

C. Lump Sum Bid Price Including Alternate Deduct:

Three Hundred Thirty Thousand Dollars (\$330,000.00)

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

No.	Item	Unit Adjustment Price	Price
1.	Concrete	cubic yard	\$ 897.00
2.	Site services of Service Engineer	per day	\$ 2,000.00
3.	Transportation, travel time, and out-of-pocket expenses for travel of Service Engineer to Site	per round trip	\$ 4,000.00

**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 and Supplementary 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 paragraphs 6.2., A. and 6.2., B below. All such payments will be measured by the schedule of values established in paragraph 2.07.A of 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 in the General Requirements:

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 Engineer shall determine, or Owner may withhold, in accordance with paragraph 15.01 of the General Conditions.

1. 90% of Work completed (with the balance being retainage). If Work has been 50% completed as determined by Engineer, and if the character and progress of the Work have been satisfactory to Owner and Engineer, Owner, on recommendation of Engineer, may determine that as long as the character and progress of the Work remain satisfactory to them, there will be no 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 as Engineer shall determine in accordance with 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 tentative list of items to be completed or corrected attached to the certificate of Substantial Completion.

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 moneys not paid when due as provided in Article 15 of the General Conditions shall bear interest at maximum rate allowed by law at the place of the Project 4% per annum.

#### **ARTICLE 8 - CONTRACTOR'S REPRESENTATIONS**

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

- A Contractor has examined and carefully studied the Contract Documents and the other related data identified in the Bidding Documents.
- B Contractor has visited the Site and become familiar with and is satisfied as to the general, local, and Site conditions that may affect cost, progress, and performance of the Work.
- C Contractor is familiar with and is satisfied as to all federal, state, and local Laws and Regulations that may affect cost, progress, and performance of the Work.
- D Contractor does not consider that further examinations, investigations, explorations, tests, studies, or data are necessary for the performance of the Work at the Contract Price, within the Contract Times, and in accordance with the other terms and conditions of the Contract Documents.
- E Contractor is aware of the general nature of work to be performed by Owner and others at the Site that relates to the Work as indicated in the Contract Documents.
- F Contractor has correlated the information known to Contractor, information and observations obtained from visits to the Site, reports and drawings identified in the Contract Documents, and all additional examinations, investigations, explorations, tests, studies, and data with the Contract Documents.
- G Contractor has given Engineer written notice of all conflicts, errors, ambiguities, or discrepancies that Contractor has discovered in the Contract Documents, and the written resolution thereof by Engineer is acceptable to Contractor.
- H Contract Documents are generally sufficient to indicate and convey understanding of all terms and conditions for performance and furnishing of the Work.

#### **ARTICLE 9 - CONTRACT DOCUMENTS**

9.1 The Contract Documents consist of the following:

- A. This Agreement (pages 1 to 5, inclusive).
- B. Exhibit A to this Agreement (pages 1 to 15, inclusive).
- C. Performance Bond (pages 1 to 2, inclusive).
- D. Payment Bond (pages 1 to 2, inclusive).

- E. General Conditions (pages 1 to 41, inclusive).
- F. Supplementary Conditions (pages 1 to 7, inclusive).
- G. Specifications as listed in Project Manual table of contents.
- H. Drawings consisting of a cover sheet and sheets as listed in Drawing List.
- 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. Work Change Directives;
  - 3. Change Order(s).

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 paragraph 3.04 of 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.** No assignment by a party hereto of any rights under or interests in the Contract will be binding on another party hereto without the written consent of the party sought to be bound; and, specifically but without limitation, moneys that may become due and moneys that are due may not be assigned without such consent (except to the extent that the effect of this restriction may be limited by law), and unless specifically stated to the contrary in any written consent to an assignment, no assignment will release or discharge the assignor from any duty or responsibility under the Contract Documents.

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

10.4 **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.

**IN WITNESS WHEREOF**, Owner and Contractor have signed this Agreement in duplicate. One counterpart each has been delivered to Owner and Contractor. All portions of the Contract Documents have been signed or identified by Owner and Contractor or on their behalf.

This Agreement will be effective on \_\_\_\_\_, 20\_\_ (which is the Effective Date of the Agreement).

**OWNER:**

City of Geneva \_\_\_\_\_

Geneva, Illinois \_\_\_\_\_

By: Stephanek \_\_\_\_\_

Title: City Administrator \_\_\_\_\_

[CORPORATE SEAL]

Attest Jeanne Lorman \_\_\_\_\_

Title: Executive Assistant \_\_\_\_\_

Address for giving notices:

22 South First Street \_\_\_\_\_

Geneva, Illinois 60134 \_\_\_\_\_

(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.)

**CONTRACTOR:**

KEISO-BURNETT CO \_\_\_\_\_

5200 NEWPORT DRIVE, ROLLING MEADOWS, ILLINOIS \_\_\_\_\_

By: [Signature] \_\_\_\_\_

Title: DIVISION MANAGER \_\_\_\_\_

[CORPORATE SEAL]

Attest [Signature] \_\_\_\_\_

Title: PM ASSISTANT \_\_\_\_\_

Address for giving notices

5200 NEWPORT DRIVE \_\_\_\_\_

ROLLING MEADOWS, ILLINOIS 60008 \_\_\_\_\_

License No. ECC00150 \_\_\_\_\_  
(Where applicable)

Agent for service of process: \_\_\_\_\_

JIM SMITH, SECRETARY \_\_\_\_\_

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

END OF DOCUMENT

## PROJECT AND CONTRACT IDENTIFICATION

**THIS BID** pertains to Western Avenue Substation Transformer Replacement 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, June 11, 2018. 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 copies of Bid on Bid Form bound 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 60 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	June 6, 2018

- 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 Base Bid with Alternates: Bidders shall submit a Bid on a lump sum basis for the base Bid and shall include a separate price for each alternate described in the Bidding Documents as provided for below. The price for each alternate will be the amount added to or deleted from the Base Bid if Owner selects the alternate. In the comparison of Bids, alternates will be applied in the same order as listed below.

THREE HUNDRED FORTY-FOUR THOUSAND  
 (words)  
DOLLARS (\$ 344,000.00)  
 (figures)

B. Alternate No. 1, <sup>DEDUCT (TM)</sup> ~~Add (Add)~~ ~~Reduce (Reduce)~~: Disposal of Existing Power Transformer  
FOURTEEN THOUSAND DOLLARS  
(words)  
\$ 14,000.00  
(figures)

C. 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	\$ 897.00
2.	Site services of Service Engineer	per day	\$ 2,000.00
3.	Transportation, travel time, and out-of-pocket expenses for travel of Service Engineer to Site	Per round trip	\$ 4,000.00

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.: ECC00150.
- H. Affidavit of Non-Collusion
- I. Attachment A - Certification of Compliance.
- J. Submittal schedule and complete equipment delivery schedule.
- K. Special equipment, tools, and accessories.
- L. Welding qualification program, if unable to comply with specified requirements.
- 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.
- O. List of items requiring field assembly.
- P. Recommended spare parts list with pricing.
- Q. Recommended long term and short-term storage requirements, and procedures.
- R. Geographical location of manufacturing facilities.
- 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 be held at the time and location stated in the Advertisement for Bids.
- 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 5 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.

27824.01.00  
ms1939

Bidder: (Indicate correct name of bidding entity)

**Kelso-Burnett Company**

By:

*[Handwritten Signature]* **CFD**  
*James M. Smith*

(Signature)

(Printed Name)

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

Attest:

*[Handwritten Signature]*  
**THADDEUS MALINOWSKI**

(Signature)

(Printed Name)

Title:

**ESTIMATOR**

Submittal Date: **June 11, 2018**

Address for giving notices:

**5200 Newport Drive, Rolling Meadows, Il., 60008**

Telephone No. **847-259-0720**

Facsimile No.

Contact Name and email address: **John Weir**

**jweir@kelso-burnett.com**

Contractor's License Number: **ECC00150**

END OF DOCUMENT

Certificate No: ECC00150-27



Rahm Emanuel, Mayor

# Certificate of Registration

issued by the

*Department of Buildings*  
*of the City of Chicago*

*This is to Certify that*  
*located at*  
**KELSO-BURNETT CO. - ECC000150**  
**5200 NEWPORT DR. ROLLING MEADOWS, IL 60008-**  
*having complied with the requirements of Ordinances passed by the City Council of the City of Chicago*  
*providing for the registration of electrical contractors is hereby recorded as a*

## **REGISTERED ELECTRICAL CONTRACTOR**

**General Electrician**

*and is entitled to perform electrical work in the City of Chicago under the Direction of Supervising Electrician*  
*provided that such work permits are subject to the provisions of all the Ordinances of the City of Chicago*  
*now in force or which may be hereafter passed. This certificate EXPIRES June 30, 2019.*

**SUPERVISING ELECTRICIAN: STEFAN R LOPATA - SE4692**

*In Witness Whereof I have hereunto set my hand on April 2, 2018.*



# KELSO-BURNETT CO.

## UTILITY DIVISION

5200 Newport Drive . Rolling Meadows, Illinois 60008-3886 . (847) 342-0420 . Fax (847) 259-4317

### Article 10 – Attachments to the Bid

- A. Statement of no Exceptions and Clarifications
  - Exceptions and Clarifications are required. See “Item B”
- B. Exceptions and Clarifications to Contract Documents:
  - 2.03.B.3 – Cable Bus cable to have EPR insulation
  - 2.03.C.3 – Cable Bus cable to have EPR insulation
  - 2.03.C.4 – Low voltage cable has TS-CPE jacket
  - 2.04.I – Splice plates for Cable Bus to match cable bus housing: aluminum
- C. Required Bid Security
  - Attached
- D. List of Proposed Subcontractors
  - Lyons-Pinner (yard work/transformer work)
  - Utility and Industrial or Crossmark Site Utilities (Civil work)
- E. List of Proposed Suppliers
  - MP Husky – Cable Bus
- F. Evidence of Authority to do business in the State of Illinois
  - City of Chicago Electrical license attached.
- G. Contractor’s License Number
  - City of Chicago Electrical license attached. # ECC00150
- H. Affidavit of Non-Collusion
  - Attached
- I. Attachment A – Certification of Compliance
  - Attached
- J. Submittal Schedule and complete equipment delivery schedule
  - MP Husky Cable Bus – Drawings provided 1-2 weeks after contract award. System delivery 3-4 weeks after approved drawings.
  - Voltage Transformer – Drawings provided 1-2 weeks after contract award. System delivery 4-6 weeks after approved drawings.
  - Oil Water Separator – Drawings provided 1-2 weeks after contract award. Structure delivery 2-4 weeks after approved drawings.
- K. Special equipment, tools, and accessories
  - 150 Ton Crane for removing existing transformer
- L. Welding qualifications program
  - Onsite welding is not required
- M. List of proposed equipment including model numbers description of devices
  - Cable Bus – MP Husky, 15kV – 1200Amp, 3 Phase, 4 Wire, Cabl-Bus System Quote CB-11365
  - Voltage Transformer – Ritz, 123031010.60372
  - Oil and Water Separator – Utility Concrete Products, P/N SPL12107NH-B/W-LID



- N. Information as defined in ANSI C37.21
  - To be provided upon award of contract
- O. List of Items Requiring Field Assembly
  - Not applicable
- P. Recommended Spare Parts with Pricing
  - None Recommended
- Q. Recommended long term and short-term storage requirements, and procedures
  - None Recommended
- R. Geographical location of manufacturing facility
  - MP Husky – South Carolina
- S. Copy of Warranty
  - See attached



# KELSO-BURNETT CO. UTILITY DIVISION

5200 Newport Drive · Rolling Meadows, Illinois 60008-3886 · (847) 342-0420 · Fax (847) 259-4317

**Owner:** City of Geneva, Illinois  
**Address:** 22 South First Street  
Geneva Illinois 60134

**Project:** City of Geneva Western Avenue Transformer Replacement

<b>Re:</b>	<b>Substantial Completion Date</b>	<b>11/02/18</b>
	<b>Warranty Period thru</b>	<b>11/01/19</b>

In accordance with the project documents, drawings, specifications and other relevant items, we herewith guarantee all work on the above referenced project against any defective or substandard labor, material, equipment or workmanship for a period of one (1) year from the date of substantial completion. Should any defects develop in the materials, or workmanship within the specified warranty period, this subcontractor agrees within five (5) days after receiving written or verbal notice from the Owner or General Contractor, without expense to the Owner or General Contractor, to repair, replace, and in general, to perform all necessary corrective work, with regard to the defective or nonconforming work or material, together with work in other trades that are distributed as a result of such corrective work, to the satisfaction of the Owner. The foregoing shall not in any manner limit the Owner's remedy to this subcontractor's liability to those defects appearing within the warranty period. This subcontractor agrees to perform the work in a proper manner and time period so as to minimize any consequential damage sustained by the Owner and so as not to interfere with or in any way disrupt the operations of the Owner.

By:

KELSO-BURNETT COMPANY

*John D. Weir*

John D. Weir  
Division Manger

## PERFORMANCE BOND

**CONTRACTOR** (name and address):

Kelso-Burnett Co.  
5200 Newport Drive  
Rolling Meadows, IL 60008

**SURETY** (name and address of principal place of business):

Travelers Casualty and Surety Company of America  
One Tower Square  
Hartford, CT 06183

**OWNER** (name and address):

City of Geneva  
22 South First Street  
Geneva, IL 60134

**CONSTRUCTION CONTRACT**

Effective Date of the Agreement: July 12, 2018

Amount: \$330,000.00

Description (name and location): 1801 General Construction Western Avenue Substation

**BOND**

Bond Number: 106936364

Date (not earlier than the Effective Date of the Agreement of the Construction Contract): July 12, 2018

Amount: \$330,000.00

Modifications to this Bond Form:  None  See Paragraph 16

Surety and Contractor, intending to be legally bound hereby, subject to the terms set forth below, do each cause this Performance Bond to be duly executed by an authorized officer, agent, or representative.

**CONTRACTOR AS PRINCIPAL**

Kelso-Burnett Co. \_\_\_\_\_ (seal)

Contractor's Name and Corporate Seal

By: \_\_\_\_\_

Signature

James M Smith

Print Name

CFD

Title

Attest: \_\_\_\_\_

Signature

Accounting mgr

Title

**SURETY**

Travelers Casualty and Surety Company of America \_\_\_\_\_ (seal)

Surety's Name and Corporate Seal

By: \_\_\_\_\_

Signature (attach power of attorney)

Delia Ayala

Print Name

Attorney-in-Fact

Title

Attest: \_\_\_\_\_

Signature

Technical Assistant

Title

Notes: (1) Provide supplemental execution by any additional parties, such as joint venturers. (2) Any singular reference to Contractor, Surety, Owner, or other party shall be considered plural where applicable.

1. The Contractor and Surety, jointly and severally, bind themselves, their heirs, executors, administrators, successors, and assigns to the Owner for the performance of the Construction Contract, which is incorporated herein by reference.
2. If the Contractor performs the Construction Contract, the Surety and the Contractor shall have no obligation under this Bond, except when applicable to participate in a conference as provided in Paragraph 3.
3. If there is no Owner Default under the Construction Contract, the Surety's obligation under this Bond shall arise after:
  - 3.1 The Owner first provides notice to the Contractor and the Surety that the Owner is considering declaring a Contractor Default. Such notice shall indicate whether the Owner is requesting a conference among the Owner, Contractor, and Surety to discuss the Contractor's performance. If the Owner does not request a conference, the Surety may, within five (5) business days after receipt of the Owner's notice, request such a conference. If the Surety timely requests a conference, the Owner shall attend. Unless the Owner agrees otherwise, any conference requested under this Paragraph 3.1 shall be held within ten (10) business days of the Surety's receipt of the Owner's notice. If the Owner, the Contractor, and the Surety agree, the Contractor shall be allowed a reasonable time to perform the Construction Contract, but such an agreement shall not waive the Owner's right, if any, subsequently to declare a Contractor Default;
  - 3.2 The Owner declares a Contractor Default, terminates the Construction Contract and notifies the Surety; and
  - 3.3 The Owner has agreed to pay the Balance of the Contract Price in accordance with the terms of the Construction Contract to the Surety or to a contractor selected to perform the Construction Contract.
4. Failure on the part of the Owner to comply with the notice requirement in Paragraph 3.1 shall not constitute a failure to comply with a condition precedent to the Surety's obligations, or release the Surety from its obligations, except to the extent the Surety demonstrates actual prejudice.
5. When the Owner has satisfied the conditions of Paragraph 3, the Surety shall promptly and at the Surety's expense take one of the following actions:
  - 5.1 Arrange for the Contractor, with the consent of the Owner, to perform and complete the Construction Contract;
  - 5.2 Undertake to perform and complete the Construction Contract itself, through its agents or independent contractors;
  - 5.3 Obtain bids or negotiated proposals from qualified contractors acceptable to the Owner for a contract for performance and completion of the Construction Contract, arrange for a contract to be prepared for execution by the Owner and a contractor selected with the Owner's concurrence, to be secured with performance and payment bonds executed by a qualified surety equivalent to the bonds issued on the Construction Contract, and pay to the Owner the amount of damages as described in Paragraph 7 in excess of the Balance of the Contract Price incurred by the Owner as a result of the Contractor Default; or
- 5.4 Waive its right to perform and complete, arrange for completion, or obtain a new contractor, and with reasonable promptness under the circumstances:
  - 5.4.1 After investigation, determine the amount for which it may be liable to the Owner and, as soon as practicable after the amount is determined, make payment to the Owner; or
  - 5.4.2 Deny liability in whole or in part and notify the Owner, citing the reasons for denial.
6. If the Surety does not proceed as provided in Paragraph 5 with reasonable promptness, the Surety shall be deemed to be in default on this Bond seven days after receipt of an additional written notice from the Owner to the Surety demanding that the Surety perform its obligations under this Bond, and the Owner shall be entitled to enforce any remedy available to the Owner. If the Surety proceeds as provided in Paragraph 5.4, and the Owner refuses the payment or the Surety has denied liability, in whole or in part, without further notice the Owner shall be entitled to enforce any remedy available to the Owner.
7. If the Surety elects to act under Paragraph 5.1, 5.2, or 5.3, then the responsibilities of the Surety to the Owner shall not be greater than those of the Contractor under the Construction Contract, and the responsibilities of the Owner to the Surety shall not be greater than those of the Owner under the Construction Contract. Subject to the commitment by the Owner to pay the Balance of the Contract Price, the Surety is obligated, without duplication for:
  - 7.1 the responsibilities of the Contractor for correction of defective work and completion of the Construction Contract;
  - 7.2 additional legal, design professional, and delay costs resulting from the Contractor's Default, and resulting from the actions or failure to act of the Surety under Paragraph 5; and
  - 7.3 liquidated damages, or if no liquidated damages are specified in the Construction Contract, actual damages caused by delayed performance or non-performance of the Contractor.
8. If the Surety elects to act under Paragraph 5.1, 5.3, or 5.4, the Surety's liability is limited to the amount of this Bond.
9. The Surety shall not be liable to the Owner or others for obligations of the Contractor that are unrelated to the Construction Contract, and the Balance of the Contract Price shall not be reduced or set off on account of any such unrelated obligations. No right of action shall accrue on this Bond to any person or entity other than the Owner or its heirs, executors, administrators, successors, and assigns.

10. The Surety hereby waives notice of any change, including changes of time, to the Construction Contract or to related subcontracts, purchase orders, and other obligations.
11. Any proceeding, legal or equitable, under this Bond may be instituted in any court of competent jurisdiction in the location in which the work or part of the work is located and shall be instituted within two years after a declaration of Contractor Default or within two years after the Contractor ceased working or within two years after the Surety refuses or fails to perform its obligations under this Bond, whichever occurs first. If the provisions of this paragraph are void or prohibited by law, the minimum periods of limitations available to sureties as a defense in the jurisdiction of the suit shall be applicable.
12. Notice to the Surety, the Owner, or the Contractor shall be mailed or delivered to the address shown on the page on which their signature appears.
13. When this Bond has been furnished to comply with a statutory or other legal requirement in the location where the construction was to be performed, any provision in this Bond conflicting with said statutory or legal requirement shall be deemed deleted herefrom and provisions conforming to such statutory or other legal requirement shall be deemed incorporated herein. When so furnished, the intent is that this Bond shall be construed as a statutory bond and not as a common law bond.
14. Definitions
  - 14.1 Balance of the Contract Price: The total amount payable by the Owner to the Contractor under the Construction Contract after all proper adjustments have been made including allowance for the Contractor for any amounts received or to be received by the Owner in settlement of insurance or other claims for damages to which the Contractor is entitled, reduced by all valid and proper payments made to or on behalf of the Contractor under the Construction Contract.
  - 14.2 Construction Contract: The agreement between the Owner and Contractor identified on the cover page, including all Contract Documents and changes made to the agreement and the Contract Documents.
  - 14.3 Contractor Default: Failure of the Contractor, which has not been remedied or waived, to perform or otherwise to comply with a material term of the Construction Contract.
  - 14.4 Owner Default: Failure of the Owner, which has not been remedied or waived, to pay the Contractor as required under the Construction Contract or to perform and complete or comply with the other material terms of the Construction Contract.
  - 14.5 Contract Documents: All the documents that comprise the agreement between the Owner and Contractor.
15. If this Bond is issued for an agreement between a contractor and subcontractor, the term Contractor in this Bond shall be deemed to be Subcontractor and the term Owner shall be deemed to be Contractor.
16. Modifications to this Bond are as follows:

## PAYMENT BOND

CONTRACTOR (name and address):

Kelso-Burnett Co.  
5200 Newport Drive  
Rolling Meadows, IL 60008

SURETY (name and address of principal place of business):

Travelers Casualty and Surety Company of America  
One Tower Square  
Hartford, CT 06183

OWNER (name and address): City of Geneva, 22 South First Street, Geneva, IL 60134

### CONSTRUCTION CONTRACT

Effective Date of the Agreement: July 12, 2018

Amount: \$330,000.00

Description (name and location): 1801 General Construction Western Avenue Substation

### BOND

Bond Number: 106936364

Date (not earlier than the Effective Date of the Agreement of the Construction Contract): July 12, 2018

Amount: \$330,000.00

Modifications to this Bond Form:  None  See Paragraph 18

Surety and Contractor, intending to be legally bound hereby, subject to the terms set forth below, do each cause this Payment Bond to be duly executed by an authorized officer, agent, or representative.

