



2026 Cathodic Protection Project

**CONTRACT DOCUMENTS
BIDDING REQUIREMENTS, CONTRACT FORMS,
CONDITIONS OF THE CONTRACT,
TECHNICAL SPECIFICATIONS AND DRAWINGS**



**Bids will be received at the office of
South Valley Water Reclamation Facility, located at
7495 S 1300 W
West Jordan, UT 84084
until 2:00 PM Wednesday, June 9th, 2026.**

**SECTION 00020
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BIDDING REQUIREMENTS, CONTRACT FORMS, AND CONDITIONS OF THE CONTRACT

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SECTION 00030 - NOTICE INVITING BIDS

RECEIPT OF BIDS: Sealed Bids will be received at the office of the OWNER at 7495 South 1300 West, West Jordan, Utah 84084 for the WORK located at the Facility, **until 2:00 PM on June 9, 2026**, for construction of South Valley Water Reclamation Facility's 2026 Cathodic Protection System Project. Any Bids received after the specified time and date will not be considered.

PRE-BID WALKTHROUGH: A **mandatory** pre-bid walkthrough at SVWRF will take place on **May 28th at 10:00 AM**. Meet at the Administration Office. Only attending contractors will be allowed to bid the project.

OPENING OF BIDS: The Bids will be publicly opened and read at 2:00 PM on **June 9, 2026**, at the above-mentioned office of the OWNER.

COMPLETION OF WORK: The WORK shall be completed as described below:

- a) Contractor shall procure and install cathodic protection test stations, anodes, and all appurtenances with site restoration as described in Summary of Work (01110). The Work shall be completed by the date set forth in the Agreement (00500).

DESCRIPTION OF WORK: The project consists of the following Items:

- a) Installation of cathodic protection test stations, galvanic anodes, and remote corrosion monitoring stations as shown on the Drawings and provided in the specifications.
- b) Site and surface restoration for Work activities in all areas including, but not limited to asphalt, sidewalks, sod replacement, sprinklers, landscape fabric and rock, and unimproved areas.

SITE OF WORK: The site of the WORK is located at the OWNER's water reclamation facility at 7495 South 1300 West, West Jordan, Utah.

OBTAINING CONTRACT DOCUMENTS: The Contract Documents are entitled "South Valley Water Reclamation Facility – 2026 Cathodic Protection System Project".

Interested parties desiring emailed electronic files should contact Jacob Baer (Engineer) via email at jbaer@carollo.com and copy Taigon Worthen (Owner) at tworthen@svwater.com. There will be no charge for emailed bid documents. Bid Documents may also be found at Utah's U3P site and located on South Valley Water Reclamation Facility's website under Engineering.

BID SECURITY: Each Bid shall be accompanied by a certified check or cashier's check or Bid Bond in the amount of 5 percent of the Total Bid Price payable to the OWNER as a guarantee that the Bidder, if its Bid is accepted, will promptly execute the Agreement. A bid shall not be considered unless one of the forms of Bidder's security is enclosed with it.

BIDS TO REMAIN OPEN: The Bidder shall guarantee the Total Bid Price for a period of 60 calendar days from the date of bid opening.

PROJECT ADMINISTRATION: Technical communications relative to this WORK shall be directed to the ENGINEER prior to opening of the Bids.

ENGINEER
Carollo Engineers, Inc.,
7090 S. Union Park Avenue, Suite 600
Telephone: (801)233-2500
Attention: Jacob Baer, P.E.
e-mail: jbaer@carollo.com

SOUTH VALLEY WATER RECLAMATION FACILITY
7495 South 1300 West
West Jordan, Utah 84084
Telephone: 801-495-5469
e-mail: tworthen@svwater.com
Attention: Taigon Worthen, P.E.

OWNER'S RIGHTS RESERVED: The OWNER reserves the right to reject any or all bids, to waive any informality in a bid, and to make awards to the lowest responsive, responsible bidder as the OWNER in its sole discretion shall determine may best serve the interest of the OWNER. The award will be based on the lowest summed price of any combination of bid schedules in 00310 as deemed in the best interest of SVWRF by SVWRF. There is no guarantee all bid schedules will be awarded. There will only be one award.

- END OF NOTICE INVITING BIDS -

SECTION 00300 – BID FORMS

BID

BID TO: South Valley Water Reclamation Facility

1. The undersigned Bidder proposes and agrees, if this Bid is accepted to enter into an Agreement with the OWNER in the form included in the Contract Documents to perform the WORK as specified or indicated in said Contract Documents entitled "South Valley Water Reclamation Facility – 2026 Cathodic Project System Project."
2. Bidder accepts all of the terms and conditions of the Contract Documents, including without limitation those in the Notice Inviting Bids and Instructions to Bidders, dealing with the dispositions of the Bid security.
3. This Bid will remain open for the period stated in the "Notice Inviting Bids" unless otherwise required by law. Bidder will enter into an Agreement within the time and in the manner required in the "Notice Inviting Bids" and the "Instructions to Bidders", required by the Contract Documents.
4. Bidder has examined copies of all the Contract Documents including the following Addenda (receipt of all of which is hereby acknowledged):

Number _____	Date _____
_____	_____
_____	_____
_____	_____

Failure to acknowledge addenda shall render the bid non-responsive and shall be cause for its rejection.

5. Bidder has familiarized itself with the nature and extent of the Contract Documents, WORK, site, locality where the WORK is to be performed, the legal requirements (federal, state, and local laws, ordinances, rules, and regulations), and the conditions affecting cost, progress or performance of the WORK and has made such independent investigations as Bidder deems necessary.

To all the foregoing, and including all Bid Forms contained in the Bid, said Bidder further agrees to complete the WORK required under the Contract Documents within the Contract Time stipulated in said Contract Documents, and to accept in full payment therefore the Contract Price based on the Total Bid Price(s) named in the aforementioned Bid forms.

Dated: _____ Bidder: _____

By: _____

Title: _____

BID CERTIFICATE

(if Corporation)

STATE OF)

) SS:

COUNTY OF)

I HEREBY CERTIFY that a meeting of the Board of Directors of the _____

a corporation existing under the laws of the State of _____, held on _____, 20 _____, the following resolution was duly passed and adopted:

“RESOLVED, that _____, as _____ of this Corporation, be and is hereby authorized to execute the Bid dated _____, 20____, to the South Valley Water Reclamation Facility by this Corporation and that his/her execution thereof, attested by the Secretary of this Corporation, and with the Corporate Seal affixed, shall be the official act and deed of this Corporation.”

I further certify that said resolution is now in full force and effect.

IN WITNESS WHEREOF, I have hereunto set my hand and affixed the official seal of the corporation this _____, day of _____, 20____.

Secretary

(SEAL)

BID CERTIFICATE

(if Partnership)

STATE OF)

) SS:

COUNTY OF)

I HEREBY CERTIFY that a meeting of the Partners of the _____

a partnership existing under the laws of the State of _____, held on _____, 20 _____, the following resolution was duly passed and adopted:

“RESOLVED, that _____, as _____ of the Partnership, be and is hereby authorized to execute the Bid dated _____, 20____, to the South Valley Water Reclamation Facility by this Partnership and that his/her execution thereof, attested by the _____ shall be the official act and deed of this Partnership.”

I further certify that said resolution is now in full force and effect.

IN WITNESS WHEREOF, I have hereunto set my hand this _____, day of _____, 20____.

BID CERTIFICATE

(if Joint Venture)

STATE OF)

) SS:

COUNTY OF)

I HEREBY CERTIFY that a meeting of the Principals of the _____

a joint venture existing under the laws of the State of _____, held on _____, 20 _____, the following resolution was duly passed and adopted:

“RESOLVED, that _____, as _____ of the Joint Venture, be and is hereby authorized to execute the Bid dated _____, 20____, to the “South Valley Water Reclamation Facility by this Joint Venture and that his/her execution thereof, attested by the _____ shall be the official act and deed of this Joint Venture.”

I further certify that said resolution is now in full force and effect.

IN WITNESS WHEREOF, I have hereunto set my hand and affixed the official seal of the corporation this _____, day of _____, 20____.

LIST OF SUBCONTRACTORS

The Bidder shall list below the name and the location of the place of business of each Subcontractor who will perform work or labor or render service to the prime contractor in or about the construction of the work or improvement, or a Subcontractor who, under subcontract to the prime contractor, specially fabricates and installs a portion of the work or improvement according to detailed drawings contained in the plans and specifications, in an amount in excess of one-half of 1 percent of the prime contractor's total bid or ten thousand dollars (\$10,000), whichever is greater. The Bidder shall also list below the portion of the WORK which will be performed by each Subcontractor under its contract. The prime contractor shall list only one Subcontractor for each portion as is defined by the prime contractor in its bid.

The Bidder's attention is directed to the provisions of Paragraph entitled "Subcontract Limitations," of the Supplementary General Conditions which stipulates the percent of the WORK to be performed with the Bidder's own forces. Failure to comply with this requirement will render the Bid non-responsive and may cause its rejection.

	<u>Subcontr.</u> <u>License</u> <u>Number</u>	<u>Percent</u> <u>of Total</u> <u>Bid</u>	<u>Subcontractor's Name and Address</u>
<u>Work to be Performed</u>			
1. _____	_____	_____	_____ _____ _____
2. _____	_____	_____	_____ _____ _____ _____
3. _____	_____	_____	_____ _____ _____
4. _____	_____	_____	_____ _____ _____

Note: Attach additional sheets if required.

INFORMATION REQUIRED OF BIDDER

The Bidder shall furnish the following information. Additional sheets shall be attached as required. Failure to complete Item Nos. 1, 3, and 6, will cause the Bid to be non-responsive and may cause its rejection.

(1) CONTRACTOR's name and address:

(2) CONTRACTOR'S telephone number and contact email:

(3) CONTRACTOR's fax number: _____

(1) CONTRACTOR's license: Primary Classification _____

State License No. and Expiration Date _____

Specialty classifications held, if any: _____

Name of Licensee, if different from (1) above: _____

(2) Name, address, and telephone number of surety company and agent who will provide the required bonds on this contract:

(3) ATTACH TO THIS BID a financial statement, references, and other information, sufficiently comprehensive to permit an appraisal of CONTRACTOR's current financial condition.

(4) ATTACH TO THIS BID a list of the 3 most recent cathodic protection contracts completed by the CONTRACTOR involving Work of similar type and comparable value. The list shall include the following information as a minimum:

- o Names, address, and telephone number of owner.
- o Name of Project.
- o Location of Project.
- o Brief description of the work involved.
- o Contract amount.
- o Date of completion of the contract.

NONCOLLUSION AFFIDAVIT TO BE EXECUTED BY BIDDER

AND SUBMITTED WITH BID

STATE OF)

) SS:

COUNTY OF)

_____, being first duly sworn, deposes and says that he or she is _____ of _____ the party making the foregoing bid that the bid is not made in the interest of, or on behalf of, any undisclosed person, partnership, company, association, organization, or corporation; that the bid is genuine and not collusive or sham; that the bidder has not directly or indirectly induced or solicited any other bidder to put in a false or sham bid, and has not directly or indirectly colluded, conspired, connived, or agreed with any bidder or anyone else to put in a sham bid, or that anyone shall refrain from bidding; that the bidder has not in any manner, directly or indirectly, sought by agreement, communication, or conference with anyone to fix the bid price of the bidder or any other bidder, or to fix any overhead, profit or cost element of awarding the contract of anyone interested in the proposed contract; that all statements contained in the bid are true; and further, that the bidder has not, directly or indirectly, submitted his or her bid price or any breakdown thereof, or the contents thereof, or divulged information or data relative thereto, or paid, and will not pay, any fee to any corporation, partnership, company association, organization, bid depository, or to any member or agent thereof to effectuate a collusive or sham bid.

Signed: _____

Subscribed and sworn to before me

this ____ day of _____, 20 ____

Notary Public in and for the
County of _____
State of _____

(SEAL)

BID BOND

KNOW ALL MEN BY THESE PRESENTS,

That _____ as Principal, and _____ as Surety, are held and firmly bound unto the South Valley Water Reclamation Facility hereinafter called "OWNER," in the sum of _____ dollars, for the payment of which sum, well and truly to be made, we jointly and severally bind ourselves, our heirs, executors, administrators, successors, and assigns firmly by these presents.

WHEREAS, said Principal has submitted a Bid to said OWNER to perform the WORK required under the bidding schedule(s) of the OWNER's Contract Documents entitled "South Valley Water Reclamation Facility – 2026 Cathodic Project System Project."

NOW THEREFORE, if said Principal is awarded a contract by said OWNER and, within the time and in the manner required in the "Notice Inviting Bids" and the "Instruction to Bidder" enters into a written Agreement on the form of agreement bound with said Contract documents, furnishes the required certificates of insurance, and furnishes the required Performance Bond and Payment Bond, and performs in all other respects the agreement created by this bid, then this obligation shall be null and void, otherwise it shall remain in full force and effect. The Surety stipulates and agrees that the obligation of said Surety shall in no way be impaired or affected by an extension of the time within which the OWNER may accept such bid and Surety further waives notice of any such extension. In the event suit is brought upon this bond by said OWNER and OWNER prevails, said Principal and Surety shall pay all costs incurred by said OWNER in such suit, including reasonable attorney's fees and costs to be fixed by the court.

SIGNED AND SEALED, this _____ day of _____, 20____

(Principal) (SEAL) _____ (SEAL)
(Surety)

By: _____ By: _____
(Signature) (Signature)

(SEAL AND NOTARIAL ACKNOWLEDGEMENT OF SURETY)

- END OF BID FORMS -

00310 – BID SCHEDULES

PART 1 - GENERAL

1.01 CONSTRUCTION CONTRACT

- A. This Bid is submitted to:

South Valley Water Reclamation Facility
7495 S 1300 W
West Jordan, UT 84084

Name of Project:

SOUTH VALLEY WATER RECLAMATION FACILITY
2026 CATHODIC PROTECTION SYSTEM PROJECT

1.02 SCHEDULES TO BE ADDED TO THE AGREEMENT

- A. This Bid Schedules contain the schedules of prices which will be incorporated into the Agreement by reference.

1.03 TAXES

- A. The Bidder agrees that all sales, consumer, use, and other similar taxes are included in the stated bid prices for the Work, unless provision is made herein for the Bidder to separately itemize the estimated amount of tax.

1.04 SCHEDULES OF PRICES

- A. Lump Sum Bid & Basis of Award: Schedule of Prices for South Valley Water Reclamation Facility – 2026 Cathodic Protection System Project as specified and shown on the Drawings. Bidder shall complete Schedule A-F in their entirety.
- B. Schedule A thru F contains prices for the cathodic protection project WORK related to the improvements shown in South Valley Water Reclamation Facility 2026 Cathodic Protection System Contract Documents.
- C. The award of the PROJECT will be based on the lowest summed price of any combination of bid schedules as deemed in the best interest of SVWRF by SVWRF. There is no guarantee all bid schedules will be awarded. There will only be one award.
- D. Bid Prices: Bidder will complete the WORK in accordance with the Contract Documents for the Lump Sum Bid Prices indicated in the Bid Schedules hereafter.
- E. BID SCHEDULES:

BID TO: SOUTH VALLEY WATER RECLAMATION FACILITY

The undersigned Bidder hereby proposes to furnish all plant machinery, labor, services, materials, equipment, tools, supplies, transportation, utilities, and all other items and facilities necessary to perform all work required under the Bidding Schedules of the Owner's Contract Documents titled **"2026 CATHODIC PROTECTION SYSTEM PROJECT"** drawings and all addenda issued by said Owner prior to opening of the bids.

The undersigned bidder acknowledges receipt of the following addenda:

<u>No.</u>	<u>Date Received</u>	<u>No.</u>	<u>Date Received</u>
_____	_____	_____	_____
_____	_____	_____	_____

Bidder agrees that, within 10 calendar days after receipt of Notice of Award from Owner, he will execute the Agreement in the required form, of which the Notice Inviting Bids, Instructions to Bidders, Bid, Information Required of Bidder, Technical Specifications, Drawings, and all addenda issued by Owner prior to the opening of bids, are a part, and will secure the required insurance and bonds and furnish the required insurance certificates; and that upon failure to do so within said time, then the bid guarantee furnished by Bidder shall be forfeited to Owner as liquidated damages for such failure; provided, that if Bidder shall execute the Agreement, secure the required insurance and bonds, and furnish the required insurance certificates within said time, his check, if furnished, shall be returned to him within five days thereafter, and the bid bond, if furnished, shall become void. It is further understood that this bid may not be withdrawn for a period of 45 days after the date set for the opening thereof, unless otherwise required by law.

Bidder further agrees to complete all work required under the contract within the time stipulated in the Contract Documents, and to accept in full payment therefore the price(s) named in the above-mentioned Bidding Schedule(s).

Dated: _____

Bidder: _____

By: _____
(Signature)

Title: _____

**BID SCHEDULE A – BIOREACTOR NO. 5
FOR
2026 CATHODIC PROTECTION SYSTEM PROJECT**

Item No.	Description	Quantity	Unit	Unit Price	Extended Amount
1	Mobilization	1	Lump Sum		
2	Cathodic Protection Test Stations 4, 8, 9, 11, 13, 22, 23, 32	1	Lump Sum		
3	Demobilization	1	Lump sum		
Total Project Bid for Schedule A					

TOTAL PROJECT BID FOR SCHEDULE A IN WORDS:

**BID SCHEDULE B – SECONDARY CLARIFIERS
FOR
2026 CATHODIC PROTECTION SYSTEM PROJECT**

Item No.	Description	Quantity	Unit	Unit Price	Extended Amount
1	Mobilization	1	Lump Sum		
2	Cathodic Protection Test Station 12, 19, 21, 24, 25, 37, 37M	1	Lump Sum		
3	Demobilization	1	Lump sum		
Total Project Bid for Schedule B					

TOTAL PROJECT BID FOR SCHEDULE B IN WORDS:

**BID SCHEDULE C – 72” SE
FOR
2026 CATHODIC PROTECTION SYSTEM PROJECT**

Item No.	Description	Quantity	Unit	Unit Price	Extended Amount
1	Mobilization	1	Lump Sum		
2	Cathodic Protection Test Station 38, 39	1	Lump Sum		
3	Demobilization	1	Lump sum		
Total Project Bid for Schedule C					

TOTAL PROJECT BID FOR SCHEDULE C IN WORDS:

**BID SCHEDULE D – 60” IE UW
FOR
2026 CATHODIC PROTECTION SYSTEM PROJECT**

Item No.	Description	Quantity	Unit	Unit Price	Extended Amount
1	Mobilization	1	Lump Sum		
2	Cathodic Protection Test Station 33	1	Lump Sum		
3	Demobilization	1	Lump sum		
Total Project Bid for Schedule D					

TOTAL PROJECT BID FOR SCHEDULE D IN WORDS:

**BID SCHEDULE E – 60” IE CHLORINE CONTACT
FOR
2026 CATHODIC PROTECTION SYSTEM PROJECT**

Item No.	Description	Quantity	Unit	Unit Price	Extended Amount
1	Mobilization	1	Lump Sum		
2	Cathodic Protection Test Station 34	1	Lump Sum		
3	Demobilization	1	Lump sum		
Total Project Bid for Schedule E					

TOTAL PROJECT BID FOR SCHEDULE D IN WORDS:

**BID SCHEDULE F – 8” SCUM/WAS
FOR
2026 CATHODIC PROTECTION SYSTEM PROJECT**

Item No.	Description	Quantity	Unit	Unit Price	Extended Amount
1	Mobilization	1	Lump Sum		
2	Cathodic Protection Test Station 2, 3, 3M, 5, 6, 6M, 7	1	Lump Sum		
3	Demobilization	1	Lump sum		
Total Project Bid for Schedule F					

TOTAL PROJECT BID FOR SCHEDULE F IN WORDS:

ATTACHMENTS TO THIS BID

- a. The following documents are attached to and made a condition of this Bid:
 - i. Required Bid security in the form of a certified or cashier's check, or a Bid Bond as specified in Document 00300 - Bid Forms.
 - ii. Document 00300 - Bid Forms, and other individuals and entities required to be identified in this Bid.
 - iii. Document 00444 - Experience Modification Rate.
 - iv. Document 00453 - Bid Preference.
 - v. Document 00454 - Bid Certification of the Payment of State and Local Taxes.
 - vi. Document 00458 - Certification of Drug-Free Workplace Requirements

- END OF BID SCHEDULES

DOCUMENT 00444

EXPERIENCE MODIFICATION RATE

ARTICLE 1 - CONTRACTOR'S SAFETY PERFORMANCE AND PROGRAM

1.01 WORKERS' COMPENSATION INSURANCE - EXPERIENCE MODIFICATION RATE (EMR)

A. Provide the following data:

	<u>Policy Year</u>	<u>Modification Rate</u>
Most Recent Policy Year	_____	_____
1 year previously	_____	_____
2 years previously	_____	_____

B. Answer the following questions.

1. Are the above rates interstate or intrastate? _____.
2. If intrastate, which state? _____.
3. If your EMR is exactly 1.0 for any policy year, it is because your firm is (or was) too new or too small to have an EMR calculated?

Yes _____ No _____

C. Provide documentation by one of the following methods:

1. Furnish a letter from your insurance agent, insurance carrier, or state fund (on their letterhead) verifying the EMR data for the last 3 rating periods.
 - a. If you do not have an interstate rating, obtain your intrastate EMR's.
2. Furnish a copy of the last 3 years' Experience Rating Calculation Sheets from your insurance carrier.
3. If you are in a "state fund", such as Ohio or West Virginia, furnish a copy of the state's last 3 years annual statement page that shows the modification rate and the coverage period.

END OF DOCUMENT

DOCUMENT 00453

BID PREFERENCES

1. Did you claim a bid preference under Utah Procurement Code 63G-6-404 - Preference for Providers of State Products?

Yes No

If so, are you submitting proof that the goods, supplies, equipment, materials, or printing offered are produced, manufactured, mined, grown or performed in Utah?

Yes No

2. Did you claim a bid preference under Utah Procurement Code 63G-6-405 - Preference for Resident Contractors?

Yes No

If so, are you submitting proof of qualifications as a Resident Contractor?

Yes No

3. Did you claim a bid preference under Utah Procurement Code 63G-6-406 - Preference for Recycled Paper and Paper Products?

Yes No

If so, are you submitting proof of entitlement under this Code section?

Yes No

BIDDER

(Signature)

(Date)

END OF DOCUMENT

DOCUMENT 00454

BID CERTIFICATION FOR THE PAYMENT OF UTAH STATE AND LOCAL TAXES

KNOW ALL MEN BY THESE PRESENTS, THAT the Bidder does hereby stipulate and certify that the Bidder has paid Utah state and local taxes for 5 successive years before submitting this Bid to Owner.

Yes

No

BIDDER

(Signature)

(Date)

END OF DOCUMENT

DOCUMENT 00458

CERTIFICATION OF DRUG-FREE WORKPLACE REQUIREMENTS

ARTICLE 1 - BIDDER CERTIFICATIONS

1.01 The Bidder certifies that it will or will continue to provide a drug-free workplace by:

- A. Publishing a statement notifying employees that the unlawful manufacture, distribution, dispensing, possession, or use of a controlled substance is prohibited in the Bidder's workplace and specifying the actions that will be taken against employees for violation of such prohibition.
 - 1. Making it a requirement that each employee to be engaged in the performance of the contract be given a copy of the statement.
 - 2. Notifying the employee in the statement that, as a condition of employment under the Contract, the employee will:
 - a. Abide by the terms of the statement.
 - b. Notify the employer in writing of his or her conviction for a violation of a criminal drug statute occurring in the workplace no later than 5 calendar days after such conviction.
 - 1) Notifying the Owner in writing within 10 calendar days after receiving notice from an employee or otherwise receiving actual notice of such conviction.
 - 2) Taking 1 of the following actions, within 30 calendar days of receiving notice, with respect to any employee who is so convicted:
 - a) Taking appropriate personnel action against such an employee, up to and including termination, consistent with the requirements of Federal and State law.
 - b) Requiring such employee to participate satisfactorily in a drug abuse assistance or rehabilitation program approved for such purpose by a Federal, State or local health, law enforcement, or other appropriate agency.
 - c. Notify the employee that in the event of a major accident/incident resulting in loss of life, injury or damage to the facility, or equipment, all personnel involved shall be required to submit to substance testing as soon as possible after the incident, but not more than 4 hours after the incident.
- B. Establishing an ongoing drug-free awareness program to inform employees about:
 - 1. The dangers of drug abuse in the workplace.
 - 2. The Bidder's policy of maintaining a drug-free workplace.
 - 3. Any available drug counseling, rehabilitation, and employee assistance programs.
 - 4. The penalties that may be imposed upon employees for drug abuse violations occurring in the workplace.
- C. Making a good faith effort to continue to maintain a drug-free workplace through implementation of the requirements stated in this Document.

ARTICLE 2 - WORK LOCATIONS

2.01 The Bidder may insert in the space provided below the site(s) for the performance of work done in connection with this Contract:

A. Place(s) of Performance: (Street address, city, county, state, zip code):

BIDDER

(Signature)

(Date)

END OF DOCUMENT

SECTION 00500

AGREEMENT

THIS AGREEMENT is dated as of the _____ day of _____ in the year _____ by and between South Valley Water Reclamation Facility (hereinafter called OWNER) and _____ (Hereinafter called CONTRACTOR).

OWNER and CONTRACTOR, in consideration of the mutual covenants hereinafter set forth, agree as follows:

ARTICLE 1. WORK.

CONTRACTOR shall complete the WORK as specified or indicated in the OWNER's Contract Documents entitled "South Valley Water Reclamation Facility – 2026 Cathodic Protection System Project". The WORK is generally described in Specification Section 01110 - Summary of Work.

ARTICLE 2. CONTRACT TIMES

COMPLETION OF WORK: The WORK shall be completed as follows:

1. Contractor shall begin WORK as soon as the Notice to Proceed is issued following award of WORK. Notice to Proceed is planned for **July 2026**. Substantial Completion will be **90** days from Notice to Proceed with Final Completion being **15** days from Substantial Completion as Specified in Summary of Work (01110).

ARTICLE 3. LIQUIDATED DAMAGES

OWNER and the CONTRACTOR recognize that time is of the essence of this Agreement and that the OWNER will suffer financial loss if the WORK is not completed within the time specified in Article 2 herein, plus any extensions thereof allowed in accordance with Article 12 of the General Conditions. They also recognize the delays, expense, and difficulties involved in proving in a legal proceeding the actual loss suffered by the OWNER if the WORK is not completed on time. Accordingly, instead of requiring any such proof, the OWNER and the CONTRACTOR agree that as liquidated damages for delay (but not as a penalty) the CONTRACTOR shall pay the OWNER \$500.00, or as otherwise specified in the Supplementary General Conditions for each day that expires after the deadlines specified in Article 2 herein.

ARTICLE 4. CONTRACT PRICE

OWNER shall pay CONTRACTOR for completion of the WORK in accordance with the Contract Documents in current funds the amount set forth in the Bid Schedule.

ARTICLE 5. PAYMENT PROCEDURES

CONTRACTOR shall submit Applications for Payment in accordance with Article 14 of the General Conditions. Applications for Payment will be processed by OWNER as provided in the General Conditions.

ARTICLE 6. CONTRACT DOCUMENTS

The Contract Documents which comprise the entire agreement between OWNER and CONTRACTOR concerning the WORK consist of this Agreement (pages 00500-1 to 00500-6, inclusive) and the following attachments to this Agreement:

- Notice Inviting Bids (pages 00030-1 to 00030-2, inclusive).
- Instructions to Bidders (pages 00100-1 to 00100-5, inclusive).
- Bid Forms including the Bid, Bid Schedule(s), information required of Bidder, Bid Bond, and all required certificates and affidavits (pages 00300-1 to 00300-8 and 00310-1 to 00310-6, inclusive).
- Payment Bond (pages 00620-1 to 00620-1, inclusive).
- General Conditions (pages 00700-1 to 00700-36, inclusive).
- Supplementary General Conditions (pages 00800-1 to 00800-7, inclusive).
- Supplementary General Conditions (Utah) (pages 00810-1 to 00810-4, inclusive).
- Technical Specifications consisting of Divisions and pages, as listed in the Table of Contents.
- Drawings, as listed in the Table of Contents/List of Drawings.
- Any such Addenda issued during the bidding process.
- Notice to Proceed.
- Change Orders which may be delivered or issued after Effective Date of this Agreement and are not attached hereto.

There are no Contract Documents other than those listed in this Article 6. The Contract Documents may only be amended by Change Order as provided in Paragraph 3.03 of the General Conditions.

ARTICLE 7. ASSIGNMENTS

No assignment by a party hereto of any rights under or interests in the Contract Documents will be binding on another party hereto without the written consent of the party sought to be bound; and specifically but without limitation monies that may become due and monies 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.

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 of all covenants, agreements and obligations contained in the Contract Documents.

IN WITNESS WHEREOF, OWNER and CONTRACTOR have caused this Agreement to be executed the day and year first above written.

OWNER:
South Valley Water Reclamation Facility
By _____
(Glen Kennedy, Board Chairman)

CONTRACTOR:

By _____

Attest _____

[CORPORATE SEAL]

Address for giving notices:
South Valley Water Reclamation Facility
7495 South 1300 West
West Jordan, Utah 84084

Attest _____

Address for giving notices:

Approved as to Form:

(Signature)

Agent for service of process: _____

(Facility Attorney)

Telephone No. for Agent

AGREEMENT CERTIFICATE

(if Corporation)

STATE OF)

) SS:

COUNTY OF)

I HEREBY CERTIFY that a meeting of the Board of Directors of the _____

_____ a corporation existing under the laws of the State of _____, held on _____, 20 _____, the following resolution was duly passed and adopted:

“RESOLVED, that _____, as _____ of this Corporation, be and is hereby authorized to execute the Agreement dated _____, 20____, to the South Valley Water Reclamation Facility by this Corporation and that his/her execution thereof, attested by the Secretary of this Corporation, and with the Corporate Seal affixed, shall be the official act and deed of this Corporation.”

I further certify that said resolution is now in full force and effect.

IN WITNESS WHEREOF, I have hereunto set my hand and affixed the official seal of the corporation this _____, day of _____, 20____.