### CONTRACTOR AS PRINCIPAL

Kelso-Burnett Co. \_\_\_\_\_ (seal)  
Contractor's Name and Corporate Seal

By: \_\_\_\_\_

Signature

James M Smith

Print Name

Title

CFO

Attest: \_\_\_\_\_

Signature

Title

Accounting Mgr

### SURETY

Travelers Casualty and Surety Company of America \_\_\_\_\_ (seal)  
Surety's Name and Corporate Seal

By: \_\_\_\_\_

Signature (attach power of attorney)

Delia Ayala

Print Name

Attorney-in-Fact

Title

Attest: \_\_\_\_\_

Signature

Technical Assistant

Title

Notes: (1) Provide supplemental execution by any additional parties, such as joint venturers. (2) Any singular reference to Contractor, Surety, Owner, or other party shall be considered plural where applicable.

1. The Contractor and Surety, jointly and severally, bind themselves, their heirs, executors, administrators, successors, and assigns to the Owner to pay for labor, materials, and equipment furnished for use in the performance of the Construction Contract, which is incorporated herein by reference, subject to the following terms.
2. If the Contractor promptly makes payment of all sums due to Claimants, and defends, indemnifies, and holds harmless the Owner from claims, demands, liens, or suits by any person or entity seeking payment for labor, materials, or equipment furnished for use in the performance of the Construction Contract, then the Surety and the Contractor shall have no obligation under this Bond.
3. If there is no Owner Default under the Construction Contract, the Surety's obligation to the Owner under this Bond shall arise after the Owner has promptly notified the Contractor and the Surety (at the address described in Paragraph 13) of claims, demands, liens, or suits against the Owner or the Owner's property by any person or entity seeking payment for labor, materials, or equipment furnished for use in the performance of the Construction Contract, and tendered defense of such claims, demands, liens, or suits to the Contractor and the Surety.
4. When the Owner has satisfied the conditions in Paragraph 3, the Surety shall promptly and at the Surety's expense defend, indemnify, and hold harmless the Owner against a duly tendered claim, demand, lien, or suit.
5. The Surety's obligations to a Claimant under this Bond shall arise after the following:
  - 5.1 Claimants who do not have a direct contract with the Contractor,
    - 5.1.1 have furnished a written notice of non-payment to the Contractor, stating with substantial accuracy the amount claimed and the name of the party to whom the materials were, or equipment was, furnished or supplied or for whom the labor was done or performed, within ninety (90) days after having last performed labor or last furnished materials or equipment included in the Claim; and
    - 5.1.2 have sent a Claim to the Surety (at the address described in Paragraph 13).
  - 5.2 Claimants who are employed by or have a direct contract with the Contractor have sent a Claim to the Surety (at the address described in Paragraph 13).
6. If a notice of non-payment required by Paragraph 5.1.1 is given by the Owner to the Contractor, that is sufficient to satisfy a Claimant's obligation to furnish a written notice of non-payment under Paragraph 5.1.1.
7. When a Claimant has satisfied the conditions of Paragraph 5.1 or 5.2, whichever is applicable, the Surety shall promptly and at the Surety's expense take the following actions:
  - 7.1 Send an answer to the Claimant, with a copy to the Owner, within sixty (60) days after receipt of the Claim, stating the amounts that are undisputed and the basis for challenging any amounts that are disputed; and
  - 7.2 Pay or arrange for payment of any undisputed amounts.
  - 7.3 The Surety's failure to discharge its obligations under Paragraph 7.1 or 7.2 shall not be deemed to constitute a waiver of defenses the Surety or Contractor may have or acquire as to a Claim, except as to undisputed amounts for which the Surety and Claimant have reached agreement. If, however, the Surety fails to discharge its obligations under Paragraph 7.1 or 7.2, the Surety shall indemnify the Claimant for the reasonable attorney's fees the Claimant incurs thereafter to recover any sums found to be due and owing to the Claimant.
8. The Surety's total obligation shall not exceed the amount of this Bond, plus the amount of reasonable attorney's fees provided under Paragraph 7.3, and the amount of this Bond shall be credited for any payments made in good faith by the Surety.
9. Amounts owed by the Owner to the Contractor under the Construction Contract shall be used for the performance of the Construction Contract and to satisfy claims, if any, under any construction performance bond. By the Contractor furnishing and the Owner accepting this Bond, they agree that all funds earned by the Contractor in the performance of the Construction Contract are dedicated to satisfy obligations of the Contractor and Surety under this Bond, subject to the Owner's priority to use the funds for the completion of the work.
10. The Surety shall not be liable to the Owner, Claimants, or others for obligations of the Contractor that are unrelated to the Construction Contract. The Owner shall not be liable for the payment of any costs or expenses of any Claimant under this Bond, and shall have under this Bond no obligation to make payments to or give notice on behalf of Claimants, or otherwise have any obligations to Claimants under this Bond.
11. The Surety hereby waives notice of any change, including changes of time, to the Construction Contract or to related subcontracts, purchase orders, and other obligations.
12. No suit or action shall be commenced by a Claimant under this Bond other than in a court of competent jurisdiction in the state in which the project that is the subject of the Construction Contract is located or after the expiration of one year from the date (1) on which the Claimant sent a Claim to the Surety pursuant to Paragraph 5.1.2 or 5.2, or (2) on which the last labor or service was performed by

anyone or the last materials or equipment were furnished by anyone under the Construction Contract, whichever of (1) or (2) first occurs. If the provisions of this paragraph are void or prohibited by law, the minimum period of limitation available to sureties as a defense in the jurisdiction of the suit shall be applicable.

13. Notice and Claims to the Surety, the Owner, or the Contractor shall be mailed or delivered to the address shown on the page on which their signature appears. Actual receipt of notice or Claims, however accomplished, shall be sufficient compliance as of the date received.
14. When this Bond has been furnished to comply with a statutory or other legal requirement in the location where the construction was to be performed, any provision in this Bond conflicting with said statutory or legal requirement shall be deemed deleted herefrom and provisions conforming to such statutory or other legal requirement shall be deemed incorporated herein. When so furnished, the intent is that this Bond shall be construed as a statutory bond and not as a common law bond.
15. Upon requests by any person or entity appearing to be a potential beneficiary of this Bond, the Contractor and Owner shall promptly furnish a copy of this Bond or shall permit a copy to be made.

#### 16. Definitions

16.1 **Claim:** A written statement by the Claimant including at a minimum:

1. The name of the Claimant;
2. The name of the person for whom the labor was done, or materials or equipment furnished;
3. A copy of the agreement or purchase order pursuant to which labor, materials, or equipment was furnished for use in the performance of the Construction Contract;
4. A brief description of the labor, materials, or equipment furnished;
5. The date on which the Claimant last performed labor or last furnished materials or equipment for use in the performance of the Construction Contract;
6. The total amount earned by the Claimant for labor, materials, or equipment furnished as of the date of the Claim;
7. The total amount of previous payments received by the Claimant; and
8. The total amount due and unpaid to the Claimant for labor, materials, or equipment furnished as of the date of the Claim.

16.2 **Claimant:** An individual or entity having a direct contract with the Contractor or with a subcontractor of the Contractor to furnish labor, materials, or equipment for use in the performance of the Construction Contract. The term Claimant also includes any individual or entity that has rightfully asserted a claim under an applicable mechanic's lien or similar statute against the real property upon which the Project is located. The intent of this Bond shall be to include without limitation in the terms of "labor, materials, or equipment" that part of the water, gas, power, light, heat, oil, gasoline, telephone service, or rental equipment used in the Construction Contract, architectural and engineering services required for performance of the work of the Contractor and the Contractor's subcontractors, and all other items for which a mechanic's lien may be asserted in the jurisdiction where the labor, materials, or equipment were furnished.

16.3 **Construction Contract:** The agreement between the Owner and Contractor identified on the cover page, including all Contract Documents and all changes made to the agreement and the Contract Documents.

16.4 **Owner Default:** Failure of the Owner, which has not been remedied or waived, to pay the Contractor as required under the Construction Contract or to perform and complete or comply with the other material terms of the Construction Contract.

16.5 **Contract Documents:** All the documents that comprise the agreement between the Owner and Contractor.

17. If this Bond is issued for an agreement between a contractor and subcontractor, the term Contractor in this Bond shall be deemed to be Subcontractor and the term Owner shall be deemed to be Contractor.

18. Modifications to this Bond are as follows:



**Travelers Casualty and Surety Company of America  
Travelers Casualty and Surety Company  
St. Paul Fire and Marine Insurance Company**

**POWER OF ATTORNEY**

**KNOW ALL MEN BY THESE PRESENTS:** That Travelers Casualty and Surety Company of America, Travelers Casualty and Surety Company, and St. Paul Fire and Marine Insurance Company are corporations duly organized under the laws of the State of Connecticut (herein collectively called the "Companies"), and that the Companies do hereby make, constitute and appoint **DELIA AYALA** of **Schaumburg/Chicago Illinois**, their true and lawful Attorney-in-Fact to sign, execute, seal and acknowledge any and all bonds, recognizances, conditional undertakings and other writings obligatory in the nature thereof on behalf of the Companies in their business of guaranteeing the fidelity of persons, guaranteeing the performance of contracts and executing or guaranteeing bonds and undertakings required or permitted in any actions or proceedings allowed by law.

**IN WITNESS WHEREOF**, the Companies have caused this instrument to be signed, and their corporate seals to be hereto affixed, this **3rd** day of **February**, 2017.



State of Connecticut

City of Hartford ss.

By: *Robert L. Raney*  
Robert L. Raney, Senior Vice President

On this the **3rd** day of **February**, 2017, before me personally appeared **Robert L. Raney**, who acknowledged himself to be the Senior Vice President of Travelers Casualty and Surety Company of America, Travelers Casualty and Surety Company, and St. Paul Fire and Marine Insurance Company, and that he, as such, being authorized so to do, executed the foregoing instrument for the purposes therein contained by signing on behalf of the corporations by himself as a duly authorized officer.

**In Witness Whereof**, I hereunto set my hand and official seal.

My Commission expires the **30th** day of **June**, 2021



*Marie C. Tetreault*  
Marie C. Tetreault, Notary Public

This Power of Attorney is granted under and by the authority of the following resolutions adopted by the Boards of Directors of Travelers Casualty and Surety Company of America, Travelers Casualty and Surety Company, and St. Paul Fire and Marine Insurance Company, which resolutions are now in full force and effect, reading as follows:

I, Sharon L. Caruso Notary Public of Cook County, in the State of Illinois, do hereby certify that Delia Ayala, Attorney-in-fact, of the Travelers Casualty & Surety Company of America, who is personally known to me to be the same person whose name is subscribed to the foregoing instrument, appeared before me this day in person, and acknowledged that he signed, sealed and delivered said instrument, for and on behalf of the Travelers Casualty & Surety Company of America, for the uses and purposes therein set forth.

Given under my hand and notarial seal at my office in the Village of Schaumburg, in said County, this 25th day of July A.D. 2018.

*Sharon L. Caruso*  
Notary Public



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



Issued and Published Jointly by



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, expeditors, timekeepers, clerks, and other personnel employed by Contractor, whether at the Site or in Contractor's principal or branch office for general administration of the Work and not specifically included in the agreed upon schedule of job classifications referred to in Paragraph 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;
1. 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*

Amend the first sentence of Paragraph 2.02.A. to read as follows:

Owner will furnish to Contractor printed copies of the Contract (including one fully executed counterpart of the Agreement) as specified in Section 01 30 00, article "Copies of Drawings and Project Manuals."

Owner will furnish to Contractor printed copies of the Contract (including one fully executed counterpart of the Agreement), and one copy in electronic portable document format (PDF) as specified in Section 01 30 00, article "Copies of Drawings and Project Manuals."

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 be furnished upon request at the cost of reproduction.

### **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-5.03 Subsurface and Physical Conditions*

Add the following new paragraph(s) immediately after paragraph 5.03.B:

- C. The following reports of explorations and tests of subsurface conditions at or adjacent to the Site are known to Owner:
  - 1. Geotechnical report dated September 16, 2009, prepared by Professional Service Industries, Inc. entitled: Proposed Substation Expansion, 951 Western Avenue, Geneva, Illinois consisting of 21 pages. The Technical Data contained in such report upon whose accuracy Contractor may rely are the recommendations and construction considerations.
- D. The following drawings of physical conditions relating to existing surface or subsurface structures at or adjacent to the Site (except Underground Facilities) are known to Owner:
  - 1. Drawings dated with various dates, prepared by Stanley Consultants entitled: 5629, consisting of 9 sheets numbered 5629-1 to 5629-9, inclusive.
    - a. None of the contents of such drawings is Technical Data on whose accuracy Contractor may rely.
- E. Contractor may examine copies of reports and drawings identified in SC 5.03.C and SC 5.03.D that were not included with the Bidding Documents at City of Geneva during regular business hours, or may request copies from Engineer.

#### *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:
  - 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 \$   500,000
      - Bodily injury by disease, each employee \$   500,000

- Bodily injury/disease, aggregate \$ 500,000
- 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 \$ 2,000,000
- b. Products--Completed Operations Aggregate \$ 3,000,000
- c. Personal and Advertising Injury \$ 1,000,000
- d. Each Occurrence (Bodily Injury and Property Damage) \$ 1,000,000
- e. Damage to Rented Premises (Each Occurrence) \$ 500,000
3. Business Automobile Liability under paragraph 6.03.D of the General Conditions:
- a. Bodily Injury
- Each person \$ 1,000,000
- Each accident \$ 1,000,000
- b. Property Damage
- Each accident \$ 1,000,000
4. Excess or Umbrella Liability:
- a. General Aggregate \$ 3,000,000
- b. Each Occurrence \$ 2,000,000
5. Contractor's Pollution Liability:
- a. General Aggregate \$ 2,000,000
- b. Each Occurrence \$ 1,000,000
- 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 shall be specifically named on policy as additional insureds by endorsement, including completed operations.
7. Contractor's Professional Liability:
- a. Each Claim \$ 1,000,000
- b. Annual Aggregate \$ 2,000,000

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 [insert name of state where Project is located] 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

Insert the following after the second sentence of Paragraph 7.12.C:

- C. . . . The following Owner safety programs are applicable to the Work: \_\_\_\_\_ . . .

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 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 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.

## **ARTICLE 15 – PAYMENTS TO CONTRACTOR; SET-OFFS; COMPLETION; CORRECTION 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**

Add the following new paragraph immediately after Paragraph 17.01.

### *SC-17.02 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  
June 6, 2018

BID PROPOSAL NO. 18-01  
WESTERN AVENUE SUBSTATION TRANSFORMER REPLACEMENT  
GENERAL CONSTRUCTION

CITY OF GENEVA  
GENEVA, ILLINOIS

1. DRAWINGS

Revise the following Drawing as indicated. This Drawing is not being reissued at this time.

Drawing 27824-EU02

Shift the new/existing division marker from between conduits "Cable Tray" and C3 to between conduits C5 and C6.

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 general construction for the upgrade of Transformer #1 at the Western Avenue Substation Geneva, Illinois for The City of Geneva, Owner including:
  - 1. Removing existing transformer from pad.
  - 2. Removing existing transformer pad.
  - 3. Removing of existing low side cable bus support and foundation.
  - 4. Furnishing and installing power transformer foundation and oil containment system.
  - 5. Removing a 34.5kV voltage transformer and jumper.
  - 6. Furnishing and installing a 34.5kV voltage transformer and jumper.
  - 7. Removing transformer high side jumpers.
  - 8. Furnishing and installation transformer high side jumpers.
  - 9. Removing existing 12.47kV cable bus system.
  - 10. Designing, furnishing, and installing 12.47kV cable bus system.
  - 11. Removing control and power wiring.
  - 12. Furnishing and installing control and power wiring.
  - 13. Removing and installation of ground connections.
  - 14. Redressing of disturbed substation yard.
- B. Work for Alternate Agreement comprises general construction for the upgrade of Transformer #1 at the Western Avenue Substation Geneva, Illinois for The City of Geneva, Owner including:
  - 1. Removal and appropriate disposal of oil.
  - 2. Removal and scrap of unit.
- C. Substation testing and checkout: Provide 4 days of 1 person on site, during testing to correct issues found by testing firm.
- D. ComEd witness testing: Provide one person on site during testing to fix issues found by testing firm.

### **1.02 AGREEMENT**

- A. Construct Work under single lump sum Agreement.
- B. Alternates will be exercised at option of Owner.

### **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: 34.5-12.47kV, 12/16/20 MVA Power Transformer installed on pad and dressed out.
- 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. Protect products from exposure to elements, and from damage.
  - 3. 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. Substantiating data: When Engineer requires substantiating information, submit data justifying dollar amounts in question. Include following with application:
  - 1. Partial release of liens from major subcontractors and vendors.
  - 2. Record documents as specified in Sections 01 32 00 and 01 70 00, for review by Owner which will be returned to Contractor.
  - 3. Affidavits attesting to off-site stored products.
  - 4. Construction progress schedules, revised and current as specified in Section 01 32 00.
  - 5. Certified payroll for Contractor 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 RELATED SECTIONS

- A. Bid documents: Quotation of cost of each alternate.
- B. Agreement between Owner and Contractor: Alternates accepted by Owner for incorporation into Work.
- C. Sections of Specifications identified in each Alternate.

1.02 PROCEDURES

- A. Alternates will be exercised at option of Owner.
- B. Coordinate related Work and modify surrounding Work as required to complete Work, including changes under each Alternate, when acceptance is designated in Agreement between Owner and Contractor.

1.03 ALTERNATE NO. 1: Disposal of Transformer #1.

- A. Work to include removal and disposal of existing 35/12.47kV 12.5MVA transformer, including oil and bushings.

**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 Bidder 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 Bidder's requests for substitution with reasonable promptness and advise Owner.
- B. Notify Bidder 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 mechanical and electrical Work which are indicated diagrammatically on Drawings. Follow routing shown for pipes, ducts, and conduit, as closely as practicable; place runs parallel with lines of building. Utilize spaces efficiently to maximize accessibility for other installations, for maintenance, and for repairs.
- D. In finished areas except as otherwise indicated, conceal pipes, ducts, and wiring within the construction. Coordinate locations of fixtures and outlets with finish elements.
- E. Coordinate completion and clean-up of Work of separate sections in preparation for Substantial Completion and for portions of Work designated for Owner's occupancy.
- F. After Owner occupancy of premises, coordinate access to site for correction of defective Work and Work not in accordance with Contract Documents, to minimize disruption of Owner's activities.

### **1.02 COPIES OF DRAWINGS AND PROJECT MANUALS**

- A. After Notice of Award, Contractor may obtain, at no charge, up to 2 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.

### **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, and such persons shall not again be permitted to return to Work without written consent of Engineer.
- D. Workmanship shall be of best quality.

### **1.04 FIELD ENGINEERING**

- A. Employ a Land Surveyor licensed in the State of Illinois as required.
- B. Contractor shall locate and protect survey control and reference points. Promptly notify Engineer of any discrepancies discovered.
- C. Control datum for survey is that established by Contractor provided survey.

- D. Verify set-backs and easements; confirm drawing dimensions and elevations.
- E. Provide field engineering services. Establish elevations, lines, and levels, utilizing recognized engineering survey practices.
- F. Submit a copy of site drawings signed by the Land Surveyor that the elevations and locations of the Work are in conformance with the Contract Documents.
- G. Maintain a complete and accurate log of control and survey work as it progresses.
- H. Protect survey control points prior to starting site work; preserve permanent reference points during construction.
- I. Promptly report to Engineer the loss or destruction of any reference point or relocation required because of changes in grades or other reasons.
- J. Replace dislocated survey control points based on original survey control. Make no changes without prior written notice to Engineer.