Secretary

(SEAL)

AGREEMENT CERTIFICATE

(if Partnership)

STATE OF)

) SS:

COUNTY OF)

I HEREBY CERTIFY that a meeting of the Partners of the _____

a partnership existing under the laws of the State of _____, held on _____, 20 _____, the following resolution was duly passed and adopted:

“RESOLVED, that _____, as _____ of the Partnership, be and is hereby authorized to execute the Agreement dated _____, 20____, by and between this Partnership and South Valley Water Reclamation Facility by this Partnership and that his/her execution thereof, attested by the _____ shall be the official act and deed of this Partnership.”

I further certify that said resolution is now in full force and effect.

IN WITNESS WHEREOF, I have hereunto set my hand this _____, day of _____, 20____.

AGREEMENT CERTIFICATE
(if Joint Venture)

STATE OF)
) SS:
COUNTY OF)

I HEREBY CERTIFY that a meeting of the Principals of the _____

a joint venture existing under the laws of the State of _____, held on _____, 20 _____, the following resolution was duly passed and adopted:

“RESOLVED, that _____, as _____ of the Joint Venture, be and is hereby authorized to execute the Agreement dated _____, 20____, by and between this Joint Venture and South Valley Water Reclamation Facility and that his/her execution thereof, attested by the _____ shall be the official act and deed of this Joint Venture.”

I further certify that said resolution is now in full force and effect.

IN WITNESS WHEREOF, I have hereunto set my hand this _____, day of _____, 20____.

**DOCUMENT 00510
NOTICE OF AWARD**

Issue Date:	MM/DD/YYYY	Owner's Contract No.:	
Owner:	South Valley Water Reclamation Facility	Contractor's Project No.:	
Engineer:	Carollo Engineers, Inc.		
Project:	SVWRF 2026 Cathodic Protection Project		
Bidder:	Click here to enter text.		
Bidder's Address:			

Notice of Award To Bidder

You are notified that Owner has accepted your Bid dated June 9th, 2026, for the above Contract, and that you are the Successful Bidder and are awarded a contract for:

\$ _____

Installation of cathodic protection test stations, galvanic anodes, and remote corrosion monitoring stations for locations: _____ as indicated in the Drawings and provided in the specifications. Work also includes site and surface restoration for work activities in all areas including but not limited to asphalt, sidewalks, sod replacement, sprinklers, landscape fabric and rock, and unimproved areas.

(describe Work awarded)

The Contract Price of the awarded Contract is:

Two unexecuted counterparts of the Document 00500 - Agreement accompany this Notice of Award, and the Contract Documents have been made available to Bidder electronically.

You must comply with the following conditions precedent within 14 days of the date of receipt of this Notice of Award:

1. Deliver to Owner two counterparts of the Agreement, fully executed by Bidder.
2. Deliver with the executed Agreement(s) the Contract security and insurance documentation as specified in the Instructions to Bidders and General Conditions, Articles 2 and 6.
3. Other conditions precedent (if any):

Failure to comply with these conditions within the time specified will entitle Owner to consider you in default, annul this Notice of Award, and declare your Bid security forfeited.

Within ten days after you comply with the above conditions, Owner will return to you one fully executed counterpart of the Agreement, together with any additional copies of the Contract Documents as indicated in Paragraph 2.02 of the General Conditions.

Notice of Award To Bidder

Owner: South Valley Water Reclamation Facility
Authorized
Signature: _____
By: _____ Title: _____

Copy: Engineer

END OF DOCUMENT

DOCUMENT 00550

NOTICE TO PROCEED

Owner: South Valley Water Reclamation Facility

Owner's Contract No.: _____ **Effective Date of Contract:** _____

Contractor: Click here to enter text. **Contractor's Project No.:** _____

Project Name: 2026 Cathodic Protection System Project

Contract Name: 2026 SVWRF Cathodic Protection System Project

Engineer: Carollo Engineers, Inc. **Engineer's Project No.:** 205157

To Contractor	
<p>Owner hereby notifies Contractor that the Contract Times under the above Contract will commence to run on: _____</p> <p>On that date, Contractor shall start performing its obligations under the Contract Documents. No Work shall be done at the Site prior to such date. In accordance with the Contract, the date of Substantial Completion is _____, and the date of readiness for final payment is _____ or the number of days to achieve Substantial Completion is <u>Ninety (90)</u>, and the number of days to achieve readiness for final payment is <u>Fifteen (15)</u> from Substantial Completion as Specified in Summary of Work (01110).</p>	
<p>Before starting any Work at the Site, Contractor must comply with the following:</p> <ul style="list-style-type: none">- A Preconstruction conference to be held at _____ at South Valley Water Reclamation Facility. Representatives of Owner and Engineer will be present to discuss project. Contractor is required to attend and participate in the conference.	
Owner Authorized Signature:	_____
Printed Name:	_____
Title:	_____
Date Issued:	_____

Copy: Engineer

END OF SECTION

SECTION 00620

PAYMENT BOND

KNOW ALL MEN BY THESE PRESENTS,

That _____ as CONTRACTOR,
and _____ as Surety,
are held and firmly bound unto South Valley Water Reclamation Facility hereinafter called
"OWNER," in the sum of _____ dollars, for the
payment of which sum, well and truly to be made, we bind ourselves, our heirs, executors,
administrators, successors, and assigns, jointly and severally, firmly by these presents.

THE CONDITIONS OF THIS OBLIGATION ARE SUCH that said CONTRACTOR has been
awarded and is about to enter into the annexed Agreement with said OWNER to perform the
WORK as specified or indicated in the Contract Documents entitled "South Valley Water
Reclamation Facility 2026 Cathodic Protection System Project".

NOW THEREFORE, if said CONTRACTOR, or subcontractor, fails to pay for any materials,
equipment, or other supplies, or for rental of same, used in connection with the performance of
work contracted to be done, or for amounts due under applicable State law for any work or labor
thereon, said Surety will pay for the same in an amount not exceeding the sum specified above,
and, in the event suit is brought upon this bond, reasonable attorney's fees to be fixed by the
court. This bond shall inure to the benefit of any persons, companies, or corporations entitled to
file claims under applicable State law so as to give a right of action to them or their assigns in any
suit brought upon this bond.

PROVIDED, that any alterations in the WORK to be done or the materials to be furnished, or
changes in the time of completion, which may be made pursuant to the terms of said Contract
Documents, shall not in any way release said CONTRACTOR or said Surety thereunder, nor shall
any extensions of time granted under the provisions of said Contract Documents release either
said CONTRACTOR or said Surety, and notice of such alterations or extensions of the Agreement
is hereby waived by said Surety.

SECTION 00700

GENERAL CONDITIONS

ARTICLE 1 - DEFINITIONS

Wherever used in these General Conditions or in the other Contract Documents and printed with initial or all capital letters, the following terms have the meanings indicated:

Addenda - Written or graphic instruments issued prior to the opening of Bids which make additions, deletions, or revisions to the Contract Documents.

Agreement - The written contract between the OWNER and the CONTRACTOR for the performance of the WORK pursuant to the Contract Documents. Documents incorporated into the contract by reference become part of the contract and of the Agreement.

Application for Payment - The form furnished by the ENGINEER and completed by the CONTRACTOR to request progress or final payment including supporting documentation to substantiate the amounts for which payment is requested.

Bid - The offer or proposal of a Bidder, submitted on the prescribed form, setting forth the price or prices for the WORK to be performed.

Bidder - Any person, firm or corporation submitting a Bid for the WORK.

Bonds - Bid, Performance and Payment Bonds and other instruments which protect the OWNER against loss due to inability or refusal of the CONTRACTOR to perform pursuant to the Contract Documents.

Change Order - A document recommended by the OWNER'S REPRESENTATIVE, which is signed by the CONTRACTOR and the OWNER and authorizes an addition, deletion, or revision in the WORK, or an adjustment in the Contract Price or the Contract Time, issued on or after the Effective Date of the Agreement.

Contract Documents - The documents which comprise the entire agreement between OWNER and CONTRACTOR concerning the WORK, consisting of the Drawings, Technical Specifications, General Conditions, Supplementary General Conditions, Notice Inviting Bids, Instructions to Bidders, Addenda, CONTRACTOR'S Bid, Information Required of Bidder, Agreement, Performance Bond, Payment Bond, Notice To Proceed and Change Orders. Only printed or hard copies of the documents listed above are Contract Documents.

Contract Price - The total monies payable by the OWNER to the CONTRACTOR for completion of the WORK under the terms and conditions of the Contract Documents.

Contract Time - The number of successive Days or the date stated in the Contract Documents for Substantial Completion of the WORK. The Contract Time begins to run on the date specified in the Notice to Proceed.

CONTRACTOR - The person, firm, or corporation with whom the OWNER has executed the Agreement.

Day - A calendar day of 24 hours measured from midnight to the next midnight.

Defective Work - Work that: is unsatisfactory, faulty, or deficient; does not conform to the Contract Documents; does not meet the requirements of any inspection, reference standard, test, or approval referred to in the Contract Documents; has been damaged prior to the ENGINEER's recommendation of final payment.

Drawings - The drawings, plans, maps, profiles, diagrams, and other graphic representations which show the character, location, nature, extent, and scope of the WORK.

Effective Date of the Agreement - The date indicated in the Agreement on which it was executed.

ENGINEER - The person, firm or corporation named as such in the Contract Documents.

Field Order - A written order issued by the OWNER which requires minor changes in the WORK, but which does not involve a change in the Contract Price or Contract Time.

General Requirements - Division 1 of the Technical Specifications.

Laws and Regulations; Laws or Regulations - Includes any and all applicable state, federal and local statutes, common law, rules, regulations, ordinances, codes, and/or orders.

Notice of Award - The OWNER's written notice to the apparent successful Bidder stating that upon compliance with the conditions precedent enumerated therein by the apparent successful Bidder within the time specified, the OWNER will enter into the Agreement.

Notice to Proceed - The OWNER's written notice to the CONTRACTOR authorizing the CONTRACTOR to proceed with the work and establishing the date of commencement of the Contract Time.

OWNER - SOUTH VALLEY WATER RECLAMATION FACILITY.

OWNER'S REPRESENTATIVE - The authorized representative of the OWNER who is assigned to the site or any part thereof.

Partial Utilization - Placing a portion of the WORK in service for the purpose for which it is intended (or a related purpose) before reaching Substantial Completion of the WORK.

Project - A unit of total construction of which the WORK to be provided under the Contract Documents, may be the whole, or a part thereof.

Shop Drawings - All drawings, diagrams, illustrations, schedules and other data which are specifically prepared by or for the CONTRACTOR to illustrate some portion of WORK and all illustrations, brochures, standard schedules, performance charts, instruction, and diagrams to illustrate material or equipment for some portion of the WORK.

Specifications - (Same definition as for Technical Specifications hereinafter).

Subcontractor - An individual, firm, or corporation having a direct contract with the CONTRACTOR or with any other Subcontractor for the performance of a part of the WORK.

Substantial Completion - That state of construction when the WORK has progressed to the point where, in the opinion of the OWNER as evidenced by the Notice of Substantial Completion, it is sufficiently complete, in accordance with the Contract Documents, so that the WORK can be

utilized for the purposes for which it is intended. The terms "substantially complete" and "substantially completed" as applied to any work refer to substantial completion thereof.

Supplementary General Conditions - The part of the Contract Documents which makes additions, deletions, or revisions to these General Conditions.

Supplier - A manufacturer, fabricator, supplier, distributor, materialman, or vendor.

Technical Data - The factual information contained in reports describing physical conditions, including: exploration method, plans, logs, laboratory test methods and factual data. Technical Data does not include conclusions, interpretations, interpolations, extrapolations or opinions contained in reports or reached by the CONTRACTOR.

Technical Specifications - Those portions of the Contact Documents consisting of the General Requirements and written technical descriptions of products and execution of the WORK.

Underground Utilities - All pipelines, conduits, ducts, cables, wires, manholes, vaults, tanks, tunnels, or other such facilities or attachments and any encasements containing such facilities which have been installed underground to furnish any of the following services or materials: water, sewage and drainage removal, electricity, gases, steam, liquid petroleum products, telephone or other communications, cable television, traffic, or other control systems.

WORK - The entire construction required to be furnished under the Contract Documents. WORK is the result of performing services, furnishing labor and supervision, and furnishing and incorporating materials and equipment into the construction, all as required by the Contract Documents.

ARTICLE 2 - PRELIMINARY MATTERS

2.01 DELIVERY OF BONDS/INSURANCE CERTIFICATES

- A. The CONTRACTOR shall deliver to the OWNER the Bonds and insurance certificates required by the Contract Documents within ten (10) days after receiving the Notice of Award from the OWNER.

2.02 COPIES OF DOCUMENTS

- A. The OWNER shall furnish the CONTRACTOR five copies of the Contract Documents (Specifications and reduced Drawings), together with two sets of full-scale Drawings. Additional quantities of the Contract Documents will be furnished at reproduction cost.

2.03 STARTING THE PROJECT

- A. The CONTRACTOR shall begin construction of the WORK within 10 days after the commencement date stated in the Notice to Proceed but shall not commence construction prior to the commencement date.

2.04 BEFORE STARTING CONSTRUCTION

- A. Before undertaking each part of the WORK, the CONTRACTOR shall carefully study and compare the Contract Documents to check and verify pertinent figures and dimensions shown thereon with all applicable field measurements. The CONTRACTOR shall promptly report in writing to the OWNER any conflict, error, or discrepancy which

the CONTRACTOR may discover and shall obtain a written interpretation or clarification from the OWNER before proceeding with any work affected thereby.

- B. The CONTRACTOR shall submit to the OWNER for review those documents called for under the Section entitled "Contractor Submittals" in the General Requirements.

2.05 PRECONSTRUCTION CONFERENCE

- A. The CONTRACTOR shall attend a preconstruction conference with the OWNER, the ENGINEER and others as appropriate to discuss the construction of the WORK in accordance with the Contract Documents.

2.06 FINALIZING SCHEDULES

- A. At least 7 days before the CONTRACTOR's submittal of its first Application for Payment, the CONTRACTOR, the OWNER, and others as appropriate will meet to finalize the schedules submitted in accordance with the General Requirements.

ARTICLE 3 - CONTRACT DOCUMENTS: INTENT, AMENDING, REUSE

3.01 INTENT

- A. The Contract Documents comprise the entire agreement between OWNER and CONTRACTOR concerning the WORK. The Contract Documents are complementary, what is called for by one is as binding as if called for by all. The Contract Documents will be construed in accordance with the law of the place of the Project.
- B. It is the intent of the Contract Documents to describe the WORK, as completely as possible and in a functional manner. The WORK is intended to be constructed in accordance with the Contract Documents. All work, materials, or equipment that may be reasonably inferred from the Contract Documents as being required to produce the completed work shall be supplied whether or not specifically called for. When words which have a well-known technical or trade meaning are used to describe work, materials, or equipment such words shall be interpreted in accordance with that meaning. Reference to standard specifications, manuals, or codes or any technical society, organization, or association, or to the Laws or Regulations of any governmental authority, whether such reference be specific or by implication, shall mean the latest standard specification, manual, code, or Laws or Regulations in effect at the time of opening of Bids, except as may be otherwise specifically stated. However, no provision of any referenced standard specification, manual, or code (whether or not specifically incorporated by reference in the Contract Documents) shall be effective to change the duties and responsibilities of the OWNER, the CONTRACTOR, or the ENGINEER or any of their consultants, agents, or employees from those set forth in the Contract Documents.
- C. If, during the performance of the WORK, the CONTRACTOR finds a conflict, error or discrepancy in the Contract Documents, the CONTRACTOR shall immediately report it to the OWNER in writing and before proceeding with the work affected thereby. The OWNER shall then make a written interpretation, clarification, or correction.