#### 1.05 PROJECT MEETINGS

- A. Representatives of Contractor, Subcontractors and suppliers attending meetings shall be qualified and authorized to act on behalf of entity each represents.
- B. Preconstruction meeting:
  - 1. Owner will schedule a meeting after Notice of Award.
  - 2. Location: A central site, convenient for all parties, designated by Owner.
  - 3. Attendance:
    - a. Owner's representative.
    - b. Engineer and its professional consultants.
    - c. Resident Project Representative.
    - d. Contractor's superintendent.
    - e. Major Subcontractors.
    - f. Major suppliers.
    - g. Others as appropriate.
  - 4. Agenda:
    - a. Execution of Owner-Contractor Agreement.
    - b. Submission of executed bonds and insurance certificates.
    - c. Distribution of Contract Documents.
    - d. Submission of list of Subcontractors, list of products, schedule of values, and progress schedule.
    - e. Designation of personnel representing the parties in Contract, Owner, and the Engineer.
    - f. Procedures and processing of field decisions, submittals, substitutions, applications for payments, proposal request, Change Orders, and Contract closeout procedures.
    - g. Scheduling.
    - h. Scheduling activities for mobilization.
  - 5. Engineer will record minutes and distribute copies within 2 days after meeting to participants, with electronic copies to Owner, participants, and those affected by decisions made.
- C. Final walk-through meeting:
  - 1. Require attendance of parties directly affecting, or affected by, Work of the specific section.
  - 2. Notify Engineer when work has been completed.
  - 3. Engineer will schedule meeting date.
  - 4. Engineer will prepare agenda and preside at meeting:
    - a. Review conditions of installation.
    - b. Review withal related work completed.
  - 5. Record minutes and distribute copies within 7 days after meeting to participants, with 2 copies to Engineer, Owner, participants, and those affected by decisions made.

## **PART 2 PRODUCTS**

### **2.01 EQUIPMENT ELECTRICAL CHARACTERISTICS AND COMPONENTS**

- A. Motors: Specific motor type is specified in individual specification sections.
- B. Wiring Terminations: Provide terminal lugs to match branch circuit conductor quantities, sizes, and materials indicated. Include lugs for terminal box.
- C. Cord and Plug: Provide minimum 6' (2 m) cord and plug including grounding connector for connection to electric wiring system. Cord of longer length is specified in individual specification sections.

## **PART 3 EXECUTION**

### **3.01 SPECIAL PROCEDURES**

- A. Materials: As specified in product sections; match existing with new products for patching and extending work.
- B. Employ skilled and experienced installer to perform alteration work.
- C. Cut, move, or remove items as necessary for access to alterations and renovation Work. Replace and restore at completion.
- D. Remove unsuitable material not marked for salvage, such as rotted wood, corroded metals, and deteriorated masonry and concrete. Replace materials as specified for finished Work.
- E. Remove debris and abandoned items from area and from concealed spaces.
- F. Prepare surface and remove surface finishes to provide for proper installation of new work and finishes.
- G. Close openings in exterior surfaces to protect existing work from weather and extremes of temperature and humidity.
- H. Remove, cut, and patch Work in a manner to minimize damage and to provide means of restoring products and finishes to specified condition.
- I. Refinish existing visible surfaces to remain in renovated rooms and spaces, to specified condition for each material, with a neat transition to adjacent finishes.
- J. Where new Work abuts or aligns with existing, provide a smooth and even transition. Patch Work to match existing adjacent Work in texture and appearance.
- K. When finished surfaces are cut so that a smooth transition with new Work is not possible, terminate existing surface along a straight line at a natural line of division and submit recommendation to Engineer for review.
- L. Where a change of plane of 1/4" or more occurs, submit recommendation for providing a smooth transition; to Engineer for review.
- M. Patch or replace portions of existing surfaces which are damaged, lifted, discolored, or showing other imperfections.
- N. Finish surfaces as specified in individual product sections.

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. Deliver submittals to Engineer listed below when required by Specification Sections:

Mr. Philip Schulz, P. E.  
[schulzphil@stanleygroup.com](mailto:schulzphil@stanleygroup.com)  
Stanley Consultants, Inc.  
Stanley Building  
225 Iowa Avenue  
Muscatine, Iowa 52761-3764

- B. Submittals shall be in English language.
- C. Weights, measures, and units shall be English units with SI metric values following in parenthesis.
- D. 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. When Shop Drawings are revised for resubmission, identify all changes made since previous submission.
- F. 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.
- G. 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.
- H. 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."
- I. 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.
- J. Submittals not requested will not be recognized or processed.
- K. Contractor shall submit Shop Drawings on all hardware and components supplied as a part of this contract. Contractor does not need to submit Shop Drawings on equipment where manufacturer and

model number are supplied without alternate prior to ordering parts. Contractor shall provide Shop Drawings after parts have been ordered.

### 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 1 copy of submittals to Contractor. Contractor shall make additional copies 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. 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.
- D. 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.

- E. Details shall be identified by reference to sheet and detail, schedule or room numbers shown on Drawings.
- F. Indicate special utility and electrical characteristics, utility connection requirements, and location of utility outlets for service for functional equipment and appliances.
- G. Equipment which is identified on Contract Documents with tag number or name shall be identified on Shop Drawing with same tag.
- H. Schedule submittals to expedite Project. Coordinate submission of related items.
- I. For each submittal for review, allow 15 days excluding delivery time to and from Contractor.
- J. Identify variations from Contract Documents and product or system limitations which may be detrimental to successful performance of completed Work.
- K. Shop Drawings shall not be submitted in electronic format.
- L. Number required:
  - 1. Submit 2 copies of each Shop Drawing.
  - 2. Copies of Shop Drawings submitted shall be black line on white background.
  - 3. Reviewer will reproduce additional copies of Shop Drawings as required for internal distribution.
  - 4. Shop Drawings shall be suitable for reproduction in black and white. Shop Drawings submitted which are not suitable for reproduction will not be reviewed.
  - 5. If Contractor will not grant permission to reviewer to reproduce Shop Drawings, submit two copies of each Shop Drawing.
  - 6. Samples: Submit number stated in each Specification section.
  - 7. Drawings larger than 8-1/2" x 11" shall be rolled.
- 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 licensed 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. Manufacturer's instructions:

1. When specified in individual specification sections, submit printed instructions for delivery, storage, assembly, installation, start-up, 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.

Q. 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 Owner-Contractor Agreement. 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: 8.5" x 11".
  - 2. Format of listings: Chronological order of start of each item of Work.
  - 3. Identification of listings: By major Specification Section numbers.
- C. Construction progress schedule shall 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. Site utilities.
    - b. Subcontractor Work.
    - c. Equipment installations.
    - d. Finishes.
  - 3. Projected percentage of completion for each item, as of first day of each month.
- D. Submittal schedule shall show:
  - 1. Dates for Contractor's submittals.
  - 2. Dates submittals will be required for Owner-furnished products.
- E. Products delivery schedule show delivery dates for: Products specified in Project Manual.
- F. Distribution copies of reviewed schedules to:
  - 1. Owner.
  - 2. Subcontractors.
  - 3. Other concerned parties.
- G. 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 1 copy of transmittal form for initial submittals and resubmittals. Sequentially number transmittal form. Revise submittals with original number and sequential alphabetic suffix.
- C. Do not include submittals for more than one section of Specifications on Submittal Transmittal form.
- D. Identify project title, location, and number and contract title and number.
- E. Identify preparer name and, submittal number, including preparer's submittal revision number.
- F. A brief description should clearly identify specific application of equipment or material covered by Submittal, utilizing where possible same title used in Drawings and Specifications.
- G. Identify Specification Section number.

- H. 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

Date Received \_\_\_\_\_  
 Date Distributed \_\_\_\_\_

**SUBMITTAL TRANSMITTAL**

Transmittal No. \_\_\_\_\_

Project Title \_\_\_\_\_ Project No. \_\_\_\_\_ Contract No. \_\_\_\_\_  
 Project Location \_\_\_\_\_ Contract 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 No.	SC Submittal No.	Status	Distribution (No.)						
							Cont	RPR	Own	Des			

Contractor Remarks

Address

By \_\_\_\_\_ Date \_\_\_\_\_

By Signature above, the Contractor shall certify that they have reviewed the submittal and that they comply with all applicable specification sections and contract drawings. Action of any kind on submittal by Engineer/Architect does not relieve Contractor from responsibility for errors, correctness of details, or conformance to the contract.

Engineer/Architect Remarks



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

By \_\_\_\_\_  
 Date \_\_\_\_\_

## **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. Should manufacturers' instructions conflict with Contract Documents, request clarification from Engineer before proceeding.
- D. Comply with specified standards as minimum quality for the Work except where more stringent tolerances, codes, or specified requirements indicate higher standards or more precise workmanship.
- E. 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 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, date of Owner-Contractor Agreement when there are no Bids, except where a specific date is established by code.
- C. Obtain copies of standards where required by product specification sections.
- D. Should specified reference standards conflict with Contract Documents, request clarification from the Engineer before proceeding.
- E. Neither the contractual relationships, duties, or 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. AAR –Association of American Railroads
  - 2. ACI - American Concrete Institute
  - 3. AISC - American Institute of Steel Construction
  - 4. ANSI - American National Standards Institute
  - 5. ASTM – International Standards Worldwide
  - 6. AWS - American Welding Society
  - 7. ICEA - Insulated Cable Engineers Association
  - 8. IEEE - Institute of Electrical and Electronics Engineers
  - 9. NEMA - National Electrical Manufacturers' Association
  - 10. NETA - International Electrical Testing Association
  - 11. NFPA - National Fire Protection Association
  - 12. NRMCA – National Ready Mixed Concrete Association
  - 13. OSHA – U. S. Department of Labor, Occupational Safety and Health Administration
  - 14. SJI - Steel Joist Institute
  - 15. SMACNA - Sheet Metal and Air Conditioning Contractors' National Association
  - 16. UL - Underwriters' Laboratories, Inc.

#### 1.05 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.

#### 1.06 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, start-up of equipment, test, adjust and balance of equipment 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.

## **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.

#### **3.03 FIELD PERFORMANCE TESTS**

- A. If equipment or system fails to function properly, or guaranteed performance is not indicated, Contractor shall 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 and guaranteed performance is obtainable.

END OF SECTION

**PART 1 GENERAL**

1.01 WELDING REQUIREMENTS

- A. Welding shall be performed by qualified welding operators using procedures which have been qualified in accordance with applicable codes and standards specified.

1.02 PROCEDURE QUALIFICATION

- A. Contractor, subcontractor, or fabricator performing welding under jurisdiction of referenced codes shall be responsible for obtaining and qualifying welding procedures. Structural welding procedures conforming to AWS D1.1 are prequalified as defined in AWS D1.1.
- B. Contractor shall maintain records, and make available to Engineer when requested, certifying successful completion of procedure qualification tests.

1.03 PERFORMANCE QUALIFICATION

- A. Contractor, subcontractor, or fabricator performing welding under jurisdiction of referenced codes shall be responsible for testing and qualifying its welding operators in accordance with applicable procedures.
- B. Welding operator's qualification as specified in code shall be considered as remaining in effect indefinitely unless welder has not engaged in given process of welding for which welding operator is qualified for period of 6 months.
- C. Engineer reserves right to require any welder to retake tests when, in opinion Engineer, of work of welder creates reasonable doubt as to welder's proficiency; Engineer reserves right to witness any required retesting; conduct such tests at no additional expense to Owner.

**PART 2 PRODUCTS**

NOT USED

**PART 3 EXECUTION**

NOT USED

END OF SECTION

**PART 1 GENERAL**

1.01 TEMPORARY ELECTRICITY

- A. Provide and pay for power service required from Owner as needed for construction operation.
- B. Provide power outlets for construction operations, with branch wiring and distribution boxes located as required. Provide flexible power cords as required.
- C. Provide main service disconnect and over-current protection at convenient location meter.
- D. Permanent convenience receptacles may not be utilized during construction.

1.02 TEMPORARY LIGHTING FOR CONSTRUCTION PURPOSES

- A. Provide and maintain lighting for construction operations.
- B. Provide and maintain lighting to exterior staging and storage areas for after dark for security purposes.
- C. Provide and maintain lighting to interior work areas after dark for security purposes.
- D. Provide branch wiring from power source to distribution boxes with lighting conductors, pigtails, and lamps as required.
- E. Maintain lighting and provide routine repairs.
- F. Permanent building lighting may be utilized during construction.

1.03 TEMPORARY HEATING

- A. Existing facilities shall not be used.
- B. Provide heating devices and heat as needed to maintain specified conditions for construction operations.

1.04 TEMPORARY COOLING

- A. Existing facilities shall not be used.
- B. Provide and pay for cooling devices and cooling as needed to maintain specified conditions for construction operations. Provide separate metering and reimburse Owner for cost of energy used.

1.05 TEMPORARY VENTILATION

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

1.06 TELEPHONE SERVICE

- A. Provide, maintain, and pay for telephone service to field office at time of project mobilization, if needed.

1.07 FACSIMILE SERVICE

- A. Provide, maintain and pay for facsimile service to field office at time of project mobilization, if needed.

1.08 TEMPORARY WATER SERVICE

- A. Provide and pay for suitable quality portable water service as needed to maintain specified conditions for construction operations.

1.09 TEMPORARY SANITARY FACILITIES

- A. Provide and maintain required facilities and enclosures. Existing facility use is not permitted. Provide at time of project mobilization.

1.10 FIELD OFFICES AND SHEDS

- A. Office: Provide as required.
- B. Locate offices and sheds a minimum distance of 30' from existing and new structures.
- C. Environmental control: Heating, cooling, and ventilating for offices: Automatic equipment to maintain comfort conditions.
- D. Storage Areas and sheds: Size to storage requirements for products of individual Sections, allowing for access and orderly provision for maintenance and for inspection of products to requirements of Section 01 60 00.
- E. Preparation: Fill and grade sites for temporary structures to provide drainage away from buildings.
- F. Maintenance and cleaning:
  - 1. Weekly janitorial services for offices; periodic cleaning and maintenance for office and storage areas.
  - 2. Maintain approach walks free of mud, water, and snow.
- G. Removal: At completion of Work remove buildings, foundations, utility services, and debris. Restore areas.

1.11 VEHICULAR ACCESS

- A. Location approved by Owner.
- B. Provide unimpeded access for emergency vehicles.
- C. Provide and maintain access to fire hydrants and control valves free of obstructions.
- D. Provide means of removing mud from vehicle wheels before entering streets and parking lots.
- E. Existing on-site roads may be used for construction traffic.

1.12 PARKING

- A. Arrange for temporary parking areas to accommodate construction personnel.
- B. Locate as approved by Owner.
- C. When site space is not adequate, provide additional off-site parking.
- D. Tracked vehicles not allowed on paved areas.
- E. Do not allow heavy vehicles or construction equipment in parking areas.

- F. Do not allow vehicle parking on existing pavement.
- G. Designate 1 parking space for the Owner.
- H. Permanent Pavements and parking facilities:
  - 1. Prior to Substantial Completion the base for permanent roads and parking areas may be used for construction traffic.
  - 2. Avoid traffic loading beyond paving design capacity. Tracked vehicles not allowed.
- I. Maintenance:
  - 1. Maintain traffic and parking areas in a sound condition free of excavated material, construction equipment, products, mud, snow, and ice.
  - 2. Maintain existing and permanent paved areas used for construction; promptly repair breaks, potholes, low areas, standing water, and other deficiencies, to maintain paving and drainage in original, or specified, condition.
- J. Removal, repair:
  - 1. Remove temporary materials and construction at Substantial Completion.
  - 2. Remove underground work and compacted materials to a depth of 2' (600 mm); fill and grade site as specified.
  - 3. Repair existing facilities damaged by use, to original condition.
- K. Mud from site vehicles: Provide means of removing mud from vehicle wheels before entering streets.

#### 1.13 PROGRESS CLEANING AND WASTE REMOVAL

- A. Maintain areas free of waste materials, debris, and rubbish. Maintain site in a clean and orderly condition.
- B. Remove debris and rubbish from pipe chases, plenums, attics, crawl spaces, and other closed or remote spaces, prior to enclosing the space.
- C. Broom and vacuum clean interior areas prior to start of surface finishing, and continue cleaning to eliminate dust.
- D. Collect and remove waste materials, debris, and rubbish from site weekly and dispose off-site.

#### 1.14 BARRIERS

- A. Provide barriers to prevent unauthorized entry to construction areas to allow for Owner's use of site, and to protect existing facilities and adjacent properties from damage from construction operations and demolition.
- B. Provide barricades and covered walkways required by governing authorities for public rights-of-way and for public access to existing building.
- C. Provide protection for plants designated to remain. Replace damaged plants.
- D. Protect nonowned vehicular traffic, stored materials, site, and structures from damage.

#### 1.15 ENCLOSURES AND FENCING

- A. Construction: Commercial grade chain link fence.
- B. Provide 6' (1.8 m) high fence around construction site; equip with vehicular and pedestrian gates with locks.

1.16 SECURITY

- A. Security program:
  - 1. Protect Work existing premises and Owner's operations from theft, vandalism, and unauthorized entry.
  - 2. Initiate program in coordination with Owner's existing security system at project mobilization.
  - 3. Maintain program throughout construction period until Owner occupancy.
- B. Entry control:
  - 1. Restrict entrance of persons and vehicles into Project site and existing facilities.
  - 2. Allow entrance only to authorized persons with proper identification.
  - 3. Maintain log of workers and visitors, make available to Owner on request.
  - 4. Coordinate access of Owner's personnel to site in coordination with Owner's security forces.
- C. Restrictions:
  - 1. Do not allow cameras on site or photographs taken except by written approval of Owner.
  - 2. Do no work on days indicated in Owner-Contractor Agreement.

1.17 WATER CONTROL

- A. Grade site to drain. Maintain excavations free of water. Provide, operate, and maintain pumping equipment.
- B. Protect site from puddling or running water. Provide water barriers as required to protect site from soil erosion

1.18 DUST CONTROL

- A. Execute Work by methods to minimize raising dust from construction operations.
- B. Provide positive means to prevent air-borne dust from dispersing into atmosphere.

1.19 NOISE CONTROL

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

1.20 PEST CONTROL

- A. Provide methods, means, and facilities to prevent pests and insects from entering the facility.

1.21 POLLUTION CONTROL

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

1.22 RODENT CONTROL

- A. Provide methods, means, and facilities to prevent rodents from accessing or invading premises.

1.23 REMOVAL OF UTILITIES, FACILITIES, AND CONTROLS

- A. Remove temporary utilities, equipment, facilities, materials, prior to Substantial Completion inspection.
- B. Remove underground installations to a minimum depth of 2' (600 mm). Grade site as indicated.
- C. Clean and repair damage caused by installation or use of temporary work.

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

**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 PRODUCT STORAGE AND HANDLING REQUIREMENTS

- A. Store and protect products in accordance with manufacturers' instructions.
- B. Store with seals and labels intact and legible.
- C. Store sensitive products in weathertight, climate-controlled enclosures in an environment favorable to product.
- D. For exterior storage of fabricated products, place on sloped supports above ground.
- E. Provide off-site storage and protection when site does not permit on-site storage or protection.
- F. Cover products subject to deterioration with impervious sheet covering. Provide ventilation to prevent condensation and degradation of products.
- G. Store loose granular materials on solid flat surfaces in a well-drained area. Prevent mixing with foreign matter.
- H. Provide equipment and personnel to store products by methods to prevent soiling, disfigurement, or damage.
- I. Arrange storage of products to permit access for inspection. Periodically inspect to verify products are undamaged and are maintained in acceptable condition.

### 1.04 PRODUCT OPTIONS

- A. Products specified by reference standards or by description only: Any product meeting those standards or description.
- B. Products specified by naming one or more manufacturers: Products of one of manufacturers named and meeting specifications, no options or substitutions allowed.

**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.
- D. Owner will occupy all of the building as specified in Section 01 11 00.

### **1.02 FINAL CLEANING**

- A. Execute final cleaning prior to final project assessment.
- B. Clean interior and exterior glass, surfaces exposed to view; remove temporary labels, stains and foreign substances, polish transparent and glossy surfaces.
- C. Clean equipment and fixtures to a sanitary condition with cleaning materials appropriate to the surface and material being cleaned.
- D. Replace filters of operating equipment.
- E. Clean debris from roofs, gutters, downspouts, and drainage systems.
- F. Clean site; sweep paved areas, rake clean landscaped surfaces.
- G. Remove waste and surplus materials, rubbish, and construction facilities from the site.