3.02 ORDER OF PRECEDENCE OF CONTRACT DOCUMENTS

A. In resolving issues resulting from conflicts, errors, or discrepancies in any of the Contract Documents, or the order of precedence shall be as follows:

1. Change Orders
2. Agreement
3. Addenda
4. Supplementary General Conditions
5. General Conditions
6. Technical Specifications
7. Referenced Standard Specifications
8. Drawings
9. Contractor's Bid (Bid Form).

B. With reference to the Drawings the order of precedence is as follows:

1. Figures govern over scaled dimensions
2. Detail drawings govern over general drawings
3. Addenda/change order drawings govern over general drawings
4. Contract Drawings govern over standard drawings.

3.03 AMENDING AND SUPPLEMENTING CONTRACT DOCUMENTS

A. The Contract Documents may be amended by a Change Order (pursuant to Article 10) to provide for additions, deletions or revisions in the WORK or to modify terms and conditions.

3.04 REUSE OF DOCUMENTS

A. Neither the CONTRACTOR, Subcontractor, Supplier, nor any other person or organization performing any of the WORK under a contract with the OWNER shall have or acquire any title to or ownership rights in any of the Drawings, Technical Specifications, or other documents used on the WORK, and they shall not reuse any of them on the extensions of the Project or any other project without the written consent of the OWNER and the ENGINEER.

ARTICLE 4 - AVAILABILITY OF LANDS: PHYSICAL CONDITIONS, REFERENCE POINTS

4.01 AVAILABILITY OF LANDS

A. The OWNER shall furnish the lands, rights-of-way and easements upon which the

WORK is to be performed and for access thereto, together with other lands designated for the use of the CONTRACTOR in the Contract Documents. Easements for permanent structures or permanent changes in existing major facilities will be obtained and paid for by the OWNER, unless otherwise provided in the Contract Documents. Nothing contained in the Contract Documents shall be interpreted as giving the CONTRACTOR exclusive occupancy of the lands or rights-of-way provided. The CONTRACTOR shall provide for all additional lands and access thereto that may be required for temporary construction facilities or storage of materials and equipment. The CONTRACTOR shall not enter upon nor use any property not under the control of the OWNER until a written temporary construction easement agreement has been executed by the CONTRACTOR and the property owner, and a copy of the easement furnished to the ENGINEER prior to its use. Neither the OWNER nor the ENGINEER shall be liable for any claims or damages resulting from the CONTRACTOR's unauthorized trespass or use of any properties.

4.02 PHYSICAL CONDITIONS - SUBSURFACE AND EXISTING STRUCTURES

- A. Explorations and Reports: The Supplementary General Conditions may identify exploration reports and subsurface conditions tests at the site that have been utilized by the OWNER in the preparation of the Contract Documents. The CONTRACTOR may rely upon the accuracy of the Technical Data contained in these reports. The CONTRACTOR is responsible for the interpretation, extrapolation or interpolation of all technical as well as nontechnical data and its reliance on the completeness, opinions and interpretation of the reports.
- B. Existing Structures: The Supplementary General Conditions identify the drawings of physical conditions in or relating to existing surface and subsurface structures (except Underground Utilities referred to in Paragraph 4.04 herein) which are at or contiguous to the site that have been utilized by the OWNER in the preparation of the Contract Documents. The CONTRACTOR is responsible for the interpretation, extrapolation or interpolation of all technical as well as nontechnical data and its reliance on the completeness, opinions and interpretation of the reports.

4.03 DIFFERING SITE CONDITIONS

- A. The CONTRACTOR shall notify the OWNER upon encountering any of the following unforeseen conditions, hereinafter called "differing site conditions," during the prosecution of the WORK. The CONTRACTOR's notice to the OWNER shall be in writing and delivered before the differing site conditions are disturbed, but in no event later than 14 days after their discovery.
 - 1. Subsurface or latent physical conditions at the site of the WORK which could not reasonably have been discovered through diligent inspection by CONTRACTOR before his Bid was submitted which differs materially from those indicated, described, or delineated in the Contract Documents including those reports and documents discussed in Paragraph 4.02; and
 - 2. Physical conditions at the site of the WORK of an unusual nature which could not reasonably have been discovered through diligent inspection by CONTRACTOR before his Bid was submitted and which differ materially from those ordinarily encountered and generally recognized as inherent in work of the character provided for in the Contract Documents including those reports and documents discussed in Paragraph 4.02.

- B. The OWNER will review the alleged differing site conditions; determine the necessity of obtaining additional explorations or tests with respect to verifying their existence and extent.
- C. If the OWNER concludes that because of newly discovered conditions a change in the Contract Documents is required, a Change Order will be issued as provided in Article 10 to reflect and document the consequences of the differing site conditions.
- D. In each such case, an increase or decrease in the Contract Price or an extension or shortening of the Contract Time, or any combination thereof, will be allowable to the extent that they are attributable to the differing site conditions. If the OWNER and the CONTRACTOR are unable to agree as to the amount or length of the Change Order, a claim may be made as provided in Articles 11 and 12.
- E. The CONTRACTOR's failure to give written notice of differing site conditions within 14 days of their discovery and before they are disturbed shall constitute a waiver of all claims in connection therewith, whether direct or consequential in nature.

4.04 PHYSICAL CONDITIONS - UNDERGROUND UTILITIES

- A. Shown or Indicated: The information and data shown or indicated in the Contract Documents with respect to existing Underground Utilities at or contiguous to the site are based on information and data furnished to the OWNER by the owners of Underground Utilities or by others. Unless it is expressly provided in the Supplementary General Conditions, the OWNER and the ENGINEER shall not be responsible for the accuracy or completeness of any Underground Utilities information or data. The CONTRACTOR's responsibility relating to underground utilities are: review and check all information and data, locate all Underground Utilities shown or indicated in the Contract Documents, coordinate the WORK with the owners of Underground Utilities during construction, safeguard and protect the Underground Utilities, and repair any damage to Underground Utilities resulting from the WORK. The cost of all these activities will be considered as having been included in the Contract Price.
- B. Not Shown or Indicated: If an Underground Utility not shown or indicated in the Contract Documents is uncovered or revealed at or contiguous to the site and which the CONTRACTOR could not reasonably have been expected to be aware of, the CONTRACTOR shall identify the owner of the Underground Utility, give written notice of the location to that owner and notify the OWNER.

4.05 REFERENCE POINTS

- A. The OWNER will provide one bench mark, near or on the site of the WORK, and will provide two points near or on the site to establish a base line for use by the CONTRACTOR in laying out the WORK. Unless otherwise specified in the General Requirements, the CONTRACTOR shall furnish all other lines, grades, and bench marks required for proper execution of the WORK.
- B. The CONTRACTOR shall preserve all bench marks, stakes, and other survey marks. In case of their removal or destruction by its own employees or by its subcontractor's employees, the CONTRACTOR shall be responsible for the accurate replacement of reference points by professionally qualified personnel at no additional cost to the OWNER.

ARTICLE 5 - BONDS AND INSURANCE

5.01 PERFORMANCE, PAYMENT AND OTHER BONDS

- A. The CONTRACTOR shall furnish Performance and Payment Bonds, each in the amount of 100% of the Contract Price as security for the faithful performance and payment of all the CONTRACTOR's obligations under the Contract Documents. The Performance Bond shall remain in effect at least until one year after the date of Notice of Completion, except as otherwise provided by Law or Regulation or by the Contract Documents. After the OWNER issues the Notice of Completion, the amount of the Performance Bond may be reduced to 10 percent of the Contract Price, or \$1,000, whichever is greater. The CONTRACTOR shall also furnish such other Bonds as are required by the Supplementary General Conditions.
- B. If the surety on any Bond furnished by the CONTRACTOR is declared a bankrupt or becomes insolvent or its right to do business is terminated in any state where any part of the WORK is located, the CONTRACTOR shall within 7 days after written approval by the OWNER of a substitute Bond and Surety substitute the approved Bond and Surety.

5.02 INSURANCE

- A. The CONTRACTOR shall purchase and maintain the insurance required under this paragraph. This insurance shall include the specific coverages set out herein and be written for not less than the limits of liability and coverages provided in the Supplementary General Conditions, or required by law, whichever is greater. The CONTRACTOR's liabilities under the Agreement shall not be deemed limited in any way to the insurance coverage required.
- B. The CONTRACTOR shall furnish the OWNER with certificates indicating the type, amount, class of operations covered, effective dates and expiration dates of all policies. All insurance policies purchased and maintained (or the certificates or other evidence thereof) shall contain a provision or endorsement that the coverage afforded will not be canceled, materially changed, or renewal refused until at least 30 days' prior written notice has been given to the OWNER by certified mail. Contract or certificate terms which state that reasonable efforts will be made to notify the OWNER prior to cancellation, change or renewal of the policy are not acceptable. All insurance shall remain in effect until the OWNER issues the Notice of Final Completion and at all times thereafter when the CONTRACTOR may be correcting, removing, or replacing defective work in accordance with Paragraph 13.01B or completing punch list items required by the Notice of Substantial Completion. In addition, the insurance required herein (except for Worker's Compensation and Employer's Liability) shall name the OWNER, the ENGINEER, and their officers, agents, and employees as "additional insured" under the policies. All liability insurance policies shall be occurrence and not claims made policies.
 - 1. Workers' Compensation and Employer's Liability: This insurance shall protect the CONTRACTOR against all claims under applicable state workers' compensation laws. The CONTRACTOR shall also be protected against claims for injury, disease, or death of employees which, for any reason, may not fall within the provisions of a workers' compensation law. This policy shall include an "all states" endorsement. The CONTRACTOR shall require each subcontractor similarly to provide Workers' Compensation Insurance for all of the latter's employees to be engaged in the WORK unless its employees are covered by the protection afforded by the CONTRACTOR's Workers' Compensation Insurance.

In the event a class of employees is not protected under the Workers' Compensation Statute, the CONTRACTOR or Subcontractor, as the case may be, shall provide adequate employer's liability insurance for the protection of its employees not protected under the statute.

2. Comprehensive General Liability: This insurance shall be written in comprehensive form and shall protect the CONTRACTOR against all claims arising from injuries to persons other than its employees and damage to property of the OWNER or others arising out of any act or omission of the CONTRACTOR or its agents, employees or subcontractors. The policy shall include the following endorsements: (1) Protective Liability endorsement to insure the contractual liability assumed by the CONTRACTOR under the indemnification provisions in these General Conditions; (2) Broad Form Property Damage endorsement; (3) Personal Injury endorsement to cover personal injury liability for intangible harm. The Comprehensive General Liability coverage shall contain no exclusion relative to blasting, explosion, collapse of building, or damage to underground structures.
3. Comprehensive Automobile Liability: This insurance shall be written in comprehensive form. The policy shall protect the CONTRACTOR against all claims for injuries to employees, members of the public and damage to property of others arising from the use of CONTRACTOR's motor vehicles, whether they are owned, non-owned, or hired, and whether used or operated on or off the site. The motor vehicle insurance required under this paragraph shall include: (a) motor vehicle liability coverage; (b) personal injury protection coverage and benefits; (c) uninsured motor vehicle coverage; and (d) underinsured motor vehicle coverage.
4. Subcontractor's Insurance: The CONTRACTOR shall require each of its subcontractors to procure and to maintain Comprehensive General Liability Insurance and Comprehensive Automobile Liability Insurance of the type and in the amounts specified in the Supplementary General Conditions or insure the activities of its subcontractors in the CONTRACTOR's own policy, in like amount.
5. Builder's Risk: This insurance shall be of the "all risk" type, shall be written in completed value form, and shall protect the CONTRACTOR, the OWNER, and the ENGINEER against damage to buildings, structures, materials and equipment. The amount of this insurance shall not be less than the insurable value of the WORK at completion. Builder's risk insurance shall provide for losses to be payable to the CONTRACTOR, the OWNER, and the ENGINEER as their interests may appear. The policy shall contain a provision that in the event of payment for any loss under the coverage provided, the insurance company shall have no rights of recovery against the CONTRACTOR, the OWNER, or the ENGINEER. The Builder's Risk policy shall insure against all risks of direct physical loss or damage to property from any external cause including flood and earthquake. Allowable exclusions, if any, shall be as specified in the Supplementary General Conditions.

ARTICLE 6 - CONTRACTOR RESPONSIBILITIES

6.01 SUPERVISION AND SUPERINTENDENCE

- A. The CONTRACTOR shall supervise and direct the WORK competently and efficiently, devoting the attention and applying the skills and expertise necessary to perform the WORK in accordance with the Contract Documents. The CONTRACTOR shall be solely responsible for the means, methods, techniques, sequences, and procedures of construction and safety precautions and programs incidental thereto. The CONTRACTOR shall be responsible to see that the finished WORK complies accurately with the Contract Documents.
- B. The CONTRACTOR shall employ the superintendent named in "Information Required of Bidder" on the work site at all times during the progress of the WORK. The superintendent shall not be replaced without the OWNER's written consent. The superintendent will be the CONTRACTOR's representative at the site and shall have authority to act on behalf of the CONTRACTOR. All communications given to the superintendent shall be as binding as if given to the CONTRACTOR. The CONTRACTOR shall issue all its communications to the OWNER.
- C. The CONTRACTOR's superintendent, or OWNER approved representative shall be present at the site of the WORK at all times while work is in progress. Failure to observe this requirement shall be considered suspension of the WORK by the CONTRACTOR until the superintendent is again present at the site.

6.02 LABOR, MATERIALS, AND EQUIPMENT

- A. The CONTRACTOR shall provide skilled, competent and suitably qualified personnel to survey and lay out the WORK and perform construction as required by the Contract Documents. The CONTRACTOR shall at all times maintain good discipline and order at the site.
- B. Except in connection with the safety or protection of persons at the WORK, or property at the site or adjacent thereto, all work at the site shall be performed during regular working hours (7:00 a.m. - 6:00 p.m., Monday through Friday), and the CONTRACTOR will not permit overtime work or the performance of work on Saturday, Sunday or any legal holiday observed by the OWNER without the OWNER's written consent given after prior written notice to the OWNER. Except as otherwise provided in this Paragraph, the CONTRACTOR shall receive no additional compensation for overtime work, i.e., work in excess of 8 hours in any one calendar day or 40 hours in any one calendar week, even though such overtime work may be required under emergency conditions and may be ordered by the OWNER in writing. Additional compensation will be paid the CONTRACTOR for overtime work in the event extra work is ordered by the OWNER and the Change Order specifically authorizes the use of overtime work, but only to the extent that the CONTRACTOR pays overtime wages on a regular basis being paid (>40 hours per week) for overtime work of a similar nature in the same locality.
- C. All costs of inspection and testing performed during overtime work approved solely for the convenience of the CONTRACTOR shall be borne by the CONTRACTOR. The OWNER shall have the authority to deduct the costs of all inspection and testing from any partial payments otherwise due to the CONTRACTOR.