### **1.03 DEMONSTRATION AND INSTRUCTIONS**

- A. Demonstrate operation and maintenance of products to Owner's personnel 2 weeks prior to date of Substantial Completion.
- B. Demonstrate Project equipment by a qualified individual who is knowledgeable about the Project.
- C. For equipment or systems requiring seasonal operation, perform demonstration for other season within 6 months.
- D. Utilize operation and maintenance manuals as basis for instruction. Review contents of manual with Owner's personnel in detail to explain all aspects of operation and maintenance.
- E. Demonstrate start-up, operation, control, adjustment, trouble-shooting, servicing, maintenance, and shutdown of each item of equipment at agreed time at equipment location.
- F. Prepare and insert additional data in operations and maintenance manuals when need for additional data becomes apparent during instruction.
- G. Amount of time required for instruction on each item of equipment and system is that specified in individual sections.

### **1.04 TESTING, ADJUSTING AND BALANCING**

- A. Owner will appoint, employ, and pay for services of an independent firm to perform testing.

- B. Local utility company (ComEd) will provide additional day of witness testing.
- C. Reports will be submitted by the independent firm to the Engineer indicating observations and results of tests and indicating compliance or noncompliance with the requirements of the Contract Documents.
- D. Provide 4 days of on-site assistance during Owner-provided testing.
- E. Provide 1 day of on-site assistance during ComEd-provided testing.

#### 1.05 PROTECTING INSTALLED CONSTRUCTION

- A. Protect installed Work and provide special protection where specified in individual specification sections.
- B. Provide temporary and removable protection for installed products. Control activity in immediate work area to prevent damage.
- C. Provide protective coverings at walls, projections, jambs, sills, and soffits of openings.
- D. Protect finished floors, stairs, and other surfaces from traffic, dirt, wear, damage, or movement of heavy objects, by protecting with durable sheet materials.
- E. Prohibit traffic or storage upon waterproofed or roofed surfaces. If traffic or activity is necessary, obtain recommendations for protection from waterproofing or roofing material manufacturer.
- F. Prohibit traffic from landscaped areas.

#### 1.06 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. Measured depths of foundations in relation to finish main floor datum.
  - 2. Measured horizontal and vertical locations of underground utilities and appurtenances, referenced to permanent surface improvements.
  - 3. Measured locations of internal utilities and appurtenances concealed in construction, referenced to visible and accessible features of the Work.
  - 4. Field changes of dimension and detail.
  - 5. Details not on original Contract Drawings.

- G. Submit documents to Engineer with claim for final Application for Payment.

1.07 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 and place in location as directed; obtain receipt prior to final payment.

1.08 PRODUCT WARRANTIES AND PRODUCT BONDS

- A. Obtain warranties and bonds executed in triplicate by responsible subcontractors, suppliers, and manufacturers, within ten days after completion of the applicable item of work.
- B. Execute and assemble transferable warranty documents and bonds from subcontractors, suppliers, and manufacturers.
- C. Verify that documents are in proper form, contain full information, and are notarized.
- D. Co-execute submittals when required.
- E. Provide Table of Contents and assemble in 3-D side ring binder with durable plastic cover.
- F. Submit prior to final Application for Payment.
- G. Time of Submittals:
  - 1. For equipment or component parts of equipment put into service during construction with Owner's permission, submit documents within 10 days after acceptance.
  - 2. Make other submittals within 10 days after Date of Substantial Completion, prior to final Application for Payment.
  - 3. For items of Work for which acceptance is delayed beyond Date of Substantial Completion, submit within 10 days after acceptance, listing the date of acceptance as the beginning of the warranty or bond period.

1.09 MAINTENANCE SERVICE

- A. Furnish service and maintenance of components indicated in specification sections during the warranty period.
- B. Examine system components at a frequency consistent with reliable operation. Clean, adjust, and lubricate as required.
- C. Include systematic examination, adjustment, and lubrication of components. Repair or replace parts whenever required. Use parts produced by the manufacturer of the original component.
- D. Maintenance service shall not be assigned or transferred to any agent or Subcontractor without prior written consent of the Owner.

**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.

### 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. Size 8-1/2" x 11" (216 mm x 279 mm).
  - 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. Fold larger drawings to size of text pages.
  - 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: 1" (25 mm).
    - 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. Seller, name of responsible principal, address, and telephone number.
  - 2. List of each product required to be included, indexed to content of volume.
- 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 EQUIPMENT AND SYSTEMS

- A. Submit 3 hard copies and one electronic (PDF) copy of complete manual in final form.
- 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. Summer and winter operating instructions.
    - c. Special operating instructions.
  - 3. Maintenance procedures:
    - a. Routine operations.
    - b. Guide to "trouble-shooting."
    - c. Disassembly, repair, and reassembly.
    - d. 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. Each contractor's coordination Drawings. As-installed color-coded piping diagrams.
  - 10. List of original manufacturer's spare parts, manufacturer's current prices, and recommended quantities to be maintained in storage.
  - 11. 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.

#### 1.06 SUBMITTAL SCHEDULE

A. Preliminary draft::

1. Submit 2 copies to Owner.
2. 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

<p><b>CITY OF GENEVA</b></p>  <p><b>WESTERN AVENUE SUBSTATION TRANSFORMER #1</b></p>    <p><b>WESTERN AVENUE SUBSTATION TRANSFORMER REPLACEMENT</b></p>    <p><b>CONTRACT 18-01</b></p>    <p><b>VOLUME NUMBER _____</b></p>	<p><b>CITY OF GENEVA POWER COOPERATIVE WESTERN AVENUE SUBSTATION TRANSFORMER #1</b></p>          <p><b>OPERATING AND MAINTENANCE MANUAL FOR TRANSFORMER #1</b></p> <p><b>VOLUME NUMBER _____</b></p>       <p><b>MANUFACTURER'S NAME MANUFACTURER'S ADDRESS</b></p>    <p><b>STANLEY CONSULTANTS, INC. MUSCATINE, IOWA</b></p>	<p><b>36 pt 36 pt</b></p>  <p><b>24 pt 24 pt</b></p>          <p><b>36 pt 36 pt 36 pt</b></p> <p><b>36 pt</b></p>       <p><b>24 pt 24 pt</b></p>    <p><b>14 pt 14 pt</b></p>
<p><b>SPINE</b></p>	<p><b>COVER</b></p>	

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. Removal and disposal of existing concrete pad for transformer neutral grounding resistor.
- B. Remove and legally dispose of items.

### 1.02 MEASUREMENT AND PAYMENT

- A. No separate measurement or payment will be made for demolition work under this contract. Include costs in connection with Work in lump sum Contract Price.

### 1.03 DEFINITIONS

- A. Deconstruction: Disassembly of buildings for the purpose of recovering materials.
- B. Construction and demolition (C&D) materials: Materials produced in the process of construction, renovation and/or demolition of structures, where structures include buildings (residential, commercial, institutional), roads, and bridges. C&D materials typically include concrete, asphalt, wood, gypsum wallboard, paper, glass, rubble, and roofing materials. Also includes land clearing debris, such as stumps, rocks, and dirt.
- C. Environmental pollution and damage: Presence of chemical, physical, or biological elements or agents which adversely affect human health or welfare; unfavorably alter ecological balances of importance to human or animal life; affect other species of importance to humanity; or degrade utility of environment for aesthetic, cultural or historical purposes.
- D. Inert fill:
  - 1. Permitted facility that accepts inert waste such as asphalt and concrete exclusively for purpose of disposal.
  - 2. Inert solids and waste: Nonliquid solid waste including, but not limited to, soil and concrete, that does not contain hazardous substances or soluble pollutants at concentrations in excess of water-quality standards established by regional water board and does not contain significant quantities of decomposable solid waste.
- E. Demolition waste: Building materials and solid waste resulting from construction, remodeling, repair, cleanup, or demolition operations that are not hazardous. Term includes, but is not limited to, asphalt concrete, portland cement concrete, brick, lumber, gypsum wallboard, cardboard and other associated packaging, roofing material, ceramic tile, carpeting, plastic pipe, and steel. The materials may include rock, soil, tree stumps, and other vegetative matter resulting from land clearing and landscaping for construction or land development projects.
- F. Chemical waste: Includes petroleum products, bituminous materials, salts, acids, alkalis, herbicides, pesticides, organic chemicals and inorganic wastes.
- G. Recycling: Process of sorting, cleansing, treating and reconstituting materials for purpose of using altered form in manufacture of new product. Recycling does not include burning, incinerating or thermally destroying solid waste.
- H. Reuse: Use, in same or similar form as it was produced, of material which might otherwise be discarded.
- I. Solid waste: Putrescible and nonputrescible solid, semisolid, and liquid wastes, including garbage, trash, refuse, paper, rubbish, ashes, industrial wastes, demolition and construction wastes, abandoned vehicles and parts thereof, discarded home and industrial appliances, dewatered, treated, or chemically fixed sewage sludge which is not hazardous waste, manure, vegetable or animal solid

and semisolid wastes, and other discarded solid and semisolid wastes. "Solid waste" does not include hazardous waste, radioactive waste, or medical waste as defined or regulated by State law.

1.04 PRE-DEMOLITION MEETING

- A. Site can be observed at Pre-Bid meeting.

1.05 SCHEDULING

- A. Perform Work in manner which will provide least interference and most protection to public and existing construction. Contractor's operations subject to approval by Owner prior to commencement of Work.
- B. Take care to minimize outages of electrical systems.

1.06 CLOSEOUT SUBMITTALS

- A. Record drawings: Identify and accurately locate capped utilities and other subsurface structural, electrical, or mechanical conditions.

1.07 QUALITY ASSURANCE

- A. Demolition firm qualifications: Engage licensed demolition contractor and an experienced firm that has successfully completed demolition Work similar to that indicated for this Project.
- B. Regulatory requirements:
  - 1. Comply with governing EPA notification regulations before starting demolition. Comply with hauling and disposal regulations of authorities having jurisdiction. Obtain and pay for all permits required.
  - 2. Conform to applicable requirements of federal, state, and other governmental agencies for demolition work.

1.08 SITE 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 shown on Drawings damaged during operations.
- C. Notify Engineer and Owner of unexpected subsurface conditions and discontinue Work in area until Owner provides notification to resume Work.

**PART 2 PRODUCTS**

2.01 MATERIALS OWNERSHIP

- A. Demolished materials shall become Contractor's property and shall be removed, recycled, or disposed from Project Site in appropriate and legal manner.

**PART 3 EXECUTION**

3.01 VERIFICATION OF CONDITIONS

- A. Inspect buildings and structures where demolition is required. Inspect existing Drawings of buildings and structures; Drawings are available from Owner. Contractor shall be familiar with items that require demolition and patching.

- B. Perform excavation and dewatering necessary to accomplish Work.
- C. Determine actual Site conditions, extent to which demolition is required, and method of demolition.
- D. Schedule work with Owner and work in other parts of these Contract Documents.
- E. Verify that utilities have been disconnected and capped.
- F. Survey existing conditions and correlate with requirements indicated to determine extent of demolition and recycling required.

### 3.02 PREPARATION

- A. Prepare drawings, documents, and applications and obtain government agency approvals and permits required for demolition activities.
- B. Conduct demolition operations and remove C&D materials to ensure minimum interference with roads, streets, walks, and other adjacent occupied and utilized facilities.
- C. Do not close or obstruct streets, walks, or other adjacent occupied or utilized facilities without permission from authorities having jurisdiction. Provide alternate routes around closed or obstructed traffic ways if required by governing regulations.
- D. Conduct demolition operations to prevent injury to people and damage to adjacent buildings and facilities to remain. Ensure safe passage of people around demolition area.
  - 1. Erect temporary protection, such as walks, fences, railings, canopies, and covered passageways, where required by authorities having jurisdiction.
  - 2. Protect existing Site improvements, appurtenances, and landscaping that are designated to remain in place.

### 3.03 EXPLOSIVES

- A. Explosives: Use of explosives not permitted.

### 3.04 ENVIRONMENTAL CONTROLS

- A. Comply with federal, state and local regulations pertaining to water, air, solid waste, recycling, chemical waste, sanitary waste, sediment and noise pollution.
- B. Protection of natural resources: Preserve natural resources within project boundaries or restore to equivalent condition.
  - 1. Confine demolition activities to areas defined by public roads, easements, and work area limits indicated on drawings.
  - 2. Temporary construction: Remove indications of temporary construction facilities, such as haul roads, work areas, structures, stockpiles or waste areas.
  - 3. Water resources:
    - a. Comply with applicable regulations concerning direct or indirect discharge of pollutants to underground and natural surface waters.
    - b. Oily substances:
      - 1) Prevent oily or other hazardous substances from entering ground, drainage areas, or local bodies of water in such quantities as to affect normal use, aesthetics, or produce measurable ecological impact on area.
      - 2) Store and service construction equipment at areas designated for collection of oil wastes.
  - 4. Dust control, air pollution, and odor control: Prevent creation of dust, air pollution and odors:
    - a. Use temporary enclosures and other appropriate methods to limit dust and dirt rising and scattering in air to lowest practical level.
    - b. Properly maintain equipment to reduce gaseous pollutant emissions.
  - 5. Noise control: Perform demolition operations to minimize noise.

- a. Repetitive, high level impact noise will be permitted only between hours of 8:00 a.m. and 3:00 p.m. Repetitive impact noise on property shall not exceed following dB limitations:

Sound Level in dB	Time Duration of Impact Noise
70	More than 12 minutes in any hour
80	More than 3 minutes in any hour

- b. Provide equipment, sound-deadening devices, and take noise abatement measures that are necessary to comply with requirements of this Contract.
  - c. At least once every 5 successive working days while work is being performed above 55 dB noise level, measure sound level for noise exposure due to demolition. Measure sound levels on 'A' weighing network of general purpose sound level meter at slow response. To minimize the effect of reflective sound waves at buildings, measurements may be taken 3' to 6' in front of building face. Submit recorded information to State noting problems and alternatives before mitigating actions.
6. Disposal practices and waste hauling:
- a. Use permitted waste hauler or Contractor's trucking services and personnel.
  - b. Do not burn, bury or otherwise dispose of rubbish and waste materials on project site.
7. Revenue:
- a. Revenues or other savings obtained from recycled, re-used, or salvaged materials shall accrue to Contractor unless otherwise noted in Contract Documents.
  - b. Remove and transport C&D materials in manner that will prevent spillage on adjacent surfaces, streets, and areas or dust being emitted into atmosphere.
  - c. Clean adjacent streets of dust, dirt, and C&D materials caused by demolition operations. At end of each work day, return adjacent areas to condition existing before start of demolition.

3.05 PROTECTION

- A. Protect existing facilities from damage by falling debris, dust, and construction operations.
- B. Provide shoring and bracing where necessary to support existing construction and protect personnel during demolition operation.

3.06 DEMOLITION - GENERAL

- A. Completely remove below-grade construction, including footings.
- B. Damages: Promptly repair damages to adjacent facilities caused by demolition operations.
- C. Remove existing construction as specified and shown and as required to permit new construction.
- D. Perform removal in manner that will minimize dust, noise, and other nuisance. Maintain haul routes for disposal of material clean and free of debris.
- E. Remove existing construction carefully providing for neat and orderly junctions at construction to remain in place. Final appearance of exposed surfaces shall be similar and equal to that of adjacent existing work. Grind off rough surfaces to remove sharp projections.
- F. Perform demolition operations in manner that in no way endangers personnel, public, existing structures, utilities, roadways, or facilities not to be demolished.
- G. Any portion of existing construction whether structural, or accessory which has become unstable through removal of other parts of construction shall be removed as soon as practicable, and no such unstable part shall be left free-standing or inadequately braced against causes of collapse at end of each day's work.
- H. No demolition shall be performed on piping, electrical circuits, or equipment until system has been isolated by Owner. Contractor shall verify isolation of system.

- I. Contractor shall relocate existing active miscellaneous piping, conduit, and electrical circuits and devices not detailed on Drawings but required for installation of equipment and items installed by this Contract.
- J. To reduce fire hazards during demolition, Contractor shall:
  - 1. Maintain sufficient number of fire extinguishers to check and extinguish small fires in areas where Work is being performed.
  - 2. Wherever cutting torch or other equipment which might cause fire is being used, fire extinguishers shall be kept nearby and ready for instant use. Users of such equipment shall be instructed in proper method of preventing fires and extinguishing fire.
  - 3. Burning of waste lumber and other building materials or trash on Site will not be permitted.
- K. Use of blasting not permitted.
- L. Provide temporary personnel and vehicle protection at openings or ledges made by demolition.

### 3.07 HANDLING OF DEMOLISHED MATERIALS

- A. Storage of materials to be removed not permitted to accumulate on site. Promptly remove and dispose of unsalvageable equipment and materials.
- B. Burning: Do not burn demolished materials.
- C. No material, obstructions, or debris shall be placed or allowed to accumulate within 15' (4.5 m) of any fire hydrant. Fire hydrants shall be accessible at all times.

### 3.08 REPAIR AND RESTORATION

- A. Contractor shall be responsible for damage to personnel, public, roadways, streets, structures, utilities, facilities, and equipment caused by operations and shall repair any damage at its own expense or replace items damaged beyond repair.
- B. Do not operate vehicles or equipment on existing construction or roadways that could be damaged.
- C. Backfill applicable excavated areas, open pits, and other depressions as work progresses. Backfill materials shall conform to requirements of Drawings.
- D. Grade areas disturbed by construction to smooth, uniform surfaces sloped to drain.
- E. Replace construction removed to facilitate operations with construction of equal quality to that removed.

### 3.09 CLEAN-UP

- A. Maintain public streets, alleys, or other thoroughfares used in carrying out disposal free of litter or soil attributable to this operation. Equip and load trucks or other vehicles to prevent leakage, blowing off, or other escape of any portion of whatsoever is being hauled. Cost incurred by Owner in cleaning up such litter will be charged to Contractor and deducted from monies due or to become due it under this contract.
- B. Upon completion of demolition work in each area, thoroughly clean area of materials not to remain.

END OF SECTION

- 1) P. K. Mitchell
- 2) P. E. Schulz, J. R. Sovers

## **PART 1 GENERAL**

### 1.01 SECTION INCLUDES

- A. Cast-in-place concrete including form work, reinforcing steel, and miscellaneous materials.

### 1.02 MEASUREMENT AND PAYMENT

- A. If quantities of following items are changed from those required by Contract Documents, lump sum Contract Price will be adjusted on basis of unit adjustment prices set forth in Agreement.
  - 1. Concrete, cubic yard; (CY): Unit adjustment price includes labor, equipment, materials, tests, placing, forming, finishing, curing, installation of embedded items, and incidental work necessary for concrete construction. Unit adjustment price includes reinforcing steel.
  - 2. Cubic yards of concrete defined as volume contained within lines of foundation or structure shown on Drawings. No reductions will be made for openings or blockouts, etc., less than 1 cu ft in volume.

### 1.03 INFORMATIONAL SUBMITTALS

- A. Tests, or certificates of compliance with standards specified in this Section at least 14 days prior to commencing concrete placement for:
  - 1. Cement: From each car from which cement will be used.
  - 2. Fly ash: From each separate shipment from which fly ash is being used.
  - 3. Aggregates: For each size aggregate from each source of aggregate, for grading, deleterious substances and soundness.
- B. List of admixtures, curing compounds, and other manufactured materials proposed identifying manufacturer and type. Provide data on specific items when requested by Engineer.
- C. Testing laboratory reports required at least 14 days prior to commencing concrete placement for each class of concrete and each size aggregate:
  - 1. Proposed concrete design mix.
  - 2. Tests on concrete cylinders from trial batch of proposed mix.
- D. Testing laboratory reports for tests on concrete cylinders taken in field.

### 1.04 QUALITY ASSURANCE

- A. Contractor shall retain services of qualified independent testing laboratory.
- B. Responsibility of testing laboratory will include:
  - 1. Obtaining, making samples and trial batches, and performing laboratory and field testing specified.
  - 2. Provide reports to Owner giving information on materials, concrete design mixes, and testing performed.
  - 3. Reports shall indicate whether or not materials meet specifications.
- C. Perform Work in accordance with ACI 117 and 301.
- D. Tests:
  - 1. Establish proposed concrete design mix proportions on basis of either field experience and/or trial mixtures in accordance with ACI 318, Chapter 5, except specific requirements shall conform to these specifications. Determine and submit supporting data, standard deviation, trial batch tests, required average strength, proportions, air content, and slump range for each mix.
  - 2. Concrete strength tests:
    - a. Comply with ASTM C39 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 (120 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 1 laboratory cured cylinder at 7 days and other 2 at 28 days for average strength.
  - d. If tests indicate deficient strength as defined by ACI 318, immediately adjust mix to increase average of subsequent test results and, when directed, carry out drilled core testing, ASTM C42/C42M. Testing and remedial work shall be at no additional cost to Owner.
3. Slump tests:
- a. Test each batch as delivered; 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.
4. Air content tests:
- a. Sample on basis specified above for field strength tests.
  - b. Obtain samples from concrete at point of discharge.
  - c. Determine air content by pressure method; comply with ASTM C231.
  - d. If air content does not meet Specifications, remove deficient concrete from Work.