- D. Unless otherwise specified in the Contract Documents, the CONTRACTOR shall furnish, erect, maintain and remove the construction plant, and temporary works and assume full responsibility for all materials, equipment, labor, transportation, construction equipment, machinery, tools, appliances, fuel, power, light, heat, telephone, water, sanitary facilities and all other facilities and incidentals necessary for the furnishing, performance testing, start-up and completion of the WORK.
- E. All materials and equipment incorporated into the WORK shall be of new and good quality, except as otherwise provided in the Contract Documents. If required by the OWNER, the CONTRACTOR shall furnish satisfactory evidence (including reports of required tests) as to the kind and quality of materials and equipment. The CONTRACTOR shall apply, install, connect, erect, use, clean, and condition all material and equipment in accordance with the instructions of the manufacturer and Supplier except as otherwise provided in the Contract Documents.

6.03 ADJUSTING PROGRESS SCHEDULE

- A. The CONTRACTOR shall submit any adjustments in the progress schedule to the OWNER for acceptance in accordance with the provisions for "Contractor Submittals" in the General Requirements.

6.04 SUBSTITUTES AND "OR-EQUAL" ITEMS

- A. The CONTRACTOR shall submit proposed substitutes and "or-equal" items in accordance with the provisions for "Contractor Submittals" in the General Requirements.

6.05 SUBCONTRACTORS, SUPPLIERS, AND OTHERS

- A. The CONTRACTOR shall be responsible to the OWNER and the ENGINEER for the acts and omissions of its subcontractors and their employees to the same extent as the CONTRACTOR is responsible for the acts and omissions of its own employees. Nothing contained in this paragraph shall create any contractual relationship between any subcontractor and the OWNER or the ENGINEER nor relieve the CONTRACTOR of any liability or obligation under the Agreement.

6.06 PERMITS

- A. Unless otherwise provided in the Supplementary General Conditions, the CONTRACTOR shall obtain and pay for all construction permits and licenses from the agencies having jurisdiction, including furnishing the insurance and bonds required by such agencies. The costs incurred by the CONTRACTOR in compliance with this paragraph shall not be made the basis for claims for additional compensation. The OWNER shall assist the CONTRACTOR, when necessary, in obtaining such permits and licenses. The CONTRACTOR shall pay all governmental charges and inspection fees necessary for the prosecution of the WORK, which are applicable at the time of opening of Bids, including all utility connection charges for utilities required by the WORK.
- B. The CONTRACTOR shall pay all license fees and royalties and assume all costs when any invention, design, process, product, or device which is the subject of patent rights or copyrights held by others when issued in the construction of the WORK or incorporated into the WORK. If a particular invention, design, process, product, or device is specified in the Contract Documents for incorporation into or use in the construction of the WORK

and if to the actual knowledge of the OWNER or the 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 these rights shall be disclosed by the OWNER in the Contract Documents. The CONTRACTOR shall indemnify, defend and hold harmless the OWNER and the ENGINEER and anyone directly or indirectly employed by either of them from and against all claims, damages, losses, and expenses (including attorneys' fees and court costs) arising out of 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.

6.07 LAWS AND REGULATIONS

- A. The CONTRACTOR shall observe and comply with all Laws and Regulations which in any manner affect those engaged or employed on the WORK, the materials used in the WORK, or the conduct of the WORK. If any discrepancy or inconsistency should be discovered in the Contract Documents in relation to any Laws or Regulations, the CONTRACTOR shall report the same in writing to the OWNER. Notwithstanding any immunity otherwise provided by applicable workers' compensation statutes, the CONTRACTOR shall indemnify, defend and hold harmless the OWNER, the ENGINEER and their officers, agents, and employees against all claims arising from violation of any Laws or Regulations, by CONTRACTOR or by its employees or subcontractors. This indemnity provision is intended to provide the greatest protection of the OWNER and ENGINEER allowed by law. Any particular law or regulation specified or referred to elsewhere in the Contract Documents shall not in any way limit the obligation of the CONTRACTOR to comply with all other provisions of federal, state, and local laws and regulations.

6.08 EQUAL OPPORTUNITY

- A. The CONTRACTOR agrees not to discriminate against anyone because of race, national origin, ancestry, color, religion, sex, age, or disability. The CONTRACTOR agrees to abide by all applicable civil rights Laws and Regulations.

6.09 TAXES

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

6.10 USE OF PREMISES

- A. The CONTRACTOR shall confine construction equipment, stored materials and equipment, and other operations of workers to (1) the Project site, (2) the land and areas identified for the CONTRACTOR's use in the Contract Documents, and (3) other lands whose use is acquired by Laws and Regulations, rights-of-way, permits, and easements. The CONTRACTOR shall be fully responsible to the owner and occupant of such lands for any damage to the lands or areas contiguous thereto, resulting from the performance of the WORK or otherwise. Should any claim be made against the OWNER or the ENGINEER by owner or occupant of lands because of the performance of the WORK, the CONTRACTOR shall promptly settle the claim by agreement, or resolve the claim through litigation. The CONTRACTOR shall, to the fullest extent permitted by Laws and Regulations, indemnify, defend, and hold the OWNER and the ENGINEER harmless

from and against all claims, damages, losses, and expenses (including, but not limited to, fees of engineers, architects, attorneys, and other professionals and court costs) arising directly, indirectly, or consequentially out of any action, legal or equitable, brought by any owner or occupant of land against the OWNER or the ENGINEER to the extent the claim is based or arises out of the CONTRACTOR's performance of the WORK.

6.11 SAFETY AND PROTECTION

- A. The CONTRACTOR shall be responsible for initiating, maintaining, and supervising all safety precautions and programs in connection with the WORK. The 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 or near the work site and other persons and organizations who may be affected by activities on or near the work site.
 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, and utilities not designated for removal, relocation, or replacement in the course of construction.
- B. The CONTRACTOR shall comply with all applicable Laws and Regulations (whether referred to herein or not) of any public body having jurisdiction for the safety of persons or property or to protect them from damage, injury, or loss and shall erect and maintain all necessary safeguards for such safety and protection. The CONTRACTOR shall notify owners of adjacent property and utilities when prosecution of the WORK may affect them, and shall cooperate with them in the protection, removal, relocation, and replacement of their property.
- C. Unless the CONTRACTOR otherwise designates in writing a different individual as the responsible individual, the CONTRACTOR's superintendent shall be CONTRACTOR's representative at the site whose duties shall include providing all persons on the work site with a reasonably safe environment and the prevention of accidents.

6.12 SHOP DRAWINGS AND SAMPLES

- A. After checking and verifying all field measurements and after complying with the applicable procedures specified in the General Requirements, the CONTRACTOR shall submit all shop drawings to the OWNER for review and approval in accordance with the approved schedule for shop drawing submittals specified in the General Requirements.
- B. The CONTRACTOR shall also submit to the OWNER for review and approval all samples in accordance with the approved schedule of sample submittals specified in the General Requirements.
- C. Before submitting shop drawings or samples, the CONTRACTOR shall determine and verify all quantities, dimensions, specified performance criteria, installation requirements, materials, catalog numbers, and similar data with respect thereto and review or coordinate each shop drawing or sample with other shop drawings and samples and with the requirements of the WORK and the Contract Documents. The CONTRACTOR shall stamp each shop drawing, certifying his review. If the same shop drawings require

re-submittal more than two times, the CONTRACTOR shall pay for the costs of ENGINEER's and OWNER's subsequent review(s).

6.13 CONTINUING THE WORK

- A. The CONTRACTOR shall carry on the WORK and adhere to the progress schedule during all disputes or disagreements with the OWNER. No work shall be delayed or postponed pending resolution of any dispute or disagreement, except as the CONTRACTOR and the OWNER may otherwise mutually agree in writing.

6.14 INDEMNIFICATION

- A. To the fullest extent permitted by Laws and Regulations, and notwithstanding any immunity the CONTRACTOR might otherwise have under applicable workers' compensation statutes, the CONTRACTOR shall indemnify, defend, and hold harmless the OWNER, the ENGINEER, and their officers, agents, and employees, against and from all claims and liability arising under or by reason of, or claimed by others to arise under or by reason of, the Agreement or any performance of the WORK, but not from the sole negligence or willful misconduct of the OWNER and/or the ENGINEER. Such indemnification by the CONTRACTOR shall include but not be limited to the following:

1. Liability or claims resulting in whole or in part, directly or indirectly from, or claimed by others to result in whole or in part, directly or indirectly from, the negligence, carelessness or other fault of the CONTRACTOR or its employees, Subcontractors, Suppliers or agents in the performance of the WORK, or in guarding or maintaining the same, or from any improper materials, implements, or appliances used in its construction;
2. Liability or claims arising in whole or in part, directly or indirectly, from or based on, or claimed by others to arise in whole or in part, directly or indirectly, from or based on, the violation of any Laws or Regulations by the CONTRACTOR or its employees, Subcontractors, Suppliers or agents;
3. Liability or claims arising in whole or in part, directly or indirectly, from, or claimed by others to arise in whole or in part, directly or indirectly from, the use or manufacture by the CONTRACTOR, or its Subcontractors, Suppliers or agents in the performance of this Agreement of any copyrighted or uncopyrighted composition, secret process, patented or unpatented invention, article, or appliance, unless otherwise specifically stipulated in this Agreement.
4. Liability or claims arising in whole or in part, directly or indirectly, from, or claimed by others to arise in whole or in part, directly or indirectly from, the breach of any warranties, whether express or implied, made by the CONTRACTOR or its Subcontractors, Suppliers or agents;
5. Liabilities or claims arising in whole or in part, directly or indirectly, from, or claimed by others to arise in whole or in part, directly or indirectly from, the willful misconduct of the CONTRACTOR or its Subcontractors, Suppliers or agents; and,
6. Liabilities or claims arising in whole or in part, directly or indirectly, from, or claimed by others to arise in whole or in part, directly or indirectly from, any

breach of the obligations assumed herein by the CONTRACTOR or its Subcontractors, Suppliers or agents.

7. If for any reason the OWNER is required to pay damages in proportion to the fault of the OWNER notwithstanding the above indemnity provisions, CONTRACTOR shall, notwithstanding any workers' compensation immunity, indemnify and hold OWNER harmless from the payment of any increased damages OWNER is required to pay which result from a reapportionment of the fault of the CONTRACTOR, or any of its employees, Subcontractors or Suppliers pursuant to Utah Code Annotated section 78b-5-818, Comparative negligence.

B. The CONTRACTOR shall reimburse the OWNER, and the ENGINEER for all costs and expense, (including but not limited to fees and charges of engineers, architects, attorneys, and other professional and court costs) incurred by the OWNER, and the ENGINEER in enforcing the provisions of this Paragraph.

C. The indemnification obligation under this Paragraph shall not be limited in any way by any limitation of the amount or type of damages, compensation, or benefits payable by or for the CONTRACTOR or any such subcontractor or other person or organization under workers' compensation acts, disability benefit acts, or other employee benefit acts.

6.15 CONTRACTOR'S DAILY REPORTS

A. The CONTRACTOR shall complete a daily report indicating manpower, major equipment, subcontractors, weather conditions, etc., involved in the performance of the WORK. The daily report shall be completed on forms prepared by the CONTRACTOR and acceptable to the OWNER, and shall be submitted to the OWNER at the conclusion of each workday.

6.16 ASSIGNMENT OF CONTRACT

A. The CONTRACTOR shall not assign, sublet, sell, transfer, or otherwise dispose of the Agreement or any portion thereof, or its right, title, or interest therein, or obligations thereunder, without the written consent of the OWNER except as imposed by law. If the CONTRACTOR violates this provision, the Agreement may be terminated at the option of the OWNER. In such event, the OWNER shall be relieved of all liability and obligations to the CONTRACTOR and to its assignee or transferee, growing out of such termination.

ARTICLE 7 - OTHER WORK

7.01 RELATED WORK

A. The OWNER may perform other work related to the Project at the site by the OWNER's own forces, have other work performed by utility owners, or let other direct contracts for the performance of the other work which may contain General Conditions similar to these. If the fact that such other work is to be performed was not noted in the Contract Documents written notice thereof will be given to the CONTRACTOR prior to commencing any other work.

B. The CONTRACTOR shall afford each utility owner and other contractor who is a party to a direct contract (or the OWNER, if the OWNER is performing the additional work with the OWNER's employees) proper and safe access to the site and a reasonable

opportunity for the introduction and storage of materials and equipment and the execution of the other work. The CONTRACTOR shall properly connect and coordinate the WORK with the other work. The CONTRACTOR shall do all cutting, fitting, and patching of the WORK that may be required to make its several parts come together properly and integrate with the other work. The CONTRACTOR shall not endanger any work of others by cutting, excavating, or otherwise altering their work and shall only cut or alter their work with the written consent of the OWNER and the others whose work will be affected.

- C. If the proper execution or results of any part of the CONTRACTOR's work depends upon the integration of work with the completion of other work by any other contractor or utility owner (or the OWNER), the CONTRACTOR shall inspect and report to the OWNER in writing all delays, defects, or deficiencies in the other work that renders it unavailable or unsuitable for proper integration with the CONTRACTOR's work. Except for the results or effects of material latent defects and deficiencies in the other work which could not reasonably have been discovered by the CONTRACTOR, the CONTRACTOR's failure to report will constitute an acceptance of the other work as fit and proper for integration with the CONTRACTOR's work and as a waiver of any claim for additional time or compensation associated with the integration of the CONTRACTOR's work with the other work.

7.02 COORDINATION

- A. If the OWNER contracts with others for the performance of other work on the Project at the site, a coordinator will be identified to the extent that the coordinator can be identified at this time, in the Supplementary General Conditions and delegated the authority and responsibility for coordination of the activities among the various contractors. The specific matters over which the coordinator has authority and the extent of the coordinator's authority and responsibility will be itemized in the Supplementary General Conditions or in a notice to the CONTRACTOR at such time as the identity of the coordinator is determined.

ARTICLE 8 - OWNER'S RESPONSIBILITIES

8.01 COMMUNICATIONS

- A. The OWNER shall issue all its communications directly to the CONTRACTOR.

8.02 PAYMENTS

- A. The OWNER shall make payments to the CONTRACTOR as provided in Article 14.

8.03 LANDS, EASEMENTS, AND SURVEYS

- A. The OWNER's duties with respect to providing lands and easements and providing engineering surveys to establish reference points are set forth in Paragraphs 4.01 and 4.05. The OWNER shall identify and make available to the CONTRACTOR copies of exploration reports and subsurface conditions tests at the site and in existing structures which have been utilized in preparing the Drawings and Technical Specifications as set forth in Paragraph 4.02

8.04 CHANGE ORDERS

- A. The OWNER shall execute approved Change Orders for the conditions described in Paragraph 10.01D.
- B. When funds are not budgeted to support continuation of performance in a subsequent fiscal period, the contract shall be canceled and the contractor shall be reimbursed for the reasonable value of any non-recurring costs incurred but not amortized in the price of the supplies or services delivered under the contract.

8.05 INSPECTIONS AND TESTS

- A. The OWNER's responsibility with respect to inspection, tests, and approvals is set forth in Paragraph 13.03B.

8.06 SUSPENSION OF WORK

- A. In connection with the OWNER's right to stop work or suspend work, see Paragraphs 13.04 and 15.01, Paragraphs 15.02 and 15.03 deal with the OWNER's right to terminate services of the CONTRACTOR under certain circumstances.

ARTICLE 9 - ENGINEER'S STATUS DURING CONSTRUCTION

9.01 OWNER'S REPRESENTATIVE

- A. The OWNER will designate a representative during the construction period. The duties, responsibilities and the limitations of authority of the OWNER's representative during construction are summarized hereafter.

9.02 VISITS TO SITE

- A. The ENGINEER will make visits to the site during construction to observe and inspect the progress and quality of the WORK and to determine, in general if the WORK is proceeding in accordance with the Contract Documents.

9.03 PROJECT REPRESENTATIVE

- A. The OWNER'S Representative will observe and inspect the performance of the WORK. The Owner's Representative and/or other authorized agents of the OWNER shall serve as the primary contact(s) with the Contractor during the construction phase. All submittals shall be delivered to, and communications between the OWNER and the CONTRACTOR shall be handled by, the Owner's Representative and/or other authorized agents. The Owner's Representative shall be the primary authorized representative of the OWNER in all on-site relations with the CONTRACTOR.

9.04 CLARIFICATIONS AND INTERPRETATIONS

- A. The OWNER will issue, with reasonable promptness written clarifications or interpretations of the requirements of the Contract Documents (in the form of Drawings or otherwise) as the OWNER may determine necessary, which shall be consistent with or reasonably inferable from the overall intent of the Contract Documents.

9.05 AUTHORIZED VARIATIONS IN WORK

- A. The OWNER may authorize minor variations in the WORK as described in the Contract Documents when such variations do not involve an adjustment in the Contract Price or the Contract Time and are consistent with the overall intent of the Contract Documents. These variations shall be accomplished by issuing a Field Order. The issuance of a Field Order requires the CONTRACTOR to perform the work described in the order promptly. If the CONTRACTOR believes that a Field Order justifies an increase in the Contract Price or an extension of the Contract Time and the parties are unable to agree as to the amount or extent thereof, the CONTRACTOR may make a claim therefor as provided in Article 11 and 12.

9.06 REJECTION OF DEFECTIVE WORK

- A. The OWNER is authorized to reject work which the OWNER believes to be defective and require special inspection or testing of the WORK as provided in Paragraph 13.03G, whether or not the WORK is fabricated, installed, or completed.

9.07 CONTRACTOR SUBMITTALS, CHANGE ORDERS, AND PAYMENTS

- A. The OWNER will review for approval all CONTRACTOR submittals, including shop drawings, samples, substitutes, and "or equal" items, etc., in accordance with the procedures set forth in the General Requirements.
- B. In connection with the OWNER's REPRESENTATIVE responsibilities as to Change Orders, see Articles 10, 11, and 12.
- C. In connection with the OWNER responsibilities as to Applications for Payment, see Article 14.

9.08 DISPUTES, CLAIMS AND OTHER MATTERS

- A. All claims, disputes, and other matters concerning the acceptability of the WORK, the interpretation of the requirements of the Contract Documents pertaining to the performance of the WORK, and claims for changes in the Contract Price or Contract Time under Articles 11 and 12 will be referred to the OWNER in writing with a request for formal decision in accordance with this paragraph. The OWNER will render a decision in writing within 30 days of receipt of the request. Written notice of each claim, dispute, or other matter will be delivered by the CONTRACTOR to the OWNER promptly (but in no event later than 30 days) after the occurrence of the event. Written supporting data will be submitted to the OWNER with the written claim unless the OWNER allows an additional period of time to ascertain more accurate data in support of the claim.
- B. When reviewing the claim or dispute, the OWNER'S REPRESENTATIVE will not show partiality to the OWNER or the CONTRACTOR and will incur no liability in connection with any interpretation or decision rendered in good faith. The OWNER'S REPRESENTATIVE rendering of a decision with respect to any claim, dispute, or other matter (except any which have been waived by the making or acceptance of final payment as provided in Paragraph 14.12) shall be a condition precedent to the OWNER's or the CONTRACTOR's exercise of their rights or remedies under the Contract Documents or by Law or Regulations with respect to the claim, dispute, or other matter.

9.09 LIMITATION ON ENGINEER'S RESPONSIBILITIES

- A. Whenever in the Contract Documents the terms "as ordered," "as directed," "as required," "as allowed," "as reviewed," "as approved," or terms of like effect or import are used, or the adjectives "reasonable," "suitable," "acceptable," "proper," or "satisfactory" or adjectives of like effect or import are used to describe a requirement, direction, review, or judgment of the OWNER as to the WORK, it is intended that such requirement, direction, review, or judgment will be solely to evaluate the WORK for compliance with the Contract Documents, unless there is a specific statement indicating otherwise. The use of any such term or adjective shall not be effective to assign to the OWNER any duty or authority to supervise or direct the performance of the WORK.
- B. Neither the OWNER nor the ENGINEER will be responsible for the CONTRACTOR's means, methods, techniques, sequences, or procedures of construction not specified in the Contract Documents. Neither the OWNER nor the ENGINEER shall have any responsibility for safety precautions or programs on site or for the safety of CONTRACTOR'S employees, Subcontractors, employees of Subcontractors, Suppliers, employees of Suppliers or others on site.
- C. Neither the OWNER nor the ENGINEER will be responsible for the acts or omissions of the CONTRACTOR nor of any Subcontractor, Supplier, or any other person or organization performing any of the WORK to the extent that such acts or omissions are not reasonably discoverable considering the level of observation and inspection required by the ENGINEER's agreement with the OWNER.

ARTICLE 10 - CHANGES IN THE WORK

10.01 GENERAL

- A. Without invalidating the Agreement and without notice to any surety, the OWNER may at any time or from time to time, order additions, deletions, or revisions in the WORK; these will be authorized by a written Field Order and/or a Change Order issued by the OWNER. Upon receipt of any of these documents, the CONTRACTOR shall promptly proceed with the work involved pursuant to the applicable conditions of the Contract Documents.
- B. If the OWNER and the CONTRACTOR are unable to agree upon the increase or decrease in the Contract Price or an extension or shortening of the Contract Time, if any, that should be allowed as a result of a Field Order, a claim may be made therefor as provided in Articles 11 and 12.
- C. The CONTRACTOR shall not be entitled to an increase in the Contract Price nor an extension of the Contract Time with respect to any work performed that is not required by the Contract Documents as amended, modified, or supplemented by Change Order, except in the case of an emergency and except in the case of uncovering work provided in the Paragraph 13.03G.
- D. The OWNER and the CONTRACTOR shall execute appropriate Change Orders covering:
 - 1. Changes in the WORK which are ordered by the OWNER pursuant to Paragraph 10.01A;

2. Changes required because of acceptance of defective work under Paragraph 13.06;
 3. Changes in the Contract Price or Contract Time which are agreed to by the parties; or
 4. Any other changes agreed to by the parties.
 5. Any construction contract change order which increases the contract amount shall have the prior written certification of the District's controller that the expenditure of the change order amount is properly authorized by the District's board of trustees consistent with the District's budget and financial management policies and the instructions of the board of trustees.
- E. If the provisions of any Bond require notice of any change to be given to a surety, the giving of these notices will be the CONTRACTOR's responsibility. The CONTRACTOR shall provide for the amount of each applicable Bond to be adjusted accordingly.

10.02 ALLOWABLE QUANTITY VARIATIONS

- A. Whenever a unit price and quantity have been established for a bid item in the Contract Documents, the quantity stated may be increased or decreased to a maximum of 25 percent with no change in the unit price. An adjustment in the quantity in excess of 25 percent will be sufficient to justify a change in the unit price. All changes in the quantities of bid items shall be documented by Change Order.
- B. In the event a part of the WORK is to be entirely eliminated and no lump sum or unit price is named in the Contract Documents to cover the eliminated work, the price of the eliminated work shall be agreed upon in writing by the OWNER and the CONTRACTOR. If the OWNER and the CONTRACTOR fail to agree upon the price of the eliminated work, the price shall be determined in accordance with the provisions of Article 11.

ARTICLE 11 - CHANGE OF CONTRACT PRICE

11.01 GENERAL

- A. The Contract Price constitutes the total compensation payable to the CONTRACTOR for performing the WORK. Except as directed by Change Orders, all duties, responsibilities, and obligations assigned to or undertaken by the CONTRACTOR shall be at its expense without change in the Contract Price.
- B. The Contract Price may only be changed by a Change Order. Any claim for an increase in the Contract Price shall be based on written notice delivered by the CONTRACTOR to the OWNER promptly (but in no event later than 30 days) after the occurrence of the event giving rise to the claim and stating the general nature of the claim. Notice of the amount of the claim with supporting data shall be delivered with the claim, unless the OWNER allows an additional period of time to ascertain more accurate data in support of the claim, and shall be accompanied by the CONTRACTOR's written statement that the amount claimed covers all known amounts (direct, indirect, and consequential) to which the CONTRACTOR is entitled as a result of the occurrence of the event. If the OWNER and the CONTRACTOR cannot otherwise agree on the amount involved, all claims for adjustment in the Contract Price shall be determined by the OWNER in

accordance with Paragraph 9.08A. No claim for an adjustment in the Contract Price will be valid if not submitted in accordance with this paragraph.

- C. The value of any work covered by a Change Order or of any claim for an increase or decrease in the Contract Price shall be determined in one of the following ways:
1. Where the work involved is covered by unit prices contained in the Contract Documents, by application of unit prices to the quantities of the items involved.
 2. Mutual acceptance of a lump sum, which may include an allowance for overhead and profit not necessarily in accordance with Paragraph 11.04.
 3. On the basis of the cost of work (determined as provided in Paragraphs 11.02 and 11.03) plus a CONTRACTOR's fee for overhead and profit (determined as provided in Paragraph 11.04).

11.02 COST OF WORK (BASED ON TIME AND MATERIALS)

- A. General: The term "cost of work" means the sum of all costs necessarily incurred and paid by the CONTRACTOR for labor, materials, and equipment in the proper performance of work. Except as otherwise may be agreed to in writing by the OWNER, such costs shall be in amounts no higher than those prevailing in the locality of the Project.
- B. Labor: The cost of labor used in performing work by the CONTRACTOR, a Subcontractor, or other forces will be the sum of the following:
1. The actual wages paid plus any employer payments to, or on behalf of workers for fringe benefits including health and welfare, pension, vacation, and similar purposes. The cost of labor may include the rates paid to foremen when determined by the OWNER that the services of foremen do not constitute a part of the overhead allowance.
 2. All payments imposed by state and federal laws including, but not limited to, compensation insurance, and social security payments.
 3. The amount paid for subsistence and travel required by collective bargaining agreements, or in accordance with the regular practice of the employer.
 4. At the beginning of the extra work and as later requested by the OWNER, the CONTRACTOR shall furnish the OWNER proof of labor compensation rates being paid.
- C. Materials: The cost of materials used in performing work will be the cost to the purchaser, whether CONTRACTOR or Subcontractor, from the Supplier thereof, except as the following are applicable:
1. Trade discounts available to the purchase shall be credited to the OWNER notwithstanding the fact that such discounts may not have been taken by the CONTRACTOR.
 2. For materials secured by other than a direct purchase and direct billing to the purchaser, the cost shall be deemed to be the price paid to the actual Supplier as

determined by the OWNER. Markup except for actual costs incurred in the handling of such materials will not be allowed.

3. Payment for materials from sources owned wholly or in part by the purchaser shall not exceed the price paid by the purchaser for similar materials from these sources on extra work items or current wholesale price for the materials delivered to the work site, whichever is lower.
4. If, in the opinion of the OWNER, the cost of material is excessive, or the CONTRACTOR does not furnish satisfactory evidence of the cost of the material, then the cost shall be deemed to be the lowest current wholesale price for the quantity concerned, delivered to the work site less trade discount. The OWNER reserves the right to furnish materials for the extra work and no claim shall be made by the CONTRACTOR for costs and profit on such materials.

D. Equipment: The CONTRACTOR will be paid for the use of equipment at the rental rate listed for the equipment specified in the Rental Rate Blue Book published by Dataquest, Inc. The rental rate will be used to compute payments for equipment whether the equipment is under the CONTRACTOR's control through direct ownership, leasing, renting, or another method of acquisition. The rental rate to be applied for use of each item of equipment shall be the rate resulting in the least total cost to the Owner for the total period of use.

1. All equipment shall, in the opinion of the OWNER, be in good working condition and suitable for the purpose for which the equipment is to be used.
2. Before construction equipment is used on the extra work, the CONTRACTOR shall plainly stencil or stamp an identifying number thereon at a conspicuous location, and shall furnish to the OWNER, in duplicate, a description of the equipment and its identifying number.
3. Unless otherwise specified, manufacturers' ratings and manufacturer-approved modifications shall be used to classify equipment for the determination of applicable rental rates. Equipment which has no direct power unit shall be powered by a unit of at least the minimum rating recommended by the manufacturer.
4. Individual pieces of equipment or tools having a replacement value of \$100 or less, whether or not consumed by use, shall be considered to be small tools and no payment will be made therefore.
5. Rental time will not be allowed while equipment is inoperative due to breakdowns.

E. Equipment on the Work: The rental time to be paid for equipment used on the WORK shall be the time the equipment is in productive operation on the extra work being performed and, in addition, shall include the time required to move the equipment to the location of the extra work and return it to the original location or to another location that requires no more moving time than that required to return it to its original location. Moving time will not be paid if the equipment is used on other than the extra work, even though located at the site of the extra work. Loading and transporting costs will be allowed, in lieu of moving time, when the equipment is moved by means other than its own power. However, no payment will be made for loading and transporting costs when

the equipment is used on other than the extra work even though located at the site of the extra work. The following shall be used in computing the rental time of equipment on the WORK.

1. When hourly rates are listed, any part of an hour less than 30 minutes of operation shall be considered to be 1/2-hour of operation, and any part of an hour in excess of 30 minutes will be considered one hour of operation.
2. When daily rates are listed, any part of a day less than 4 hours operation shall be considered to be 1/2-day of operation. When owner-operated equipment is used to perform extra work to be paid for on a time and materials basis, the CONTRACTOR will be paid for the equipment and operator, as set forth in Paragraph (3), (4), and (5), following.
3. Payment for the equipment will be made in accordance with the provisions in Paragraph 11.02D, herein.
4. Payment for the cost of labor and subsistence or travel allowance will be made at the rates paid by the CONTRACTOR to other workers operating similar equipment already on the WORK, or in the absence of such labor, established by collective bargaining agreements for the type of workmen and location of the extra work, whether or not the operator is actually covered by such an agreement. A labor surcharge will be added to the cost of labor described herein in accordance with the provisions of Paragraph 11.02B, herein, which surcharge shall constitute full compensation for payments imposed by state and federal laws and all payments made to on behalf of workers other than actual wages.
5. To the direct cost of equipment rental and labor, computed as provided herein, will be added the allowances for equipment rental and labor as provided in Paragraph 11.04, herein.

11.03 SPECIAL SERVICES

- A. Special work or services are defined as that work characterized by extraordinary complexity, sophistication, or innovation or a combination of the foregoing attributes which are unique to the construction industry. The following may be considered by the OWNER in making estimates for payment for special services:
 1. When the OWNER and the CONTRACTOR, by agreement, determine that a special service or work is required which cannot be performed by the forces of the CONTRACTOR or those of any of its Subcontractors, the special service or work may be performed by an entity especially skilled in the work to be performed. After validation of invoices and determination of market values by the OWNER, invoices for special services or work based upon the current fair market value thereof may be accepted without complete itemization of labor, material, and equipment rental cost.
 2. When the CONTRACTOR is required to perform work necessitating special fabrication or machining process in a fabrication or a machine shop facility away from the job site, the charges for that portion of the work performed at the off-site facility may by agreement, be accepted as a special service and accordingly, the invoices from the work may be accepted without detailed itemization.