#### 1.05 STORAGE OF MATERIALS

- 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 or Type II.
- 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. Do not use in drilled caissons over 48" (1220 mm) in diameter or in other concrete work where least dimension of concrete section exceeds 3'-0" (900 mm).
- C. White cement: Nonstaining, ASTM C150, Type I.
- D. Use only 1 brand of each type of cement.

#### 2.02 AGGREGATE

- A. Regular aggregate: Strong, durable, well-graded minerals conforming to ASTM C33 requirements for grading, deleterious substances, and soundness.
- B. Coarse aggregate nominal size:
  - 1. 1-1/2" to No. 4 (38 mm to 4.75 mm): Use for all concrete at Contractor's option 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). Use for all concrete at Contractor's option.
- C. 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.

### 2.03 FLY ASH

- A. Conform to ASTM C618.
- B. Fly ash (Type C or F) 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.

### 2.06 REINFORCING

- A. Bars: ASTM A615/A615M, Grade 60 (420) deformed bars.
- B. Bend bars cold to conform to required details.

### 2.07 FORMS

- A. Acceptable materials:
  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.

### 2.08 JOINT MATERIALS

- A. Sawed or tooled joint sealant:
  1. MasterSeal SL 1 one-component elastomeric, self-leveling polyurethane sealant, by BASF Corporation, or equal.
  2. Use for sawed or tooled joints.

2.09 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 such as floor coverings, additional concrete, paint, and similar applied 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.

2.10 GROUT

- A. Type: Regular.
- B. 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.
- C. Minimum strength: 4,000 psi (28 Mpa) at 28 days.
- D. Use for patching.

2.11 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
A	4,500 psi	5,700 psi
B	2,500 psi	3,500 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.
- E. Air entrainment: Concrete shall contain entrained air within following limits.

Nominal Maximum Size of Coarse Aggregate, In.	Total Air Content, Percent By Volume
3/4"	4 to 8
1-1/2"	3 to 6

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

G. Concrete use:

1. Class A: Use for all concrete unless specified otherwise.
2. Class B: Use for fill concrete.

2.12 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.

**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.

3.02 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.

### 3.03 REINFORCEMENT PLACEMENT

- A. Remove scale, loose flaky rust, dirt, grease, curing compound, and other coatings which 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 blocks 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.
- D. Do not tack weld anchor bolts or other embeds to reinforcing bars.

### 3.04 REINFORCEMENT TOLERANCES

- A. 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.
- B. 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.

### 3.05 CONSTRUCTION JOINTS

- A. Install only where shown on drawing 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. Install waterstop where shown or specified.

### 3.06 EXPANSION 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.

### 3.07 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. 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.

### 3.08 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.

### 3.09 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 drain.
  - 3. Dusting of surface with dry cement or sand during finishing operations is not permitted.
  - 4. Apply curing compounds and similar materials in strict accordance with manufacturer's instructions during or after finishing.
  - 5. Finish surfaces within following tolerances as measured with a 10' (3 m) straight edge:
    - a. Mats or slabs: 3/16" (5 mm).
    - b. Top surfaces of structures other than slabs: In accordance with ACI 117.
  - 6. 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 equipment foundations and tops of structure foundations.
  - 7. 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.

- 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. 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.

### 3.10 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. Time specified above represents cumulative time during which temperature of concrete is maintained above 50°F (11°C) and for concrete with or 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 corners are true, sharp, and unbroken.

### 3.11 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, where surface curing and sealing product is specified for use, 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.

END OF SECTION

- 1) J. L. Varone
- 2) S. C. Smith, N. J. Pierson

**PART 1 GENERAL**

1.01 SECTION INCLUDES

- A. Miscellaneous metal.
- B. Welding materials.
- C. Welded studs.

1.02 WORK BY OTHERS

- A. Structural steel installation.

1.03 MEASUREMENT AND PAYMENT

- A. If quantities of following items are changed from those required by Contract Documents, lump sum Contract Price will be adjusted on basis of unit adjustment prices set forth in Agreement. Miscellaneous Metals, linear foot (LF). Unit adjustment price includes labor, equipment, and materials for the fabrication, finishing, and installation of miscellaneous metals.

1.04 QUALITY ASSURANCE

- A. Perform welding in accordance with AWS D1.1 "Structural Welding Code".
- B. Perform fabrication in accordance with AISC 303-10 "Code of Standard Practice for Steel Buildings and Bridges".

1.05 DELIVERY, STORAGE, AND HANDLING

- A. Adhere to product storage and handling requirements.
- B. Accept metal fabrications on site in labeled shipments. Inspect for damage.
- C. Protect metal fabrications from damage by exposure to weather.

**PART 2 PRODUCTS**

2.01 MATERIALS

- A. Steel plates and shapes:
  - 1. Channels and angles: ASTM A36/A36M.
  - 2. Structural plates and bars: ASTM A36/A36M.
- B. Galvanizing: ASTM A123/A123M.

2.02 WELDING MATERIALS

- A. Steel: AWS D1.1; type as required for materials being welded.

2.03 WELDED STUDS

- A. Material: ASTM A108.
- B. Automatically end weld in accordance with manufacturer's recommendations.
- C. Manufacturer: "Nelson Fluxed Headed Anchor Studs," by Nelson Stud Welding Division, or equal.

**PART 3 EXECUTION**

3.01 ERECTION

- A. Install items plumb and level, accurately fitted, free from distortion or defects.
- B. Make provisions for erection stresses. Install temporary bracing to maintain alignment, until permanent bracing and attachments are installed.
- C. Field weld components where indicated on Drawings.
- D. Perform field welding and inspect welds in accordance with AWS.

3.02 PREPARATION

- A. Clean and strip primed steel and aluminum items to bare metal where site welding is required.
- B. Supply setting templates for metal items required to be cast into concrete.

3.03 FIELD TOUCH-UP OF GALVANIZING

- A. Galvanizing damaged after fabrication or installation shall be regalvanized by painting with "Galvanox" Type 1 by Carboline-Subox Div., or equal.
- B. Apply in accordance with manufacturer's recommendations.

END OF SECTION

- 1) J. L. Varone
- 2) S. C. Smith, N. J. Pierson

## **PART 1 GENERAL**

### 1.01 SECTION INCLUDES

A. General electrical requirements for equipment and services including, but not limited to:

1. Factory wiring.
2. Low voltage field wiring.
3. Low voltage splices and terminations.
4. Low voltage cabinets and electrical enclosures.
5. Equipment safety grounding.
6. Low voltage fuses and fuse blocks.
7. Electrical meters.
8. Control relays and switches.
9. Pushbuttons.
10. Indicating lights.
11. Alarm and trip contacts.
12. Low voltage starters.
13. Low voltage circuit breakers and disconnect switches.
14. Auxiliary power transformers.
15. Power factor correction capacitors.
16. Outlet, pull, and junction boxes.
17. Plates and covers.
18. Wiring devices.
19. Welding receptacles.
20. Panelboards.
21. Welding.
22. Shop finish.
23. Rust-inhibiting compounds.
24. Galvanizing.
25. Packaging, identification, and tagging.
26. Nameplates.
27. Trip setting coordination.
28. Grounding and bonding.
29. Fireproofing and fire ratings.
30. Testing and demonstration.

### 1.02 RELATED REQUIREMENTS

- A. Section 02 41 00 – Demolition: Demolition of electrical items.

### 1.03 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.

### 1.04 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.

1.05 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.

1.06 SCHEDULING

- A. Coordinate with Owner early and late shipping and delivery schedules for items requiring storage and handling at Site.

1.07 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.
- B. Low-voltage auxiliary and control power.
  - 1. Electrical power for ac control and instrumentation equipment:
    - a. Provide devices necessary for proper operation and protection of equipment during electrical power supply and ambient temperature fluctuations specified.
    - b. Design for continuous operation at any voltage from 85% to 110% of nominal voltage. Dropout voltage shall be 60% of nominal for relays and 75% for contactors and starters.
  - 2. Electrical power for dc devices:
    - a. Design for continuous operation on ungrounded station battery system, capable of maintaining operation at any voltage from 80% to 112% of nominal voltage.
    - b. Electrical devices served shall not impose ground connection on supply.
- C. Auxiliary power: Design auxiliary equipment for low voltage service, with electrical power designed to operate from one of nominal electrical power sources as follows and as indicated on Drawings:

Volts	Phase	Frequency
120/240	1	60
125	1	dc

2.02 FACTORY WIRING

- A. Select cable for electrical and environmental conditions of installation, and suitable for unusual service conditions where encountered.
  - 1. Proper temperature application cable shall be used throughout, but shall be not less than 90°C rated.
  - 2. Conductors routed over hinges shall use extra-flexible stranding.
  - 3. Cable insulation shall be rated for maximum service voltage used, but not less than 600 volts.
  - 4. Splices not allowed.
- B. Panel, control cabinet, switchboard, motor control center, and switchgear wiring shall use flame retardant cross-linked polyethylene (XLP) or flame retardant ethylene-propylene rubber (EPR) insulation that meet or exceed requirements of UL 44 for Types SIS, and XHHW.
  - 1. Minimum size: No. 14 AWG (1.5 mm<sup>2</sup>).
  - 2. Conductors: Annealed bare copper with fine stranding passing IEEE 1202 and UL VW-1 flame test.
- C. Instrumentation, thermocouple, and thermocouple extension wire shall use twisted shielded pairs/triads having flame retardant cross-linked polyethylene (XLPE) insulation, and chlorinated polyethylene (CPE) jacket.
  - 1. Minimum size: No. 16 AWG (1.0 mm<sup>2</sup>).
  - 2. Conductor type:
    - a. Instrument: Annealed copper Class B stranding.

- b. Thermocouple: Solid alloy, ANSI MC 96.1.
3. Provide each pair/triad with shield.
4. Shielding shall consist of aluminum-polyester tape and flexible strand tin-coated No.18 AWG (0.75 mm<sup>2</sup>) copper drain wire.
5. Drain wire for each instrument cable shall be insulated with spaghetti sleeve. One end of shield wire shall be terminated on grounded terminal.
6. Cables shall pass IEEE 1202 and ICEA 70,000 Btu/hr vertical tray flame test, and each conductor shall pass UL VW-1 flame test.

D. Terminations:

1. Conductor terminal connectors shall be insulated, ring tongue, compression type connectors properly sized for conductor and terminal.
  - a. Connectors shall be constructed of copper and shall be tin-plated.
  - b. Interior surface of connector wire barrel shall be serrated; exterior surface of connector wire barrel shall be furnished with crimp guides.
2. Uninsulated terminal connectors shall be used for conductors terminated on devices equipped with individual fitted covers, such as, but not limited to, control switches and lockout relays.
3. Connections requiring disconnect plug and receptacle type devices shall be provided with factory-terminated conductors on each plug and receptacle.
  - a. Plugs and receptacles shall be factory wired into junction boxes containing terminal blocks for external connections.
  - b. Conductors on disconnect portion of plug-receptacle assemblies shall be in common jacket.
4. Prior to shipment of equipment, remove temporary wiring installed in factory for equipment testing.
5. Current transformers shall terminate on shorting type terminal blocks. Ship with shorting jumpers installed.

E. Identification and labeling:

1. Provide conductor identification sleeve on each end of each internal conductor. Mark each sleeve with opposite end destination identification with nonsmudging, permanent black ink. Sleeves shall be UV-resistant self-adhesive type or PVC, not less than 1/2" long.
2. Permanently label each terminal block, terminal, conductor, relay, breaker, fuse block, and other auxiliary devices to coincide with identification indicated on manufacturer's drawings.

2.03 FIELD WIRING

- A. Nationally or internationally recognized cable manufacturer shall produce cable provided.
  1. Metal-clad cable, NEC Type MC, may not be substituted in place of cable and conduit unless specified otherwise, or unless approved in writing.
  2. Comply with code and Project requirements directly associated with use of each cable type.
- B. Cables specified are for voltages 600 volts and below.
- C. Wiring shall be annealed, bare copper with not less than 98% conductivity, unless specified otherwise.
- D. General-purpose building conductor used on interior lighting circuits and general-purpose branch circuits routed entirely in conduit shall be single conductor.
  1. Voltage rating: 600-volt.
  2. Conductor: Class B, solid or stranded, annealed, uncoated copper, minimum size No. 12 AWG (4.0mm<sup>2</sup>).
  3. Insulation: Polyvinyl chloride (PVC) complying with NEC for type THHN or THWN.
  4. Jacket: Overall clear nylon jacket applied over conductor insulation, UL-listed as gasoline and oil resistant.
  5. Cables shall pass IEEE 383 70,000 Btu/hr, UL Standard 83 for Type THHN or THWN wire.
  6. Color coding:
    - a. Provide conductor sizes No. 8 AWG and smaller in following colors:
      - 1) Source voltage of 120/240 volts:
        - a) Phase A: Black.

- b) Phase B: Red.
- c) Neutral: White.
- 2) Source voltage of 480Y/277 volts:
  - a) Phase A: Brown.
  - b) Phase B: Orange.
  - c) Phase C: Yellow.
  - d) Neutral: Gray.
- b. Sizes No. 6 AWG and larger shall be black and color-coded with field-applied tape.
- 7. Installations in dry or damp locations shall utilize THHN and installations in wet locations shall utilize THWN.
- E. Single-conductor, low-voltage power cable for motors, feeders, branch circuits, and dc circuits routed in conduit, duct bank, or cable tray:
  - 1. Voltage rating: 600-volt.
  - 2. Conductor: Annealed, bare copper, Class B, stranded, minimum size No. 12 AWG (4.0 mm<sup>2</sup>).
  - 3. Insulation: Cross-linked polyethylene (XLPE), complying with NEC Type XHHW-2. Insulation shall be sunlight resistant and cable tray (CT) rated.
  - 4. Jacket: None.
  - 5. Color coding: Black.
  - 6. Wire shall be identified by surface marking indicating manufacturer, conductor size, conductor material, voltage rating, UL symbol, and listed type.
  - 7. Cables shall pass IEEE 383 70,000 Btu/hr, ICEA T-29-520, 210,000 Btu/hr vertical tray flame tests, and UL 1581, VW-1 vertical flame test.
  - 8. Temperature rating: 90° C for normal operation in wet or dry locations.
- F. Multiconductor, low-voltage power cables for motors, feeders, and branch circuits routed in cable tray, conduit or duct bank:
  - 1. Voltage rating: 600-volt.
  - 2. Conductors: Annealed, bare copper, Class B, stranded, minimum size No. 12 AWG (4.0 mm<sup>2</sup>).
  - 3. Insulation: Cross-linked polyethylene (XLPE) complying with NEC Type XHHW-2.
  - 4. Jacket: Flame-retardant, heat, moisture, and sunlight-resistant; polyvinyl chloride (PVC).
  - 5. Color coding: Insulated phase conductors shall be black and shall have printed numbers in accordance with ICEA Method 4. Each cable shall be identified by means of surface ink printing indicating manufacturer, number of conductors, size, metal, voltage rating, and UL listing as suitable for cable tray use.
  - 6. Phase conductors shall be cabled together with Class B stranded, bare copper grounding conductor and fillers. Ground wire size shall comply with requirements of UL 1277.
  - 7. Cover cable assembly with helically applied polyester binder tape with minimum 10% overlap.
  - 8. Cables shall pass IEEE 383 70,000 Btu/hr, and ICEA T-29-520, 210,000 Btu/hr vertical tray flame test.
  - 9. Temperature rating: 90° C for normal operation in wet or dry locations.
- G. Multiconductor cable for control, interlocks, current transformers (CTs), voltage transformers (VTs), routed in cable tray and conduit:
  - 1. Voltage rating: 600-volt.
  - 2. Conductors: Annealed, bare copper, Class B, stranded, CT minimum size No. 10 AWG (6.0mm<sup>2</sup>), VT minimum size No. 12 AWG (4.0mm<sup>2</sup>).
  - 3. Insulation: Flame-retardant, cross-linked polyethylene (XLPE) or complying with NEC Type XHHW-2.
  - 4. Jacket: Flame-retardant, heat, moisture, and sunlight-resistant; polyvinyl chloride (PVC).
  - 5. Conductors shall be cabled together with nonhygroscopic fillers.
  - 6. Cover cable assembly with helically applied binding tape with minimum 10% overlap.
  - 7. Color coding: Insulated conductors shall have colored insulation meeting ICEA Method 1, Table E-1 color code (K1 color code).
  - 8. Each cable shall be identified by means of surface ink printing indicating manufacturer, number of conductors, size, voltage rating, and UL listing as rated for cable tray.
  - 9. Cables shall pass IEEE 383 70,000 Btu/hr, and ICEA T-29-520, 210,000 Btu/hr vertical tray flame tests.
  - 10. Temperature rating: 90° C for normal operation in wet or dry locations.

- H. Instrumentation cable installed indoor or outdoor routed in cable tray, conduit, and ducts:
  - 1. Voltage rating: 300-volt.
  - 2. Conductors: Annealed, bare copper, Class B, stranded, minimum size No. 16 AWG (1.0 mm<sup>2</sup>).
  - 3. Insulation: Flame-retardant polyvinyl chloride (PVC).
  - 4. Jacket: Flame-retardant, heat, moisture, and sunlight resistant; polyvinyl chloride (PVC).
  - 5. Pairs/triads: Each twisted with lay not exceeding 2" (50 mm).
  - 6. Color code: Insulated conductors shall have colored insulation meeting ICEA Method 1, Table E-2 color code (K1 color code): Pairs black/red; Triads black/red/blue.
  - 7. Assembly:
    - a. Each pair or triad shall be cabled together with aluminum/polyester tape shield helically wrapped with minimum lap of 15% of tape width and isolation tape. Entire cable assembly shall have overall aluminum/polyester tape shield helically wrapped.
    - b. Flexible strand tin-coated No.18 AWG (0.75 mm<sup>2</sup>) copper drain wire shall be helically wound between twisted conductors and tape shield.
  - 8. Each instrumentation cable shall be identified by means of surface ink printing indicating manufacturer, conductor size, and quantity, UL listing.
  - 9. Cables shall pass UL 1581, 70,000 Btu/hr flame test.
- I. Uninsulated and Insulated grounding conductors:
  - 1. Voltage rating: 600V, green XHHW-2, when insulated.
  - 2. Conductors: Class B, stranded, bare copper.

#### 2.04 SPLICES AND TERMINATIONS

- A. Splices, except as in lighting and general purpose power circuits specified below, not allowed unless specifically indicated on Drawings or required for connection to equipment.
- B. Temperature rating of splices and terminations: No less than 75°C.
- C. Splices allowed in lighting and general-purpose power circuits.
  - 1. Provide wire and cable connectors of high-conductivity, corrosion-resistant material with contact area equal to at least current carrying capacity of wire or cable.
  - 2. General lighting and general-purpose building power circuits:
    - a. Twist-type, insulated spring connectors for splices on solid or stranded conductors smaller than No. 6 AWG.
    - b. Use indent, hex screw, or bolt clamp-type connectors, with or without tongue for splices on solid or stranded conductors No. 6 AWG and larger.
    - c. Apply insulating 600-volt tape.
- D. Insulating tapes and compounds for terminations and splices: UL-listed for intended use, location, and voltage by manufacturer.
- E. Termination of conductors to equipment with bolted connections:
  - 1. Use compression type lugs:
  - 2. Compression lugs for cables 250 kcmil and larger shall have at least 2 clamping elements of compression indents, and provision for at least 2 bolts for joining to apparatus terminals.
  - 3. Crimping hand tools used for securing conductors in compression type connectors or terminal lugs shall be made for purpose and conductor sizes involved.
  - 4. Crimping tools shall be ratchet-type preventing tool from opening until crimp action is completed.
  - 5. Tools shall be product approved by connector manufacturer.
- F. Terminals:
  - 1. Conductors No. 10 AWG and smaller: Marathon 1500 Series.
  - 2. Conductors larger than No. 4/0 AWG: Terminate to tinned copper bus bar drilled and tapped with standard NEMA sized and spaced holes.
- G. Coordinate sizes and types of conductor terminals for 600-volt power cable terminations in equipment with furnished conductor and terminal connector data.

- H. Provide 600-volt rated terminal blocks for instrumentation and control conductors for connection to circuits external to specified equipment, and for internal circuits crossing shipping splits.
  - 1. Use crimp-on terminals matching termination point terminations in manufacturer-furnished panels. Splices not allowed.
  - 2. Terminal blocks for thermocouple extension wire: Buchanan "Medium Duty" with thermocouple contacts or Marathon 200 Series with Omega Engineering, Inc. Type TL terminal lugs.
  - 3. Furnish with white marking strips.
  - 4. Where permitted by safety codes and standards, provide without covers. Neither step-type terminal blocks nor angle mounting of terminal blocks allowed.
  - 5. Fuses may be mounted on terminal blocks.
  - 6. Maximum 2 conductors in accordance with termination point.
- I. Terminal blocks for external connections shall leave from centrally mounted location, not from individual devices in enclosure.
  - 1. Group-in instrument and control compartment for easy accessibility.
  - 2. Provide sufficient space on each side of each terminal block to allow orderly arrangement of leads to be terminated on block.
  - 3. Locate auxiliary equipment in compartments, enclosures, or junction boxes so service personnel will have direct access without interference from structural members and instruments without removal of barriers, cover plates, or wiring.
  - 4. Do not mount terminal blocks in compartments containing cables or buses operating at voltages above 600 volts.
  - 5. Size for wire sizes of incoming conductors as necessary.
- J. Install shorting-type terminal blocks nearest current transformer in accessible location for each set of CTs supplied with equipment furnished, no other shorting-type terminal blocks allowed, unless specified otherwise.
- K. Each control switch and lockout relay shall have minimum of 4 spare normally open and 4 spare normally closed contacts wired out to terminal blocks.
- L. Circuit identification number listed on either circuit schedule or panel schedule shall be used to identify circuit, positioned as near as possible to end of each conductor on multiple single wire circuits and on cable jacket for multiconductor cables.
- M. Cable designations shall be visible after installation without requiring physical movement of cable.