- 3. All invoices for special services will be adjusted by deducting all trade discounts offered or available, whether the discounts were taken or not. In lieu of the allowances for overhead and profit specified in Paragraph 11.04, herein, an allowance of 5 percent will be added to invoices for special services.
- B. All work performed hereunder shall be subject to all of the provisions of the Contract Documents and the CONTRACTOR's sureties shall be bound with reference hereto as under the original Agreement. Copies of all amendments to surety bonds or supplemental surety bonds shall be submitted to the OWNER for review prior to the performance of any work hereunder.

11.04 CONTRACTOR'S FEE

- A. Work ordered on the basis of time and materials will be paid for at the actual necessary cost as determined by the OWNER, plus allowances for overhead and profit. For extra work involving a combination of increases and decreases in the WORK, the actual necessary cost will be the arithmetic sum of the additive and deductive costs. The allowance for overhead and profit shall include full compensation for superintendence, bond and insurance premiums, taxes, office expenses, and all other items of expense or cost not included in the cost of labor, materials, or equipment provided for under Paragraphs 11.02B, C, and D herein, including extended overhead and home office overhead. The allowance for overhead and profit will be made in accordance with the following schedule:

OVERHEAD AND PROFIT ALLOWANCE

Labor	10 percent
Materials	10 percent
Equipment	10 percent

- B. It is understood that labor, materials, and equipment may be furnished by the CONTRACTOR or by a Subcontractor, and that the allowance specified herein shall be applied to the labor, materials, and equipment costs of the Subcontractor, to which the CONTRACTOR may add 5 percent of the Subcontractor's total cost of work. Regardless of the number of hierarchical tiers of Subcontractors, the 5 percent markup may be applied one time only for each separate work transaction.

ARTICLE 12 - CHANGE OF CONTRACT TIME

12.01 GENERAL

- A. The Contract Time may only be changed by a Change Order. Any claim for an extension of the Contract time shall be based on written notice delivered by the CONTRACTOR to the OWNER promptly (but in no event later than 30 days) after the occurrence of the event giving rise to the claim and stating the general nature of the claim. Notice of the extent of the claim with supporting data shall be delivered within 30 days after such occurrence (unless the OWNER allows an additional period of time to ascertain more accurate data in support of the claim) and shall be accompanied by the CONTRACTOR's written statement that the adjustment claimed is the entire adjustment to which the CONTRACTOR has reason to believe it is entitled as a result of the occurrence of said event. Claims for adjustment in the Contract Time shall be determined by the OWNER in accordance with Paragraph 9.08 if the OWNER's representative and the CONTRACTOR cannot otherwise agree. No claim for an

adjustment in the Contract Time will be valid if not submitted in accordance with the requirements of this paragraph.

- B. The Contract Time will be extended in an amount equal to time lost if the CONTRACTOR makes a claim as provided in Paragraph 12.01A and the OWNER determines that the delay was caused by events beyond the control of the CONTRACTOR. Examples of events beyond the control of the CONTRACTOR include acts or neglect by the OWNER or others performing additional work as contemplated by Article 7, or by acts of God or of the public enemy, fire, floods, epidemics, quarantine restrictions, strikes, labor disputes, sabotage, or freight embargoes.
- C. All time limits stated in the Contract Documents are of the essence.
- D. None of the aforesaid time extensions shall entitle the CONTRACTOR to any adjustment in the Contract Price or any damages for delay. Furthermore, the CONTRACTOR hereby indemnifies and holds harmless the OWNER and ENGINEER, their officers, agents and employees from and against all claims, damages, losses and expenses (including lost property and attorney's fees) arising out of or resulting from the temporary suspension of work whether for the OWNER's convenience as defined in Article 15.01A or for whatever other reasons including the stoppage of work by the OWNER for the CONTRACTOR's failure to comply with any order issued by the OWNER.

12.02 EXTENSIONS OF THE TIME FOR DELAY DUE TO INCLEMENT WEATHER

- A. "Inclement weather" is any weather condition or conditions resulting immediately therefrom, causing the CONTRACTOR to suspend construction operations or preventing the CONTRACTOR from proceeding with at least 75 percent of the normal labor and equipment force engaged on the WORK.
- B. Should the CONTRACTOR prepare to begin work at the regular starting time at the beginning of any regular work shift on any day on which inclement weather, or its effects on the condition of the WORK prevents work from beginning at the usual starting time and the crew is dismissed as a result thereof, the CONTRACTOR will not be charged for a working day whether or not conditions change thereafter during the day and the major portion of the day could be considered to be suitable for construction operations.
- C. The CONTRACTOR shall base its construction schedule upon the inclusion of the number of days of inclement weather specified in the Supplementary General Conditions. No extension of the Contract Time due to inclement weather will be considered until after the stated number of days of inclement weather has been reached. However, no reduction in Contract Time will be made if the number of inclement weather days is not reached.

12.03 EXTENSIONS OF TIME FOR OTHER DELAYS

- A. If the CONTRACTOR is delayed in completion of the WORK beyond the Contract Time, by acts of God or of the public enemy, fire, floods, epidemics, quarantine restrictions, strikes, labor disputes, industry-wide shortage of raw materials, sabotage or freight embargoes, the CONTRACTOR shall be entitled to an adjustment in the Contract Time. No such adjustment will be made unless the CONTRACTOR shall notify the OWNER in writing of the causes of delay within 15 calendar days from the beginning of any such delay. The OWNER shall ascertain the facts and the extent of the delay. No adjustment in time shall be made for delays resulting from noncompliance with the Contract

Documents, accidents, failure on the part of the CONTRACTOR to carry out the provisions of the Contract Documents including failure to provide materials, equipment or workmanship meeting the requirements of the Contract Documents; the occurrence of such events shall not relieve the CONTRACTOR from the necessity of maintaining the required progress.

- B. If the CONTRACTOR is delayed in completing the WORK beyond the Contract Time by reason of shortages of raw materials required for CONTRACTOR-furnished items, the CONTRACTOR shall be entitled to an adjustment in the Contract Time in like manner as if the WORK had been suspended for the convenience and benefit of the OWNER; provided, however, that the CONTRACTOR shall furnish documentation acceptable to the OWNER that he placed or attempted to place firm orders with Suppliers at a reasonable time in advance of the required date of delivery of the items in question, that such shortages shall have developed following the date such orders were placed or attempts made to place same, that said shortages are general throughout the affected industry, that said shortages are shortages of raw materials required to manufacture CONTRACTOR furnished items and not simply failure of CONTRACTOR's Suppliers to manufacture, assemble or ship items on time, and that the CONTRACTOR shall, to the degree possible, have made revisions in the sequence of his operations, within the terms of the Contract Documents, to offset the expected delay. The CONTRACTOR shall notify the OWNER, in writing, concerning the cause of delay, within 15 calendar days of the beginning of such delay. The validity of any claim by the CONTRACTOR to an adjustment in the Contract Time shall be determined by the OWNER, and his findings thereon shall be based on the OWNER's knowledge and observations of the events involved and documentation submitted by the CONTRACTOR, showing all applicable facts relative to the foregoing provisions. Only the physical shortage of raw materials will be considered under these provisions as a cause for adjustment of time and no consideration will be given to any claim that items could not be obtained at a reasonable, practical, or economical cost or price, unless it is shown to the satisfaction of the OWNER that such items could have been obtained only at exorbitant prices entirely out of line with current rates taking into account the quantities involved and the usual practices in obtaining such quantities.
- C. If the CONTRACTOR is delayed in completion of the WORK by any act of the OWNER not authorized by the Contract Documents, an adjustment in the Contract Time will be made by the OWNER in like manner as if the WORK had been suspended for the convenience and benefit of the OWNER. In the event of such delay, the CONTRACTOR shall notify the OWNER in writing of the causes of delay within 15 calendar days from the beginning of any such delay.

ARTICLE 13 - WARRANTY AND GUARANTEE; TESTS AND INSPECTIONS; CORRECTION, REMOVAL, OR ACCEPTANCE OF DEFECTIVE WORK

13.01 WARRANTY, GUARANTEE AND CORRECTION PERIOD

- A. The CONTRACTOR warrants and guarantees to the OWNER and the ENGINEER that all work, equipment, materials and workmanship are in accordance with the Contract Documents and are not defective. Reasonably prompt notice of defects discovered by the OWNER or ENGINEER shall be given to the CONTRACTOR. All defective work, whether or not in place, may be rejected, corrected, or accepted as provided in this Article 13.

- B. If within one (1) year after the date of final completion, as set by the Contractor's Certificate of Final Completion, or a longer period of time prescribed by Laws or Regulations or by the terms of any applicable special guarantee or specific provisions of the Contract Documents, any part of the WORK is found to be defective, the OWNER shall notify the CONTRACTOR in writing and the CONTRACTOR shall promptly, without cost to the OWNER and in accordance with the OWNER's written notification, either correct the defective work, or, if it has been rejected by the OWNER, remove it from the site and replace it with non-defective work. In the event the CONTRACTOR does not promptly comply with the notification, or in an emergency where delay would cause serious risk of loss or damage, the OWNER may have the defective work corrected or rejected work removed and replaced. All direct, indirect, and consequential costs of the removal and replacement including but not limited to fees and charges of engineers, architects, attorneys and other professionals will be paid by the CONTRACTOR. This paragraph shall not be construed to limit nor diminish the CONTRACTOR's absolute guarantee to complete the WORK in accordance with the Contract Documents.

13.02 ACCESS TO WORK

- A. The ENGINEER, other representatives of the OWNER, testing agencies, and governmental agencies with jurisdictional interests shall have access to the work at reasonable times for their observation, inspections, and testing. The CONTRACTOR shall provide proper and safe conditions for their access.

13.03 TESTS AND INSPECTIONS

- A. The CONTRACTOR shall give the OWNER timely notice of readiness of the WORK for all required inspections, tests, or approvals.
- B. If Laws or Regulations of any public body other than the OWNER, with jurisdiction over the WORK require any work to be specifically inspected, tested, or approved, the CONTRACTOR shall pay all costs in connection therewith. The CONTRACTOR shall also be responsible for and shall pay all costs in connection with any inspection or testing required in connection with the OWNER's acceptance of a Supplier of materials or equipment proposed as a substitution or "or-equal" to be incorporated in the WORK and of materials or equipment submitted for review prior to the CONTRACTOR's purchase for incorporation in the WORK. The cost of all inspections, tests, and approvals, with the exception of the above which are required by the Contract Documents, shall be paid by the OWNER (unless otherwise specified).
- C. The OWNER will make, or have made, such inspections and tests as the OWNER deems necessary to see that the WORK is being accomplished in accordance with the Contract Documents. The CONTRACTOR, without additional cost to the OWNER, shall provide the labor and equipment necessary to make the WORK available for inspections. Unless otherwise specified in the Supplementary General Conditions, all other costs of inspection and testing will be borne by the OWNER. In the event the inspections or tests reveal non-compliance with the requirements of the Contract Documents, the CONTRACTOR shall bear the cost of corrective measures deemed necessary by the OWNER, as well as the cost of subsequent re-inspection and retesting. Neither observations by the OWNER nor inspections, tests, or approvals by others shall relieve the CONTRACTOR from the CONTRACTOR's obligation to perform the WORK in accordance with the Contract Documents.

- D. All inspections, tests, or approvals other than those required by Laws or Regulations of any public body having jurisdiction shall be performed by properly licensed organizations selected by the OWNER.
- E. If any work (including the work of others) that is to be inspected, tested, or approved is covered without the OWNER's written authorization, it must, if requested by the OWNER, be uncovered for testing, inspection, and observation. The uncovering shall be at the CONTRACTOR's expense unless the CONTRACTOR timely notified the OWNER of the CONTRACTOR's intention to cover the same and the OWNER failed to act with reasonable promptness in response to the notice.
- F. If any work is covered contrary to the written request of the OWNER, it must, if requested by the OWNER, be uncovered for the OWNER's observation at the CONTRACTOR's expense.
- G. If the OWNER considers it necessary or advisable that covered work be observed, inspected or tested by the OWNER or others, the OWNER shall direct the CONTRACTOR to uncover, expose, or otherwise make available for observation, inspection, or testing that portion of the work in question. The CONTRACTOR shall comply with the OWNER's direction and furnish all necessary labor, material, and equipment. If the work is defective, the CONTRACTOR shall bear all direct, indirect and consequential costs of uncovering, exposure, observation, inspection, and testing and of satisfactory reconstruction of the work, including, but not limited to, fees and charges for engineers, architects, attorneys, and other professionals. However, if the work is not defective, the CONTRACTOR shall be allowed an increase in the Contract Price or an extension of the Contract Time, or both. The increase in Contract Time and Contract Price shall be the CONTRACTOR's actual time and costs directly attributable to uncovering and exposing the work. If the parties are unable to agree as to the amount or extent of the changes, the CONTRACTOR may make a claim therefor as provided in Articles 11 and 12.

13.04 OWNER MAY STOP THE WORK

- A. If the WORK is defective, or the CONTRACTOR fails to perform work in such a way that the completed WORK will conform to the Contract Documents, the OWNER may order the CONTRACTOR to stop the WORK, or any portion thereof, until the cause for the order has been eliminated. This right of the OWNER to stop the WORK shall not give rise to any duty on the part of the OWNER to exercise this right for the benefit of the CONTRACTOR or any other party.

13.05 CORRECTION OR REMOVAL OF DEFECTIVE WORK

- A. When directed by the OWNER, the CONTRACTOR shall promptly correct all defective work, whether or not fabricated, installed, or completed, or, if the work has been rejected by the OWNER, remove it from the site and replace it with non-defective work. The CONTRACTOR shall bear all direct, indirect and consequential costs of correction or removal, including but not limited to fees and charges of engineers, architects, attorneys, and other professionals made necessary thereby. If the CONTRACTOR does not correct the defective work within 30 days, the OWNER may correct the WORK and charge the CONTRACTOR for the cost of correcting the defective WORK.

13.06 ACCEPTANCE OF DEFECTIVE WORK

- A. If, instead of requiring correction or removal and replacement of defective work, the OWNER prefers to accept the work, the OWNER may do so. The CONTRACTOR shall bear all direct, indirect, and consequential costs attributable to the OWNER's evaluation of and determination to accept the defective work. If any acceptance of defective work occurs prior to final payment, a Change Order will be issued incorporating the necessary revisions in the Contract Documents with respect to the WORK, and the OWNER shall be entitled to an appropriate decrease in the Contract Price.

ARTICLE 14 - PAYMENTS TO CONTRACTOR, LIQUIDATED DAMAGES AND COMPLETION

14.01 LUMP SUM BID

- A. A schedule of values or lump sum price breakdown will serve as the basis for progress payments for a lump sum Bid and will be incorporated into the form of Application for Payment included in the Contract Documents.

14.02 UNIT PRICE BID

- A. Progress payments for a unit price Bid will be based on the number of units completed.