## 2.05 ELECTRICAL ENCLOSURES

- A. Size junction boxes, pull boxes, and enclosures in accordance with requirements of NEC.
- B. Junction boxes and pull boxes 4" (100 mm) trade size or smaller in any dimension shall be galvanized malleable iron, or cast ferrous metal NEMA rated for installed location. Do not use concentric knockouts.
- C. Junction boxes, pull boxes, and electrical enclosures larger than 4" (100 mm) trade size in any dimension shall be as follows, unless required otherwise.
  - 1. NEMA rating for electrical enclosures installed in nonhazardous locations:
    - a. Indoor:
      - 1) Dry environmentally controlled area: NEMA 12.
      - 2) Noncorrosive wet or hose-down area: NEMA 4.
      - 3) Corrosive wet or hose-down area: NEMA 4X
    - b. Outdoor:
      - 1) Corrosive area: NEMA 4X.
      - 2) Noncorrosive area hose-down or spray area: NEMA 4.
      - 3) Noncorrosive area nonhose-down area NEMA 3R.
  - 2. Construct noncast-metal electrical enclosures from reinforced steel plate capable of supporting devices mounted on or within enclosure without deflection. Steel plate thickness shall conform to UL requirements.

3. Enclosures shall be of adequate strength to support mounted components during shipment and installation.
  4. Conduit entrances: Field drilled.
  5. Electrical enclosures located in outdoor, wet, or hose down areas shall be provided with space heaters. Provide space heaters completely wired within enclosure. Provide following:
    - a. Space heater.
    - b. Adjustable thermostat with set point temperature indicator.
    - c. One miniature circuit breaker protective device.
    - d. Space heaters, thermostat, and protection shall not interfere with cable into or out of enclosure, or with maintenance or replacement of devices within enclosure.
    - e. Use of space heaters shall not change or discolor any painted surface.
    - f. Space heater capacity shall maintain enclosure internal temperature above dew point under specified service conditions.
    - g. Space heaters: Rate for 240 volts ac minimum, and size for operation on applied voltage of 120 volts ac.
- D. Outdoor electrical enclosures with ventilating openings:
1. Louver on outdoor electrical equipment and protect in accordance with NEMA type.
  2. Equip openings on outdoor electrical equipment with fine mesh filters and stainless steel bug screens.

## 2.06 OUTLET BOXES

- A. Outlet boxes for concealed wiring systems: Sheet metal, galvanized or cadmium plated.
- B. Minimum 4" (100 mm) square, 1-1/2" (38 mm) deep, sized to accommodate devices and number of conductors in accordance with NEC. Equip with plaster ring or cover as necessary for flush finish.
- C. Exposed conduit systems shall have surface-mounted boxes unless specified otherwise. Boxes for exposed wiring in nonhazardous, noncorrosive, and nonweatherproof locations shall be malleable iron, cadmium finish or cast aluminum alloy, minimum 4" (100 mm) square, 1-1/2" (38 mm) deep.
- D. Enclosures shall be as required for areas in which they are installed and as specified.
1. Boxes: Install flush in masonry construction and design for intended use.
  2. Recessed boxes:
    - a. Where fixture is mounted, boxes shall be minimum 4" (100 mm) and octagonal in shape or 4" (100 mm) square by 1-1/2" (38 mm) deep with round plaster ring.
    - b. Where used as junction box, boxes shall be minimum 4" (100 mm) square by 2-1/8" (53 mm) deep.
  3. Outlet boxes for wall concealed telephone and signaling systems: 4" (100 mm) square by 1-1/2" (38 mm) deep, minimum. Furnish with plaster ring and cover plate.
  4. Floor boxes for floor outlets:
    - a. Cast-metal with threaded conduit entrances, brass flange ring and brass duplex flap cover plate.
    - b. Watertight with leveling and adjustment screws for adjusting cover plate to finished floor.
    - c. Minimum 4" (100 mm) diameter and 3-1/2" (88 mm) deep with approved gasket or seal between adjusting ring and box.
  5. Floor outlets for combination signaling, data, and power outlets: Construct of steel base, PVC housing, and steel bracket to allow feed through wiring and activation load-bearing support. Box construction shall meet UL 514A requirements.
    - a. Entire housing shall be removable for unrestricted access.
    - b. Once assembled, PVC housing shall be capable of carrying 6,000 lb (2722 kg) load.
    - c. Coordinate outlet requirements with communication system requirements.
  6. Floor boxes in 2-hour rated floors shall be secured in cored hole and shall be UL classified and listed for 2-hour rated floors.

## 2.07 PULL AND JUNCTION BOXES

- A. Furnish junction boxes and pull boxes were shown on Drawings, and where necessary to facilitate pulling wires and cables without damage.
- B. Above ground boxes shall be formed from sheet steel, with corners folded in and securely welded with inward flange on each of 4 edges.
- C. Drill box for mounting and attachment of cover; galvanize after fabrication.
- D. Cover: Construct of one-piece galvanized steel and provide with stainless steel round head machine screws.
- E. Box and cover shall be made of code gage steel, or heavier if shown on Drawings.
- F. Size: Minimum 4-1/2" (113 mm) deep and in accordance with NEC. Use next larger standard size when necessary in accordance with manufacturer standard sizes.
- G. Furnish pull and junction boxes without knockouts for field drilling.
- H. Enclosures shall be as required for areas in which installed and in accordance with requirements specified.
- I. Underground boxes: Specifically design and construct for intended installed location, and be either pre-formed concrete or PVC. Covers shall be capable of withstanding, without failure, type of traffic in general area.
- J. If pull and junction boxes are exposed in and around architecturally finished surfaces, paint box to match finish of nearby surfaces, unless indicated otherwise.
- K. Bolt-on junction box covers 3'-0" (900 mm) square or larger, or heavier than 25 lb. (11 kg) shall have permanent rigid handles. Covers larger than 3'-0" x 4'-0" (900 mm x 1200 mm) shall be split.

## 2.08 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 insulated 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.

#### 2.09 PIN AND SOCKET CONNECTORS

- A. Unless shown on Drawings, not allowed.

#### 2.10 FUSES AND FUSE BLOCKS

- A. Modular-type, Class H screw terminal fuse blocks with Bakelite frame and reinforced retaining clips. Blocks shall be similar in construction and by same manufacturer.
- B. Slow blow fuses: Bussmann Type MDL or Gould Shawmut Type GDL with ampere ratings of 1/4, 1/2, 1, or 2.
- C. Fast acting fuses: Bussmann Type NON or Gould Shawmut Type OT with ampere ratings of 1, 3, 6, 10, 15, 20, or 30.
- D. Extremely fast acting fuses: Bussmann Type KAB with ampere ratings of 1, 3, 6, 10, 15, 20, or 30.

#### 2.11 ELECTRICAL METERS

- A. Meters for measuring electrical quantities shall be utility grade, multifunction, switchboard-type with accuracy of  $\pm 0.2\%$  or better for volts and amperes, and 0.4% for power functions.
- B. Readouts shall have true RMS capability with at least 1/2" (13 mm) high intensity LED displays and be capable of surge withstand exceeding IEEE C37.90.1.
- C. Instruments checked in field and found to be inaccurate in excess of percent error shall be returned for replacement without cost to Owner.
- D. Design meters for operation through 5-ampere current transformer secondary and 120-volt voltage transformer secondary.
- E. Provide communications capability; coordinate with Owner.

#### 2.12 CONTROL RELAYS

- A. General service, industrial grade auxiliary relays rated 600-volt.
- B. Contacts: Reversible from N.O. to N.C. in field.
- C. Timing relays for critical service: Agastat Series 7000.

#### 2.13 CONTROL SWITCHES

- A. Multistage, rotary-type rated 120 volts ac or 125 volts dc, 3 amperes, as required.
- B. Handles: Black, fixed, modern, pistol grip type. Provide engraved black plastic escutcheon plates with targets.
- C. Provide with colored LED lamps and nameplates as required.

#### 2.14 PUSHBUTTONS

- A. Standard pushbuttons: Heavy, industrial-type rated 120 volts ac or 125 volts dc, 3 amperes, as required.

- B. Provide with colored LED lamps and nameplates as required.

#### 2.15 INDICATING LIGHTS

- A. Status indicating lights: High-intensity, cluster, LED-type for panel mounting.
- B. Coordinate indicating light colors with indicated conditions as follows. Indicating lights shall be energized when condition exists and shall be de-energized when condition does not exist:
  1. Red: Equipment energized: such as motor running, valve open, or breaker closed.
  2. Green: Equipment de-energized: such as motor stopped, valve closed, or breaker open.
  3. Amber: Equipment abnormality: such as motor trip, breaker trip, or relay trip.
  4. White: Monitoring of control power or trip coil: such as lockout relay trip coil monitor or breaker trip coil monitor. Light is on during normal circuit operation and off during loss of power or loss of coil.
  5. Blue: Loss of control power.

#### 2.16 ALARM AND TRIP CONTACTS

- A. Alarm contacts for remote annunciation: Suitable for operation at 120 volts ac and 125 volts dc. Contacts shall be rated at least 0.5-ampere make and break, minimum.
- B. Alarm contacts: Normally closed contacts that open to alarm condition.
- C. Trip contacts for remote trip: Suitable for operation at 125 volts dc and rated 5 amperes make or break, minimum.

#### 2.17 AUXILIARY POWER TRANSFORMERS

- A. Provide separately mounted transformers as shown on Drawings.
- B. Windings: Copper.
- C. Transformers shall be self-air-cooled, dry-type, capable of wall- or floor-mounting, and enclosed for wiring connection by conduit. In areas where dust and dirt may be normally present, use encapsulated-type transformers.
- D. NEMA enclosure type protection shall be as specified herein.
- E. Provide at least 2 full kVA capacity voltage taps above and 2 full kVA capacity taps below nominal rating. Each tap shall be 2.5% step.
- F. Transformer shall be capable of at least 150°C rise above rated site maximum ambient without degrading transformer life.
- G. Transformers shall be capable of continuous operation at rated kVA with normal life expectancy as defined in ANSI C57.
- H. Sound level shall not exceed NEMA maximum average sound level.
- I. Enclosure: Sheet steel with corrosion-resistant finish and manufacturer's standard color.

#### 2.18 PLATES AND COVERS

- A. Provide finish plates and covers of appropriate type and size for wiring and control devices, signal, and communication outlets.

- B. Mark each plate and cover to show circuit and panel designation. Unless indicated to be engraved plate, use self-sticking, clear membrane, UV-resistant labels with typed black letters. Handwritten labels not allowed.
- C. Coordinate color with adjacent surfaces.
- D. Raised cover galvanized steel plates shall be acceptable for use on surface-mounted outlet boxes in unfinished areas where weatherproof plates are not required.
- E. For weatherproof installations, cover plates shall be gasketed and rated for NEMA Type 4 installation.
- F. Device plate mounting hardware shall be countersunk and finished to match plate.

#### 2.19 WIRING DEVICES

- A. Where more than one flush device is indicated in same location, mount devices in gangs under common plate.
- B. Switches for control of ac lighting panel load circuits, single-pole, 3-way, and 4-way, shall be premium, heavy-duty specification-grade, and meet FS W-S-896E. Switches shall be rated for use at 120 or 277 volts and 20 amperes minimum.
- C. Device color, if not shown on Drawings, shall be coordinated to match adjacent finishes.
- D. Wall switches requiring pilot light indication shall have red LED pilot light when toggled "On."
- E. Pulse control of lighting contactors shall be 20 amperes, 120/277 volts, momentary, double-throw, and center "Off."
- F. Standard convenience outlets: Premium, heavy-duty, specification-grade, duplex, 3-wire, grounding, 20-ampere, 125-volt for 120-volt circuits, and rated 250-volts for 240 or 208-volt circuits.
- G. Ground fault circuit interrupter (GFI) receptacles: Duplex, 20-ampere, and 125 volts, feed-through type.
- H. Isolated ground (IG) outlets: Duplex, 3-wire, with isolated grounding terminal, 20-ampere, and 125 volts. Outlets shall be orange in color, unless specified otherwise.

#### 2.20 WELDING

- A. If special welding requirements are required for any piece of equipment during installation, requirements shall be stated on manufacturer's shop drawing of affected part.
- B. Furnish detailed welding requirements with equipment shipment.

#### 2.21 PANELBOARDS

- A. Dead-front, circuit breaker type, rated for voltage, phase, with main lugs or main breaker as indicated on panel schedules.
- B. Enclosure shall be NEMA-rated for installation location and capable of flush or surface mounting.
- C. Enclosure cover and access door shall be hinged with breaker operating handles accessible through latchable and lockable door.
- D. Typed panel directory located inside door shall have panel and circuits function clearly identified. Handwritten panel schedules not allowed.

- E. Provide main and neutral buses insulated from cabinet with separate ground bus. Bus material shall be copper. Ground bus shall be similar to neutral bus in size and number of conductor terminating positions.
  - 1. Bond ground bus to panelboard enclosure by copper ground strap or copper conductor of appropriate size. Bond neutral bus to ground bus in accordance with requirements of NEC.
  - 2. Grounding bus connection to enclosure by removable screws not allowed.
  - 3. Bus shall be capable of terminating clamp type lugs for neutral cable in each supply conduit, and connections for neutral cable in each load circuit.
  - 4. Neutral bus shall be fully rated, unless specified otherwise.
  - 5. Isolated ground panelboards: As specified above, except isolated ground bus shall be bonded, by insulated ground conductor, back to source of separately derived system. Do not bond isolated ground bus to panelboard enclosure unless this is first point of grounding for separately derived system.

## 2.22 CIRCUIT BREAKERS

- A. Molded-case, thermal-magnetic, bolt-in, individually front replaceable, and shall visibly indicate "On," "Off," and "Tripped" position.
- B. Branch circuit breakers used for lighting circuits shall be switch duty rated, "SWD."
- C. Breakers having multiple poles shall be manufactured as common trip type.
- D. Interrupting rating shall be not less than interrupting rating of panelboards, and not series rated to achieve required short circuit interrupting rating.
- E. Provide handle clips for 10%, or minimum of 2 whichever is greater, for breakers to prevent casual operation. If no breakers are indicated for installation, then provide on breakers labeled as spare.
- F. Breakers, and provisions for future breakers, shall be provided in quantities, poles, and ampere ratings shown on Drawings.
- G. Molded-case circuit breakers used in ac and dc panelboards and ac load centers shall be bolt-on type, G-frame size.

## 2.23 FINISHES

- A. Manufacturer's standard coating systems shall be factory-applied. Coating systems shall provide resistance to corrosion caused by weather and industrial environments.
  - 1. Surfaces inaccessible after factory or field assembly shall be protected for life of equipment.
  - 2. Painted surfaces shall be filled to provide smooth, uniform base for painting.
  - 3. Surfaces requiring field welds shall not be coated within 3" (75 mm) of field weld.
- B. Coating material and application techniques shall conform to regulations of air quality management agency having jurisdiction.
- C. Exterior surfaces of control and electrical equipment, including panels, cabinets, switchgear, transformers, and motors shall be manufacturer's standard colors unless specified otherwise.
- D. Apply high-temperature coating systems to uninsulated equipment operating at temperatures at or above 200°F (93°C).

## 2.24 RUST-INHIBITOR COMPOUNDS

- A. Uncoated machined and ferrous surfaces subject to corrosion shall be protected with rust-inhibitor compounds.

- B. Rust-inhibitor compounds used to protect surfaces of equipment and piping exposed to feedwater or steam shall be completely water-soluble.
- C. Surfaces to be field welded shall be coated with consumable rust-inhibitor compounds that will not affect quality of weld.
- D. External gasket surfaces, flange faces, couplings, rotating equipment shafts and bearings shall be thoroughly cleaned and coated with rust-inhibitor compounds.

## 2.25 GALVANIZING

- A. Galvanized structural steel members and steel assemblies shall be pickled after fabrication. Remove scale, rust, grease, and other impurities, then hot-dip galvanized in accordance with ASTM.
- B. If galvanized member is to be bolted, structural bolts shall be galvanized in accordance with ASTM.

## 2.26 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 120/240 volts:
    - a. Phase A: Black.
    - b. Phase B: Red.
    - c. Neutral: White.
  - 2. Source voltage of 240/120-volt delta: High-leg systems shall not be used without Engineer approval.
  - 3. Service entrance and equipment ground conductors shall be bare copper or green insulated conductor. Equipment bonding conductors shall be bare copper.
  - 4. Isolated ground conductors shall be insulated; green in color with integral yellow stripe. No substitutions.
- E. Signage:
  - 1. Provide proper signage, plaque, directory and warning labels for electrical equipment and raceway in accordance with NEC requirements.
  - 2. One-line diagram: Display unfolded and behind clear plastic so diagram is clearly visible.
  - 3. Mount diagram to permanent structure or wall and located within sight of each feeder, branch-circuit disconnect, each service disconnect, and switchgear. Place permanent legible warning

sign in conspicuous location with wording "Danger – High Voltage" required for following areas over 600 volts:

- a. A "Danger – High Voltage" warning sign lettering shall be a minimum of 1" (25 mm) high and remaining lettering a minimum of 1/4" (6 mm) high.
- b. Locations:
  - 1) At entrances to electrical equipment vaults and electrical equipment rooms, areas, or enclosures, and manholes and handholes, unless words are cast into access cover.
  - 2) At points of access to conductors on high-voltage conduit systems and cable systems.
  - 3) On cable trays and cable trench containing high-voltage conductors with maximum spacing of warning notices not to exceed 10' (3 m).
  - 4) On metal-clad and metal-enclosed switchgear panels or doors providing access to live parts over 600 volts [a], [Article 225.70].
  - 5) On isolated phase and nonsegregated phase bus duct, at access openings unless Owner has a differing standard.

## 2.27 EQUIPMENT NAMEPLATES

- A. Laminated white-over-black plastic such that face is white with black letters, with 1/8" (3 mm) engraved letters securely fastened with minimum of 2 self-tapping, stainless steel screws.
- B. Motor starters, either separately mounted or contained in motor control centers, shall have nameplates identifying related equipment. Where separate control and indicating lights are used, starters shall have engraved or etched legends ("start", "stop", etc.) as shown on Drawings.
- C. Provide control stations with nameplates identifying related equipment. Control and indicating lights shall have engraved or etched legends as shown on Drawings.
- D. Circuit breakers within main switchboards and distribution switchboards shall be provided with nameplates identifying related equipment being served.
- E. Fused and nonfused switches shall have 2 front cover-mounted nameplates.
  1. Nameplate containing permanent record indicating switch type, manufacturer's name, catalog number, and appropriate rating for equipment served.
  2. Provide additional nameplate to identify associated equipment.
- F. Panelboards shall have front cover-mounted nameplates identifying panelboard, matching information shown on Drawings and associated panel schedule. Nameplate shall have at least 4 lines of text consisting of:
  1. Line 1: Panel equipment identification number.
  2. Line 2: IEEE Voltage Designation.
  3. Line 3: Appropriate description from which power is derived, (i.e. fed from HP1 through XFMR-LP1).
  4. Line 4: Location of power source, (i.e. PP-1, NW wing).
- G. Lighting and auxiliary power transformers shall have front cover-mounted nameplates identifying transformer, matching information shown on Drawings. Nameplate shall have at least 2 lines of text that consist of:
  1. Line 1: Transformer equipment identification number.
  2. Line 2: Location of derived power source (i.e. fed from MDB, Elec Rm Basement).
- H. Nameplates shall meet requirements of NFPA 70E

## 2.28 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.

## 2.29 LOGIC SYSTEMS FACTORY TESTING

- A. Prior to shipment, test electrical equipment containing solid-state logic systems in accordance with manufacturer's standard tests for minimum of 120 hours under power.
  - 1. Components tested shall include electronic devices; power supplies, input-output devices, operator interface devices, and interconnecting cables provided with system.
  - 2. System shall be tested as complete assembly. Testing of individual components or modules not allowed as system tests.
- B. System test shall include:
  - 1. Means of confirming logic or mathematical design response of system by simulating changes in system input.
  - 2. Test shall repeatedly cycle system through operations system will be expected to perform in service with loads on various components equivalent to those which will be experienced in actual service.
  - 3. Adjustment of power source voltages to high and low limits. Verify correct operation of system at both high and low power source voltage limits.
- C. System shall be tested and verified capable of providing surge withstand capability in accordance with requirements of ANSI C37.90.1.
- D. Perform tests with solid-state logic system exposed to ambient temperature appropriate to service for which associated electrical equipment is designed.

## 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. Install equipment indicated on Drawings as furnished by others, unless noted as installed by others.
- E. Except as otherwise specified or indicated on Drawings, equipment shall be installed plumb, square, and level.
- F. Sheet metal junction boxes, equipment enclosures, sheet metal raceways, and similar items mounted on earth-bearing walls shall be separated from wall not less than 1/4" (6 mm) by corrosion-resistant spacers.

- G. 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.
- 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. Remove excessive slack so cables lie parallel to sides of trays.
- H. Multiple single-conductor power cables No. 1/0 AWG (50 mm<sup>2</sup>) or larger installed in cable tray that constitute single power circuit shall be grouped together in triplexed or quadriplexed arrangement. Maintain cable spacing to be 2.15 x O.D. of largest conductor in group or adjacent group.
- I. Multiconductor power cables No. 4/0 AWG (120 mm<sup>2</sup>) or larger installed in cable tray shall be installed in single layer with maintained spacing of not less than 1 cable diameter of largest cable.
- J. Fasten cables to cable tray with rated nylon ties to hold cables in place.
- K. Perform fishing and pulling with flexible round metal tape, CO<sub>2</sub> propelled polyethylene cord, nylon rope, or manila rope.
- L. 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.
- M. Insert reliable nonfreezing type of swivel or swivel connection between pulling rope and eye to prevent twisting under strain.
- N. Only use lubricants as recommended by cable manufacturer. Water-based lubricants not allowed.
- O. 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.
- P. Permanent radius of each bend after cable installation shall be in accordance with manufacturer's recommendations.
- Q. 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.
- R. 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.
- S. Final inspection shall be made after cables are in place. Where supports, bushings, and end bells deform cable jacket, provide additional supports.
- T. 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.
- U. Rough-in wiring terminated in junction boxes shall have at least 8" (200 mm) of free conductor coiled in box for connection to equipment and receptacles.
- V. Circuit information for circuits originating from panelboards is indicated on panel schedules. Other circuits are identified on circuit schedule.
  1. Do not combine receptacle loads with lighting loads.
  2. Circuits fed from panelboards shall not be combined with circuits from circuit schedule.
- W. Panelboard circuits are indicated as individual runs. Circuits may be combined into common conduits in accordance with rules of NEC. Perform work associated with combining of circuits at no additional cost to Owner.

### 3.05 WIRING DEVICES, BOXES, AND FITTINGS

- A. Install galvanized or cadmium plated, threaded, malleable iron boxes and fittings in:
  1. Embedded in concrete walls, ceiling, and floors.
  2. Outdoor exposed faces of masonry walls.
  3. Locations where weatherproof cover is required by code or this specification.
- B. Install galvanized or cadmium plated sheet steel boxes in:
  1. Indoor exposed faces of masonry walls.
  2. Interior partition walls.
  3. Joist supported ceilings.
- C. Rigid PVC device boxes shall be installed in exposed nonmetallic conduit systems.
- D. Telephone and communication conduit systems shall have separate junction boxes and pull fittings.

- E. Install fire system wiring in dedicated conduit system.
- F. Finish openings so standard sized cover plates can be used. Oversized plates not allowed.
- G. Mount wall switches 3'-6" (1050 mm) above finished floor or grade unless specified otherwise. After circuits are energized, test wall switches for proper operation.
- H. Outlets:
  - 1. Standard mounting height: 18" (450 mm) above finished floor, unless specified otherwise.
  - 2. Outlets outdoors, garages, basements, shops, storerooms, and other rooms where equipment may be hosed down: 4'-0" (1200 mm) above finished floor or grade.
  - 3. Surface-mount welding receptacles 4'-0" (1200 mm) above finished floor or grade.
  - 4. After circuits are energized, test each receptacle for correct polarity.
  - 5. Test GFCI receptacles for proper operation.
  - 6. Mount wall thermostats 5'-6" (1650 mm) above finished floor unless noted otherwise. Thermostats mounted shall be suitably insulated from wall temperatures.
- I. Communication outlets:
  - 1. 18" (450 mm) above finished floor unless required otherwise.
  - 2. Outlets outdoors, garages, basements, shops, storerooms, and rooms where equipment may be hosed down: 4'-0" (1200 mm) above floor.
- J. Clock outlets: Locate 7'-0" (2.13 m) above finished floor or grade.

### 3.06 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 through exterior building walls not in conduit shall enter within 3' (1 m) below finished grade and shall be provided with water stop. Installation of water stop shall include filling space between strands with solder and soldering 12" (300 mm) copper disc over cable.
  - 5. 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).
  - 6. Copper ground conductor in addition to conduit connection shall ground each piece of electrical equipment.
  - 7. 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.
  - 8. Bond grounding system to water piping by connection to first flange inside building from main that will form good ground connection. Make connection with copper bar or strap by drilling and tapping flange and providing bolted connection.
  - 9. Ground conductors on equipment shall be formed to contour of equipment and firmly supported.
  - 10. 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.
  - 11. Make connections to ground grid where shown on Drawings.
  - 12. Verify connections by performing continuity checks.

### 3.07 FIREPROOFING AND FIRE RATINGS

- A. Maintain fire-resistive integrity during construction.

- B. Penetrations through fire-resistive structures shall be sealed with fire-resistive material compatible with construction penetration.
- C. Where required by codes, local building officials, or fire marshal, furnish UL fire sealing systems and install in accordance with manufacturer's recommendations.

### 3.08 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.

### 3.09 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) P. K. Mitchell
- 2) P. E. Schulz, J. R. Sovers

## **PART 1 GENERAL**

### 1.01 SECTION INCLUDES

- A. Electrical and mechanical requirements for metal enclosed cable bus systems.

### 1.02 INFORMATIONAL SUBMITTALS

- A. Submit with Bid for each cable type supplied:
  - 1. Completed Data Sheets.
  - 2. Cable damage curves.
  - 3. A complete set of drawings to facilitate system design and installation.
- B. Quality assurance data:
  - 1. Certified manufacturer test reports.
  - 2. Submit documented installer experience if requested by Engineer.

### 1.03 ACTION SUBMITTALS

- A. Shop Drawings: Detailed drawings and manufacturer information for accessories.

### 1.04 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.

### 1.05 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 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. Welding:
      - 1) AWS D1.1 (American Welding Society Structural Welding Code: Steel)
      - 2) AWS D1.3/D1.2: (American Welding Society Structural Welding Code: Aluminum)
      - 3) AWS C1.1/ANSI American Welding Society Recommended Practices for Resistance Welding
    - b. Cable Ampacity Standards
      - 1) ICEA P-46-426; ICEA S-66-524; IEEE S-135
      - 2) NFPA 70, National Electric Code (NEC), 2011.
    - c. Heat Rise Standards: ANSI C37.20, C37.24.
    - d. Load Test Standards: NEMA VE-1/CSA Tray Standards.
    - e. Cable Bus Support Standard: NEMA VE-2.
    - f. NETA Acceptance Testing Specifications for Electrical Power Distribution Equipment and Systems.
    - g. Grounding: UL, NEC.

1.06 DELIVERY, STORAGE, AND HANDLING

- A. Coordinate transportation with requirements of pertinent authorities.
- B. Cover and protect cable and accessories from damage during shipment.
- C. Dispose of nonreturnable reels. Return recyclable reels to cable manufacturer.
- D. Ensure reel lengths accommodate continuous pull lengths required. Splicing not allowed unless specifically shown on Drawings.
- E. 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.
- F. Prepare detailed packing lists and shipping notification for items shipped.

**PART 2 PRODUCTS**

2.01 MANUFACTURERS

- A. Advanced Cable Bus, Inc.
- B. MDF Cable Bus Systems.
- C. MPHusky.

2.02 SYSTEM DESCRIPTION

- A. Provide a complete metal enclosed bus system; including all necessary fittings, tap boxes, enclosure connectors, entrance fittings, insulated conductors, electrical connectors, terminating kits, and other accessories as required to connect to switchgear and power transformer.
- B. Bus system shall be suitable for indoor or outdoor use with conductor spacing and ventilation maintained throughout system. Outdoor ambient condition: - -40 C to +40C.
- C. Elements of bus enclosure shall be so designed to eliminate any sharp edges or projections that may injure personnel or conductor insulations.
- D. Provide transformer termination boxes, NEMA 4X, for terminations of cable buses to outdoor 34.5kV – 12.47kV power transformers.
- E. Provide box connectors for connection of cable bus housing to indoor electrical switchgear.
- F. Provide fittings and watertight seal at cable bus wall penetrations.
- G. Provide cable bus transition pieces and supporting hardware for routing and attachment to support structures as shown on drawings.

2.03 ELECTRICAL REQUIREMENT

- A. Ratings:
  - 1. System Voltage: 12,500V line-to-line.
  - 2. Continuous Current Rating: 1,200 A.
  - 3. Wiring system: 3-phase, 4-wire, half neutral with system ground.
  - 4. Frequency: 60 Hz.
  - 5. Short circuit ratings: 25,000 RMS symmetrical amps.

6. System ground: Solidly grounded.
- B. Phase Conductors:
1. Voltage rating: 15,000-volt.
  2. Conductor: Annealed, bare copper, Class B, stranded.
  3. Insulation: Cross-linked polyethylene (XLPE), complying with NEC Type XHHW-2. Insulation shall be sunlight-resistant and cable tray (CT) rated.
  4. Jacket: PVC.
  5. Color coding: Black.
  6. Wire shall be identified by surface marking indicating manufacturer, conductor size, conductor material, voltage rating, UL symbol, and listed type.
  7. Cables shall pass IEEE 383 70,000 Btu/hr, ICEA T-29-520, 210,000 Btu/hr vertical tray flame tests, and UL 1581, VW-1 vertical flame test.
  8. Temperature rating: 90°C for normal operation in wet or dry locations.
- C. Neutral Conductors:
1. Voltage rating: 600-volt.
  2. Conductor: Annealed, bare copper, Class B, stranded.
  3. Insulation: Cross-linked polyethylene (XLPE), complying with NEC Type XHHW-2. Insulation shall be sunlight-resistant and cable tray (CT) rated.
  4. Jacket: PVC.
  5. Color coding: Black.
  6. Wire shall be identified by surface marking indicating manufacturer, conductor size, conductor material, voltage rating, UL symbol, and listed type.
  7. Cables shall pass IEEE 383 70,000 Btu/hr, ICEA T-29-520, 210,000 Btu/hr vertical tray flame tests, and UL 1581, VW-1 vertical flame test.
  8. Temperature rating: 90°C for normal operation in wet or dry locations.
- D. Current carrying conductors shall be fully insulated and rated for specified voltage. Cable insulation shall be rated for 90°C operating temperature for specified ampacity and voltage.
- E. Cable shall be suitable for indoor and outdoor use.
- F. Conductors shall be phased and supported to maintain low impedance and ensure mechanical strength necessary to prevent cable movement or damage under short circuit currents up to 25,000 RMS symmetrical amps.
- G. Conductors shall be of continuous length and be pulled in after bus enclosure is in place. Electrical connectors shall be used only at termination of conductor runs, or, if necessary, at tap points.
- H. Bus enclosure shall have a continuous current rating of not less than 1,000 amperes (50°C rise) and resistance across enclosure section splice shall not exceed 50 microhms.
- I. Spacing and arrangement between paralleled conductors shall be properly phased and balanced.
- J. Bus enclosure shall be grounded at sufficient intervals for purpose of reventing a potential above ground on bus enclosure in event of fault.

## 2.04 COMPONENTS

- A. Load carrying members of bus system shall be fabricated from extrusions of aluminum alloy 6063-T6. Maximum allowable stress used in design: 10,000 psi.
- B. Bus enclosure fittings shall have an inside bending radius of 24" (600 mm), unless minimum bending radius of conductor requires larger fitting radius.
- C. Top and bottom enclosure sections shall be corrugated to provide mechanical strength and slotted for ventilation. Top cover shall be fastened to enclosure with self-tapping screws spaced no greater than

2' (600 mm) on centers and shall be removed for inspection. Bottom section shall be factory-installed by welding.

- D. Splice joints between sections of bus enclosure: High pressure splined bolted type of design, which avoids any structural weakness at connection and does not exceed electrical resistance of 50 microhms.
- E. Design conductor support blocks in segments to maintain minimum of one conductor diameter in both horizontal and vertical planes as required for free air conductor rating. Horizontal runs will have blocks spaced every 36" (1.0 m) and vertical runs every 18" (450 mm).
- F. Cable support block shall be manufactured from either High Density Polyethylene (HDPE) UV-resistant material or fiberglass laminate manufactured in accordance with NEMA grade GPO-3.
- G. Design outdoor bus to withstand environmental loads such as wind, ice, and snow. Design cable bus enclosure for maximum support span of 12' (3.6 m).
- H. Cable bus enclosure hold down attachments shall be provided. Attachments shall be manufacturer's standard hardware. Refer to cable bus support steel drawings for support structure details.
- I. Cable bus hardware, including splice plate, cable support block, and cover hardware shall be non-magnetic, stainless steel for maximum corrosion resistance and to minimize electrical losses.

### **PART 3 EXECUTION**

#### **3.01 INSTALLATION**

- A. Install in accordance with manufacturer's recommendations and industry standard practices.
- B. Support cables in accordance with requirements of NEC.

#### **3.02 FIELD QUALITY CONTROL**

- A. Perform field tests in accordance with manufacturer recommendations.
- 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) P. K. Mitchell
- 2) P. E. Schulz, J. R. Sovers

## **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, sheeting, shoring and bracing, and associated work.
- E. Importing fill materials.
- F. Disposal of excess or unsatisfactory materials.
- G. Underground obstructions

### 1.02 MEASUREMENT AND PAYMENT

- A. If quantities of following items are changed from those required by Contract Documents, lump sum Contract Price will be adjusted on basis of unit adjustment prices set forth in Agreement.
  - 1. Structural Earth Excavation, cubic yards; (CY): Unit adjustment prices for structural earth excavation includes removal of material; obtaining, placing and compacting backfill as specified; dewatering; sheeting, shoring and bracing; disposal of excavated material as specified; grading; and all other incidental work. Cubic yards of structural earth excavation defined as volume of earth in its original space within neat lines of foundations and footing projections.
  - 2. Granular Fill, cubic yards (CY): Unit adjustment price for granular fill includes furnishing, placing, and compacting as specified. Cubic yards of granular fill defined as volume of material, in final place, as determined by calculation based on customary methods of computation of earthwork quantities within limits specified. Fill materials required by overexcavations or excavations made for Contractor's convenience will not be measured for payment.
  - 3. Structural Fill, cubic yards (CY): Unit adjustment price for structural fill includes furnishing, placing, and compacting as specified. Cubic yards of structural fill defined as volume of material, in final place, as determined by calculation based on customary methods of computation of earthwork quantities within limits specified. Fill materials required by overexcavations or excavations made for Contractor's convenience will not be measured for payment.
  - 4. Flowable Fill, cubic yards (CY): Unit adjustment price for flowable fill includes furnishing and placing as specified. Cubic yards of flowable fill defined as volume of material, in final place, as determined by calculation based on customary methods of computation of earthwork quantities within limits specified. Fill materials required by overexcavations or excavations made for Contractor's convenience will not be measured for payment.

### 1.03 INFORMATIONAL SUBMITTALS

- A. 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.

### 1.04 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 D698.
  - 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.
  - 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. Providing reports to Engineer and Owner giving information on materials and testing performed.
  - 6. Making recommendations to Engineer where deviation from Specifications occur or 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 Engineer of unexpected subsurface conditions and discontinue Work in area until Owner provides notification to resume Work.

### **PART 2 PRODUCTS**

#### 2.01 MATERIAL - GENERAL

- A. Use suitable material removed from excavations or obtained from off-site borrow areas unless shown or specified otherwise.
- B. Exclude debris, stones larger than 1" (25 mm), roots, organic or frozen material, expansive material and other deleterious materials.

#### 2.02 GRANULAR FILL

- A. Type: Material conforming to one of following ASTM D2487 (Unified Soil Classification System) classifications: SW or SP.
- B. Material shall be free of earth, clay, or other foreign substances.
- C. Use where shown on Drawings.

#### 2.03 STRUCTURAL FILL

- A. Type: Material conforming to one of following ASTM D2487 (Unified Soil Classification System) classifications: GW, GP, SW, or SP.
- B. Structural fill shall consist of non-frost susceptible material when used as backfill adjacent to or below foundations. Material that becomes unstable when wet shall not be used.
- C. Submit material source and classification to Engineer for review. Use of expansive material is prohibited.
- D. Borrow materials proposed shall be tested by Contractor's testing agency and approved by Engineer prior to use on site.
- E. Use for all backfill except where specified otherwise.

## 2.04 FLOWABLE FILL

- A. Controlled low strength grout mix using portland cement, fly ash, fine aggregates, water, and specified admixture:
  - 1. Water content of mix should be adjusted to obtain maximum 3" (75 mm) initial slump prior to incorporating admixture.
  - 2. Slump after incorporating admixture: greater than or equal to 8" (200 mm).
  - 3. Air content: 15 – 35%.
  - 4. 3-day age compressive strength: Not less than 70 psi.
  - 5. 28-day age compressive strength: 100 to 200 psi.
- B. Admixture: Rheocell Rheofill by Master Builders Technologies, or equal.
- C. Use:
  - 1. For oil/water separator drain pipe trench backfill or other locations noted on Drawings.
  - 2. At Contractor's option, for pipe bedding material for all pipes, all locations.
- D. Contractor shall prevent pipe from floating.

## 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.
  - 2. Fill with concrete or structural fill, at no expense to Owner, unauthorized excavations carried below bottoms of foundation levels shown.
  - 3. 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 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 and required for drainage. 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 8" (200 mm) in loose depth when large, self-propelled compaction equipment is used. Limit layer to 4" (100 mm) when small, hand-guided equipment (plate or "jumping jack" compactor) is used.
3. Place and compact materials at proper moisture content for obtaining densities as specified. Generally maintain within -2% to +2% of optimum, except for soils with LL>45 and/or PL>20 maintain within 0% to +4%.
4. Material too dry or too wet to compact properly shall be moistened or aerated to extent necessary to produce desired results.
5. Where removal and replacement of the native soils with non-frost susceptible material is used below foundations, the fill layer should be capped with a low permeability clay layer adjacent to the foundation to help reduce the infiltration of water into the structural fill layer.

D. Compaction:

1. Compact backfill and fill to at least 98% of maximum density as determined by ASTM D698. If the granular material is a coarse sand, crushed limestone, or gravel, is of a uniform size, or has a low fines content, compaction comparison to relative density (ASTM D 4253 and D 4254) may be more appropriate. In this case, granular materials should be compacted to at least 65% of the material's maximum relative density
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' (1.8 m) of structure, walls, pipes, or other construction which might be damaged by compaction equipment.

3.03 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.

3.04 SHEETING, SHORING AND BRACING

- A. Provide sheeting, shoring and bracing where required to hold walls of excavation and to protect workers and property. Contractor shall be responsible for proper sizing and placement of Work.
- B. Remove sheeting, shoring and bracing in manner to avoid damage or disturbance to Work. Leave sheeting and shoring in place, where removal will endanger Work, adjacent construction or personnel.

3.05 SITE GRADING

- A. Grade areas disturbed by construction operations.
- B. Finish grade to smooth, uniformly sloping surfaces to elevations shown and required for drainage.
- C. Fill depressions and provide for positive drainage away from buildings and structures.

3.06 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.

END OF SECTION

- 1) J. L. Varone
- 2) S. C. Smith, N. J. Pierson

## **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. Furnish necessary hose, equipment, attachments, and accessories for adequate watering of turf areas, as needed.

### 1.03 MEASUREMENT AND PAYMENT

- A. If quantities of turfing are changed from those required by Contract Documents, lump sum Contract Price will be adjusted on basis of unit adjustment prices set forth in Agreement.
  - 1. Seeding, square yard; (SY): Unit adjustment price includes soil preparation, seeding, mulching, cleanup, and establishment; and other incidental work for establishing turf by seeding.
  - 2. Erosion Control, square yard (SY): Unit adjustment price includes furnishing and installing erosion matting as specified.

### 1.04 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.

### 1.05 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:

Percentage	Pure Seed	Germination (%)	Origin
39.80	Creeping Red Fescue	92	CAN
29.18	Accent Perennial Ryegrass	92	OR
19.81	Durar Hard Fescue	85	OR
9.91	Bluechip Kentucky Bluegrass	85	WA
0.96	Inert Matter		
0.29	Crop		
0.05	Weed		
None	Noxious Weeds		

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.
- B. Slope finish grade to provide positive surface drainage away from buildings and other structures.
- C. Remove the top 6" (150 mm) of clay and replace with a minimum 6" (150 mm) of black dirt.
- 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 during periods from **April 1 to June 15** or from **August 1 to November 1**.
  - 2. 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.
  - 3. 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 seeded areas.
- 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' (1.8 m) centers.
    - d. Adjoining edges: Butted snugly, common row of staples on 6' (1.8 m) centers.
    - e. Strip centers: 6' (1.8 m) 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 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.

### 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 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) P. M. Johnson
- 2) G. S. Shuger

## **PART 1 GENERAL**

### 1.01 SECTION INCLUDES

- A. Substation equipment and hardware for voltages greater than 12 kV including switches, switcher, surge arresters, transformers, and line trap.

### 1.02 WORK BY OTHERS

- A. Receiving and storage of equipment.
- B. Final placement and assembly.
- C. Power, control and grounding connections.

### 1.03 INFORMATIONAL SUBMITTALS

- A. Submit with Bid:
  - 1. Completed Data Sheets.
  - 2. Manufacturer, rating, and type of each piece of equipment to be furnished.
  - 3. Maximum loads which can be supported by switch terminal pads.
  - 4. Complete data and listing of items requiring field assembly and installation.
- B. Product Data:
  - 1. Detailed list of materials identifying manufacturer and type.
  - 2. Complete instruction manuals and parts list for all equipment furnished.
  - 3. Manufacturer's catalog numbers on all standard components and accessories. Submit additional data when requested.
  - 4. Maximum loads which can be supported by switch terminal pads.
  - 5. List of miscellaneous materials proposed, including conduit, conductor, and accessories, identifying manufacturer and type.
  - 6. Special construction techniques required.
  - 7. Component and accessories list.
  - 8. Ratings and nameplate information.
  - 9. Installation information.
- C. Quality assurance data:
  - 1. Current transformer excitation and ratio correction factor curves.
  - 2. Equipment performance data and operating characteristics.
  - 3. Certified production test data and reports.
  - 4. Test reports for previous design, and documentation showing previous design ratings and configurations.
  - 5. Certified copy of manufacturer's field representative report, if representative provided.
- D. Manufacturer's instructions: Provide detailed manufacturer's installation instructions and drawings including, but not be limited to:
  - 1. Interior and exterior of equipment cleaning and debris removal prior to placing into service.
  - 2. Group-operated disconnect switches: Installation and alignment requirements
  - 3. Circuit Switchers: Installation along with terminal and ground connections requirements.
  - 4. Power fuses: Installation and alignment for proper operation and contact wipe.
  - 5. Voltage transformers: Installation instructions and terminal and ground connections.
  - 6. Coupling capacitor voltage transformers. Installation instructions and terminal and ground connections.

### 1.04 ACTION SUBMITTALS

- A. Product Data: Certified Data Sheets.

- B. Shop Drawings:
  - 1. Certified nameplate, outline, general arrangement, assembly, and installation details drawings for major items of equipment furnished.
  - 2. Complete "engineered layout" drawings for each type of group-operated switch, including mounting layout details of all operating mechanism components and accessories.
  - 3. Shop drawings on all nonstandard components.
  - 4. Certified elevation and outline drawings with dimensions.
  - 5. Certified plan view drawings with dimensions.
  - 6. Interface coordination details.
  - 7. Wiring and termination drawings.
  - 8. Complete schematic and connection diagrams for motor operators if specified on Data Sheets.

#### 1.05 CLOSEOUT SUBMITTALS

- A. Operation and maintenance manuals. Provide, at a minimum, in addition to requirements of Section 01 78 23:
  - 1. General description and technical data.
  - 2. Receiving, storage, installation, and testing instructions.
  - 3. Operating and maintenance procedures.
  - 4. Complete set of final drawings.
  - 5. Complete documentation of inspections and tests performed, including any logs, curves, and certificates. Documentation shall note any replacement of equipment or components that failed during testing.
  - 6. Spare parts lists.
  - 7. Installation field reports.
  - 8. Data sheets updated to reflect field installation conditions.

#### 1.06 QUALITY ASSURANCE

- A. Manufacturer qualifications:
  - 1. Manufacturer of equipment shall be manufacturer of major components within assembly.
  - 2. ISO 9001 certified.
  - 3. Manufacturer shall have produced similar electrical equipment for a minimum period of 5 years.
  - 4. When requested by Engineer, provide acceptable list of similar equipment installations complying with requirements of this specification.
- B. Regulatory requirements
  - 1. Design, fabricate, and test equipment in accordance with applicable standards of ANSI, NEMA, NFPA 70, IEEE, and shall be in accordance with applicable requirements of OSHA.
  - 2. Where applicable, equipment and materials supplied shall be of type listed in "List of Materials Acceptable for Use on Systems of REA Electrification Borrowers," Bulletin 43-5.
  - 3. Design equipment in accordance with relevant sections of most recent local Building Code.

#### 1.07 DELIVERY, STORAGE AND HANDLING

- A. Deliver f.o.b. job Site, unloaded.
- B. Ship equipment as completely assembled as practicable.
- C. Handle equipment to prevent damage, denting, or scoring during shipping and delivery.
- D. Protect from weather, dirt, water, construction debris, and physical damage in accordance with manufacturer's instructions.

#### 1.08 WARRANTY

- A. Provide manufacturer's standard 1-year warranty from date of delivery.

## **PART 2 PRODUCTS**

### **2.01 SYSTEM REQUIREMENTS**

- A. Design equipment using system characteristics and ratings shown on Data Sheets.

### **2.02 VOLTAGE TRANSFORMERS**

- A. Primary terminal: Standard 4-hole NEMA pad.
- B. Secondary terminals: In closed connection box with conduit entrances.
- C. Ground terminal: Clamp type connector suitable for No. 4/0 AWG.
- D. Color: ANSI Z55.1 No. 70 gray.
- E. Standard: ANSI C57.13.
- F. Manufacturer: Trench, Ltd. or Ritz Instrument Transformers, Inc.

### **2.03 SWITCH TERMINAL PAD DESIGN LOADINGS**

- A. Longitudinal switches (parallel to switch blades) shall be capable of resisting, without injury or failure, force listed in ANSI C37.32, Table 2.

### **2.04 WIRING**

- A. Control: Minimum No.12 AWG. Provide ring-tongue terminals on each end.
- B. Current transformer: Minimum No. 10 AWG.
- C. Use either molded case or DIN rail mounted miniature circuit breakers to protect individual branch circuits integral to control cabinet for external circuits entering cabinet.

### **2.05 IDENTIFICATION AND TAGGING**

- A. Nameplates shall have black lettering on white background.
- B. Nameplates shall be weather-, heat-, and UV-resistant.
- C. Fastening:
  - 1. Securely attach nameplates with self-tapping stainless steel screws.
  - 2. Fasten in place using Type 316 stainless steel, self-tapping screws.
  - 3. Adhesive nameplates not acceptable.
- D. Terminal blocks:
  - 1. Terminal blocks shall be clearly marked for wiring using permanent printed markers.
  - 2. Each internal interconnecting wire shall be identified at both ends with sleeve type wire markers with from/to information.
- E. Tag equipment with item number as shown on Data Sheets.

### **2.06 FINISHES**

- A. Stainless steel or galvanized. Apply to exposed parts after fabrication.

2.07 SOURCE QUALITY CONTROL

- A. Perform factory testing in accordance with applicable standards of IEEE, ANSI, and NEMA.
- B. Tests shall be performed at 60 Hz.
- C. Certified accuracy tests on metering type current and voltage transformers shall be in accordance with ANSI C57.13.
- D. Test results shall indicate that equipment meets standard specified before shipment can be made.

**PART 3 EXECUTION**

3.01 EXAMINATION

- A. Verify site conditions.

3.02 MANUFACTURER'S FIELD SERVICES

- A. Provide manufacturer's service representative to support installation and construction as required.

<b>DATA SHEETS SUBSTATION CHARACTERISTICS (APPLIES TO ALL DATA SHEETS)</b>		Substation Name: xxxxxx	
		REV. #	
DESCRIPTION	UNITS	SPEC DATA	VENDOR DATA
Voltages;			
High Voltage	kV	35	
Low Voltage	kV	12.47	
24 Hr. Avg. Ambient Design Temperature	°C	30	
Maximum Ambient Temperature	°C		
Minimum Ambient Temperature	°C	-40	
Site Elevation Above Sea Level	ft	Less than 3,300 ft	
Specific local Building Code and specific sections on seismic requirements used in equipment design	---	By Manufacturer	
Symmetrical short circuit current	kA	25	
Operating Frequency	Hz	60	

<b>DATA SHEET</b> <b>VOLTAGE TRANSFORMER</b>		Equipment Name: xxxxxx	
		Tag No.: xxx-##### REV. #	
DESCRIPTION	UNITS	SPEC DATA	VENDOR DATA
Manufacturer	N/A		
Catalog/Serial No.	N/A		
<b>TYPE</b>			
Outdoor	Y	Y	
Insulation	Dry Type or Oil Filled	Dry/Oil	
Number of Bushings	1	1	
Number and Type of Secondary Windings	X and Y	X and Y	
Quantity	----	1	
<b>RATINGS</b>			
Nominal Primary Circuit Voltage	kV L-L	34.5	
Transformer Primary Voltage	kV L-G	20.125	
Transformer Secondary Voltage	( / )volts	115/67.08	
Ratio	( / :1)	175/300	
Transformer Primary Connection	L-G	L-G	
BIL	kV	200	
Frequency (50 or 60)	Hz	60	
Accuracy Classification		0.3W, X, M Y,Z and ZZ	
Thermal Burden Rating Total Both Windings	VA	3000 @ 30°C	
<b>INSULATION</b>			
Insulator BIL	kV	200	
Minimum creepage distance	inches	37	
Insulator Color		ANSI 70 Gray	
Phase Spacing	Inches	36	
<b>Color</b>			
Color		ANSI 70 Gray	
<b>DELIVERY</b>			
Method of Shipment (truck, rail)	---	By Manufacturer	
Total No. of Weeks from Award of Contract, FOB site	wks	By Manufacturer	
Submittal of Review Drawings After Award of Contract	wks	By Manufacturer	
Manufacturing Time after Receipt of Approved Drawings	wks	By Manufacturer	

END OF SECTION

- 1) P. K. Mitchell
- 2) P. E. Schulz, J. R. Sovers

## **PART 1 GENERAL**

### 1.01 SECTION INCLUDES

- A. Grounding system requirements providing protection of equipment and personnel.

### 1.02 SYSTEM DESCRIPTION

- A. Grounding system includes, but is not limited to, rods, cable, connectors and miscellaneous hardware and materials.
- B. Engineer will provide outline, arrangement, and detail drawings for grounding system.

### 1.03 SUBMITTALS

- A. 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.
- B. 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.

### 1.04 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 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.

### 1.06 MAINTENANCE

- A. Grounding system shall not require maintenance after final installation, testing, and acceptance.
- B. 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.

## **PART 2 PRODUCTS**

### **2.01 ACCEPTABLE MANUFACTURERS**

- A. FCI-Burndy
- B. Erico
- C. Galvan Industries
- D. Southern Grounding Products
- E. Harger Lightning & Grounding
- F. Thompson Lightning Protection, Inc.

### **2.02 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 unless noted larger on Drawings. 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. If ground rod is longer than 10' (3 m), use sectional, threaded ground rods.
- C. Bare ground cable: Soft drawn copper in accordance with ASTM B3, Class B stranding, not less than No. 4/0 AWG (120 mm<sup>2</sup>) in accordance with ASTM B8.
- 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. Connections shall be made using an exothermic welded process.
  - 1. Exothermic molds and weld metal shall be selected for connection and be made in strict accordance with manufacturer's instructions.
  - 2. Where compression type connections are used, provide tools and proper dies as recommended by manufacturer.
  - 3. 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.

## **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. Coordinate interface installation with existing grounding systems.
- C. 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.
- D. Install separate, green-insulated equipment grounding conductor in conduit with related phase and neutral conductor.
- E. Multiconductor power cables shall have dedicated grounding conductor integrated within cable construction.
- F. Ground medium-voltage cable shields at each end using cable termination shield grounding kits supplied with medium voltage terminations. Install in strict accordance with manufacturer's instructions.
- G. 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.
- H. Above-grade connections to permanent and removable equipment shall be exothermic-weld, bolted, or compression-connection type.
- I. 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.
- J. 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).
- K. 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.

- L. 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.
- M. Install bare grounding conductor for entire length of power cable tray and where indicated on Drawings. Connect grounding conductor to each tray section and bond tray grounding system to station ground grid at minimum of every 100' (30 m). Cable tray shall additionally be continuous and rated for carrying fault current in accordance with NEC. Trays 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.
- N. Bare conductor, used for building or facility lightning protection system, shall be connected to below grade grounding system.
- O. Install ground conductor below grade around building perimeters, foundations, and equipment skids as indicated on Drawings. Repair or replace damaged ground system conductors.
- P. Exothermic welds shall encompass 100% of cable end being welded and shall resist moderate hammer blows.
- Q. Connect building and pipe support columns to grid with No. 4/0 AWG (120 mm<sup>2</sup>) 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.
- R. Extend plant ground grid system to utility substation ground grid or adjacent grounding systems where indicated. Care shall be taken when exposing and connecting to existing grounding systems to maintain continuity and backfill correctly.
- S. 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.
- T. 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.
- U. 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.
- V. Install ground conductor near top and on each side of concrete encased duct bank. Connect duct bank ground conductor to plant grounding system. Install duct bank ground conductors through manhole walls 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 manholes. Connect grounding bushings to grid conductor with minimum No. 8 AWG (10 mm<sup>2</sup>) conductor.

END OF SECTION

- 1) P. K. Mitchell
- 2) P. E. Schulz, J. R. Sovers



### AGENDA ITEM EXECUTIVE SUMMARY

Agenda Item:	Supplemental Agreement from Stanley Consultants for the Western Avenue Substation Transformer Upgrade Project.		
Presenter & Title:	Hal Wright, Superintendent of Electrical Services		
Date:	November 12, 2018		
<b>Please Check Appropriate Box:</b>			
<input checked="" type="checkbox"/>	Committee of the Whole Meeting		Special Committee of the Whole Meeting
<input checked="" type="checkbox"/>	City Council Meeting		Special City Council Meeting
<input type="checkbox"/>	Public Hearing		Other -
Associated Strategic Plan Goal/Objective: N/A			
Estimated Cost: \$ 5,000.00		Budgeted? <input checked="" type="checkbox"/> Yes <input type="checkbox"/> No	Other Funding? <input type="checkbox"/> Yes <input type="checkbox"/> No
<i>If "Other Funding," please explain how the item will be funded:</i>			
<b>Executive Summary:</b>			
The following were added or changed to the original scope for the Project: <ul style="list-style-type: none"> <li>• Preparation for transformer witness testing, including reimbursement for airline ticket.</li> <li>• Addition foundation design for the shield mast that was added during construction.</li> </ul>			
<b>Attachments:</b> <i>(please list)</i>			
<ul style="list-style-type: none"> <li>• Resolution</li> <li>• Stanley Consultants Supplemental Agreement</li> <li>• Memorandum from Superintendent Wright</li> </ul>			
<b>Voting Requirements:</b>			
<i>This motion requires <u>6</u> affirmative votes for passage.</i>			
<i>The Mayor may vote on three occasions: (a) when the vote of the aldermen or trustees has resulted in a tie; (b) when one half of the aldermen or trustees elected have voted in favor of an ordinance, resolution, or motion even though there is no tie votes; 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.</i>			
<b>Recommendation / Suggested Action:</b> <i>(how item should be listed on agenda)</i>			
Staff requests that the City Council authorize the City Administrator to execute a Supplemental Agreement from Stanley Consultants for the Western Avenue Substation Transformer Upgrade Project totaling a charge of \$5,000, and increasing the total amount of the contract to \$80,000.			

**RESOLUTION NO. 2018-113****RESOLUTION AUTHORIZING EXECUTION OF  
Supplemental Agreement from Stanley Consultants for the Western Avenue Substation  
Transformer Upgrade Project.**

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

**SECTION 1:** That the City Council of the City of Geneva, Kane County, Illinois on June 19, 2017 entered into a contract with Stanley Consultants, Inc that exceeded \$10,000.00

**SECTION 2:** Pursuant to the terms of the Agreement, the Consultant agreed to provide engineering, procurement support and project management for the upgrade of the Western Avenue Substation Transformer at a cost not to exceed \$75,000.00

**SECTION 3:** That the Agreement was approved by the City Council and the scope of service to be provided by the Contractor needs to be increased, necessitating a change order in the Agreement.

**SECTION 4:** The Contractor is to make the changes requested by the City

**SECTION 5:** Pursuant to 720 ILCS 5/33E-9, Change Orders, the City Council finds (1) the circumstances said to necessitate the change in performance were not reasonably foreseeable at the time the Contract was entered; and (2) is germane to the original Contract as signed, and (3) the change order is in the best interest of the City.

**SECTION 6:** Whereas, 720 ILCS 5/33E9 requires that any change order be made in writing.

NOW, THEREFORE, BE IT RESOLVED by the Mayor and City Council of the City of Geneva,

Kane County, Illinois as follows:

That the provisions outlined in the Supplemental Agreement as requested by Stanley Consultants dated October 16, 2018, attached hereto, is hereby approved and the City Administrator is authorized to execute these changes incorporating said proposal increasing the contract to the amount of \$80,000.00

**PASSED** by the City Council of the City of Geneva, Kane County, Illinois, this 19th day of November, 2018

**AYES: \_\_ NAYS: \_\_ ABSENT: \_\_ ABSTAINING: \_\_ HOLDING OFFICE: \_\_**

Approved by me this 19th day of November, 2018.

\_\_\_\_\_  
Mayor

ATTEST:

\_\_\_\_\_  
City Clerk



**PUBLIC WORKS DEPARTMENT**  
**MEMORANDUM**

November 12, 2018

**Memo To:** Mayor Burns, Committee of the Whole

**From:** Hal Wright, Superintendent of Electrical Services

**Re:** Recommend approving Supplemental Agreement with Stanley Consultant for the Western Avenue Substation Transformer.

The original agreement with Stanley Consultants' did not include Witness Testing costs. Those costs, if required were to be provided through the Transformer Procurement Bid. The transformer manufacturers provided an optional amount for witness testing that included the cost of the owner's engineer. Since the witness testing was eliminated at the "last minute" from the transformer manufacturers scope, and since the transformer manufacturer has provided a credit to the City of Geneva for those costs per their bid, Stanley Consultants has requested reimbursement from the City for their time preparing for the witness testing and the airline ticket.

During the general construction of the transformer foundation, it was discovered that the foundation of the static mast pole was too close to the new transformer foundation. Unfortunately, it had been shown incorrectly on the original plans for the substation. Stanley Consultants revised and corrected the plans and provided an additional specification for the work to the City of Geneva.

The Standard Terms and Conditions of the agreement provide that the extent of the agreement may only be amended by written instrument signed by both parties.

**Staff Recommendation:**

Staff requests that the City Council authorize the City Administrator to execute a Supplemental Agreement with Stanley Consultants for the Western Avenue Substation Transformer project totaling an amount of \$5,000.00, and increasing the total amount of the contract to \$80,000.00.

Cc: Stephanie Dawkins, City Administrator  
Rich Babica, Director of Public Works  
Aaron Holton, Manager of Electric Operations  
Jennifer Hilkemann, Manager of Distribution Construction & Maintenance  
Kirk Landberg, Purchasing & Inventory Coordinator



## SUPPLEMENTAL AGREEMENT

This Supplemental Agreement, made and entered into by and between STANLEY CONSULTANTS, INC (Consultant) and CITY OF GENEVA, ILLINOIS (Client) amends their agreement of June 19, 2017, for Consultant to provide services to the Client to upgrade the Western Avenue Substation Transformer, as follows:

### Scope of Services

The following tasks are added to the original scope for the Western Avenue Substation:

- Preparation for transformer witness testing, including reimbursement for airline ticket.
- Addition foundation design for the shield mast that was added during construction.

### Fees and Payments

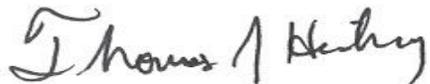
The above tasks will increase the not-to-exceed fee by Five Thousand Dollars (\$5,000) to a total not-to-exceed fee of Eighty Thousand Dollars (\$80,000).

Except as specifically amended by this Supplemental Agreement, all the terms and conditions of the original Agreement dated August 6, 2018 shall remain in full force and effect.

IN WITNESS WHEREOF, the parties have caused this Supplemental Agreement to be executed on the date below indicated.

**STANLEY CONSULTANTS, INC**

**CITY OF GENEVA, ILLINOIS**

By:   
Thomas J. Hickey, Vice President

By: \_\_\_\_\_

Date: 10/16/18

Date: \_\_\_\_\_

Attest:

Attest:

By:   
Eric D. Kamm, Business Development  
Manager

By: \_\_\_\_\_