14.03 APPLICATION FOR PROGRESS PAYMENT

- A. Unless otherwise prescribed by the OWNER, on the 25th of each month, the CONTRACTOR shall submit to the OWNER for review and approval, an Application for Payment completed and signed by the CONTRACTOR covering the WORK completed as of the date of the Application and accompanied by such supporting documentation as required by the Contract Documents.
- B. The Application for Payment shall identify, as a sub-total, the amount of the CONTRACTOR's Total Earnings to Date, plus the Net Value of Materials On-site which have not yet been incorporated in the WORK.
- C. The Net Payment Due to the CONTRACTOR shall be the above-mentioned sub-total, from which shall be deducted the retainage amount and the total amount of all previous payments made to the CONTRACTOR.
- D. The OWNER may retain five percent of the amount otherwise due to the Contractor as retainage. Monies retained shall be placed in an interest-bearing account for the benefit of the CONTRACTOR.
- E. Except as otherwise provided in the Supplementary General Conditions, the value of materials stored at the site shall be valued at 95 percent of the value of the materials. This amount shall be based upon the value of all acceptable materials and equipment stored at the site or at another location agreed to in writing by the OWNER; provided, each individual item has a value of more than \$5000 and will become a permanent part of the WORK. The Application for Payment shall also be accompanied by a bill of sale, invoice, or other documentation warranting that the CONTRACTOR has received the materials and equipment free and clear of all liens, charges, security interests, and encumbrances (which are hereinafter referred to as "Liens") and evidence that the materials and equipment are covered by appropriate property insurance and

other arrangements to protect the OWNER's interest therein, all of which will be satisfactory to the OWNER.

14.04 CONTRACTOR'S WARRANTY OF TITLE

- A. The CONTRACTOR warrants and guarantees that title to all work, materials, and equipment covered by an Application for Payment, whether incorporated in the WORK or not, will pass to the OWNER no later than the time of final payment, free and clear of all liens.

14.05 REVIEW OF APPLICATIONS FOR PROGRESS PAYMENT

- A. The OWNER will, within 7 days after receipt of each Application for Payment, either indicate in writing a recommendation of payment and present the Application to the OWNER, or return the Application to the CONTRACTOR indicating in writing the OWNER's reasons for refusing to recommend payment. In the latter case, the CONTRACTOR may make the necessary corrections and resubmit the Application. Thirty days after presentation of the Application for Payment with the OWNER's REPRESENTATIVE recommendation, the amount recommended will (subject to the provisions of Paragraph 14.05B) become due and when due will be paid by the OWNER to the CONTRACTOR.
- B. The OWNER may refuse to make payment of the full amount recommended by the OWNER's REPRESENTATIVE to compensate for claims made by the OWNER on account of the CONTRACTOR's performance of the WORK or other items entitling the OWNER to a credit against the amount recommended, but the OWNER must give the CONTRACTOR written notice within 7 days stating the reasons for such action.

14.06 PARTIAL UTILIZATION

- A. The OWNER may utilize or place into service any item of equipment or other usable portion of the WORK at any time prior to completion of the WORK. The OWNER shall notify the CONTRACTOR in writing of its intent to exercise this right. The notice will identify the equipment or specific portion or portions of the WORK to be utilized or otherwise placed into service.
- B. It shall be understood by the CONTRACTOR that until such written notification is issued, all responsibility for care and maintenance of all items or portions of the WORK to be partially utilized shall be borne by the CONTRACTOR. Upon the issuance of a notice of partial utilization, the OWNER's REPRESENTATIVE will deliver to the OWNER and the CONTRACTOR a written recommendation as to division of responsibilities between the OWNER and the CONTRACTOR with respect to security, operation, safety, maintenance, heat, utilities and insurance.
- C. The CONTRACTOR shall retain full responsibility for satisfactory completion of the WORK, regardless of whether a portion thereof has been partially utilized by the OWNER, and the CONTRACTOR's one-year correction period shall commence only after the date of Final Completion for the WORK.

14.07 DAMAGES

- A. The CONTRACTOR shall pay to the OWNER the amount specified in the Supplementary General Conditions, not as a penalty but as liquidated damages, if he

fails to complete the WORK or specified parts of the WORK within the Contract Time. The periods for which these damages shall be paid shall be the number of Days from the Contract Time as contained in the Agreement, or from the date of termination of any extension of time approved by the OWNER, to the date or dates on which the OWNER issues the Notice of Substantial Completion as provided in Article 14.08, herein. The OWNER may deduct the amount of said damages from any monies due or to become due the CONTRACTOR. After Substantial Completion, if the CONTRACTOR fails to complete the remaining WORK within 45 days or any proper extension thereof granted by OWNER, CONTRACTOR shall pay OWNER the amount stated in the Supplementary General Conditions as liquidated damages for each day that expires after the 45 days, until readiness for final payment.

- B. The said amount is fixed and agreed upon by and between the CONTRACTOR and the OWNER because of the impracticability and extreme difficulty of fixing and ascertaining the actual damages the OWNER would sustain; and said amount is agreed to be the amount of damages which the OWNER would sustain.
- C. If actual damages are assessed, they will include all costs incurred by the OWNER as a result of a delay in the completion time of the work beyond the contract time.
- D. All times specified in the Contract Documents are hereby declared to be of the essence.

14.08 SUBSTANTIAL COMPLETION

- A. When the CONTRACTOR considers the WORK ready for its intended use, the CONTRACTOR will notify the OWNER in writing that the WORK is Substantially Complete. Within a reasonable time thereafter, the OWNER and the CONTRACTOR, shall make an inspection of the WORK to determine the status of completion. If the OWNER does not consider the WORK Substantially Complete, the OWNER will notify the CONTRACTOR in writing giving the reasons therefor. If the OWNER considers the WORK Substantially Complete, the OWNER will execute the Notice of Substantial Completion signed by the CONTRACTOR, which shall fix the date of Substantial Completion.
- B. The Notice of Substantial Completion shall be a release by the CONTRACTOR of the OWNER and its agents from all claims and liability to the CONTRACTOR for anything done or furnished for, or relating to, the WORK or for any act or neglect of the OWNER or of any person relating to or affecting the WORK, to the date of Substantial Completion, except demands against the OWNER for the remainder of the amounts kept or retained from progress payments and excepting pending, unresolved claims filed in writing prior to the date of Substantial Completion. At the time of delivery of the Notice of Substantial Completion, the OWNER's REPRESENTATIVE will deliver to the OWNER and the CONTRACTOR, if applicable, a written recommendation as to division of responsibilities between the OWNER and the CONTRACTOR with respect to security, operation, safety, maintenance, heat, utilities and insurance. Upon the OWNER's acceptance of these recommendations, the recommendation will be binding on the OWNER and the CONTRACTOR until final payment.
- C. The OWNER, upon written notice to the CONTRACTOR, shall have the right to exclude the CONTRACTOR from the WORK after the date of Substantial Completion, and complete all or portions of the WORK at the CONTRACTOR's expense.

14.09 COMPLETION AND FINAL PAYMENT

- A. Upon written certification from the CONTRACTOR that the WORK is complete (if a Notice of Substantial Completion has been issued this certification must occur within 45 days of that date), the OWNER will make a final inspection with the CONTRACTOR. If the OWNER does not consider the WORK complete, the OWNER will notify the CONTRACTOR in writing of all particulars in which this inspection reveals that the WORK is incomplete or defective. The CONTRACTOR shall immediately take the measures necessary to remedy these deficiencies. If the OWNER considers the WORK complete, the CONTRACTOR may proceed to file its application for final payment pursuant to this Article. At the request of the CONTRACTOR, the OWNER's REPRESENTATIVE may recommend to the OWNER that certain minor deficiencies in the WORK that do not prevent the entire WORK from being used by the OWNER for its intended use, and the completion of which will be unavoidably delayed due to no fault of the CONTRACTOR, be exempted from being completed prerequisite to final payment. These outstanding items of pickup work, or "punch list items", shall be listed on the Notice of Substantial Completion, together with the recommended time limits for their completion, and extended warranty requirements for those items and the value of such items.
- B. After the issuance of the Notice of Completion and after the CONTRACTOR has completed corrections that have not been exempted to the satisfaction of the OWNER and delivered to the OWNER all maintenance and operating instructions, schedules, guarantees, bonds, certificates of inspection, marked-up record documents and other documents, all as required by the Contract Documents; and after the OWNER has indicated that the WORK is acceptable, the CONTRACTOR may make application for final payment following the procedure for progress payments. The final application for payment shall be accompanied by all documentation called for in the Contract Documents and other data and schedules as the OWNER may reasonably require, including an affidavit of the CONTRACTOR that all labor, services, material, equipment and other indebtedness connected with the WORK for which the OWNER or his property might in any way be responsible, have been paid or otherwise satisfied, and a consent of the payment bond surety to final payment, all in forms approved by the OWNER.

14.10 FINAL APPLICATION FOR PAYMENT

- A. If, on the basis of the OWNER's observation of the WORK during construction and final inspection, and the OWNER's review of the final application for payment and accompanying documentation, all as required by the Contract Documents, the OWNER is satisfied that the WORK has been completed and the CONTRACTOR has fulfilled all of his obligations under the Contract Documents, the OWNER's REPRESENTATIVE will, within ten days after receipt of the final application for payment, indicate in writing his recommendation of payment and present the application to the OWNER for payment. Thereupon, the OWNER's REPRESENTATIVE will give written notice to the OWNER and the CONTRACTOR that the WORK is acceptable by executing the Notice of Completion. Otherwise, the OWNER will return the application to the CONTRACTOR, indicating in writing the reasons for refusing to recommend final payment, in which case the CONTRACTOR shall make the necessary corrections and resubmit the application.
- B. Within 45 calendar days after the Notice of Completion, the OWNER will make final payment including all deducted retainage and interest to the CONTRACTOR. The OWNER's remittance of final payment shall be the OWNER's acceptance of the WORK

if formal acceptance of the WORK is not indicated otherwise. The final payment shall be that amount remaining after deducting all prior payments and all amounts to be kept or retained under the provisions of the Contract, including the following items:

1. Liquidated or actual damages, as applicable.
2. Two times the value of any outstanding items of pickup work or "punch list items", indicated on the OWNER's Notice of Completion as being yet uncompleted.

14.11 CONTRACTOR'S CONTINUING OBLIGATIONS

- A. The CONTRACTOR's obligation to perform and complete the WORK in accordance with the Contract Documents shall be absolute. Neither recommendation of any progress or final payment by the OWNER, nor the issuance of a Notice of Substantial Completion or Notice of Completion, nor payment by the OWNER to the CONTRACTOR under the Contract Documents, nor any use or occupancy of the WORK or any part thereof by the OWNER, nor any act of acceptance by the OWNER nor any failure to do so, nor any review of a shop drawing or sample submittal, will constitute an acceptance of work or materials not in accordance with the Contract Documents or a release of the CONTRACTOR's obligation to perform the WORK in accordance with the Contract Documents.

14.12 FINAL PAYMENT TERMINATES LIABILITY OF OWNER

- A. Final payment is defined as the last progress payment made to the CONTRACTOR for earned funds, less deductions listed in Paragraph 14.10B herein. The acceptance by the CONTRACTOR of the final payment referred to in Paragraph 14.10 herein, shall be a release of the OWNER and its agents from all claims of liability to the CONTRACTOR for anything done or furnished for, or relating to, the work or for any act or neglect of the OWNER or of any person relating to or affecting the work, except demands against the OWNER for the remainder, if any, of the amounts kept or retained under the provisions of Paragraph 14.10 herein; and excepting pending, unresolved claims filed prior to the date of the Notice of Substantial Completion.

ARTICLE 15 - SUSPENSION OF WORK AND TERMINATION

15.01 SUSPENSION OF WORK BY OWNER

- A. The OWNER may, by written notice to the Contractor, temporarily suspend the WORK, in whole or in part, for a period or periods of time, but not to exceed 90 days, for the convenience and benefit of the OWNER upon the occurrence of any one or more of the following: (1) unsuitable weather; (2) delay in delivery of OWNER- furnished equipment or materials, or such other conditions as are considered unfavorable for prosecution of the work; (3) Shortfall in construction funds; (4) Constraints imposed by public entities, public utilities, property owners or legal proceedings; (5) Failure or delay in acquisition of easements or right-of-way by the OWNER; or (6) Other conditions which, in the opinion of the OWNER, warrant a delay in the WORK. Suspended WORK shall be resumed by the CONTRACTOR within 10 calendar days of receipt from the OWNER of written notice to resume work. Whenever the OWNER temporarily suspends work for any conditions enumerated in this Article, the CONTRACTOR shall be entitled to an adjustment in the Contract Time as specified in Article 12.03 C.

- B. The suspension of work shall be effective upon receipt by the CONTRACTOR of a written order suspending the work and shall be terminated upon receipt by the Contractor of a written order terminating the suspension.
- C. The CONTRACTOR hereby indemnifies and holds harmless the OWNER, their officers, agents and employees, from and against all claims, damages, losses and expenses, including lost profits and attorney's fees, arising out of or resulting from the temporary suspension of the WORK, whether for the OWNER's convenience described in this Article or for whatever other reasons, including the stoppage of work by the OWNER for the CONTRACTOR's failure to comply with any order issued by the OWNER.

15.02 TERMINATION OF AGREEMENT BY OWNER (CONTRACTOR DEFAULT)

- A. In the event of default by the CONTRACTOR, the OWNER may give written notice to the CONTRACTOR of OWNER's intent to terminate the Agreement. The notice shall state the event of default and the time allowed to remedy the default. It shall be considered a default by the CONTRACTOR whenever the CONTRACTOR shall: (1) declare bankruptcy, become insolvent, or assign its assets for the benefit of its creditors; (2) fail to provide materials or workmanship meeting the requirements of the Contract Documents; (3) disregard or violate provisions of the Contract Documents or OWNER's instructions, (4) fail to prosecute the WORK according to the approved progress schedule; or, (5) fail to provide a qualified superintendent, competent workmen, or materials or equipment meeting the requirements of the Contract Documents. If the CONTRACTOR fails to remedy the conditions constituting default within the time allowed, the OWNER may then issue a Notice of Termination.
- B. In the event the Agreement is terminated in accordance with Paragraph 15.02A, the OWNER may take possession of the WORK and may complete the WORK by whatever method or means the OWNER may select. The cost of completing the WORK shall be deducted from the balance which would have been due the CONTRACTOR had the Agreement not been terminated and the WORK completed in accordance with the Contract Documents. If such cost exceeds the balance which would have been due, the CONTRACTOR shall pay the excess amount to the OWNER. If such cost is less than the balance which would have been due, the CONTRACTOR shall have no claim to the difference.

15.03 TERMINATION OF AGREEMENT BY OWNER (FOR CONVENIENCE)

- A. The OWNER may terminate the Agreement at any time if it is found that reasons beyond the control of either the OWNER or CONTRACTOR make it impossible or against the OWNER's interests to complete the WORK. In such a case, the CONTRACTOR shall have no claims against the OWNER except: (1) for the value of the work, as determined by the OWNER, performed by the Contractor up to the date the Agreement is terminated; and, (2) for the cost of materials and equipment on hand, in transit, or on definite commitment, as of the date the Agreement is terminated, which would be needed in the WORK and which meet the requirements of the Contract Documents. The value of work performed and the cost of materials and equipment delivered to the site, as mentioned above, shall be determined by the OWNER in accordance with the procedure prescribed from making the final application for payment and final payment under Paragraphs 14.09 and 14.10.

15.04 TERMINATION OF AGREEMENT BY CONTRACTOR

- A. The CONTRACTOR may terminate the Agreement upon 10 days written notice to the OWNER, whenever: (1) the WORK has been suspended under the provisions of Paragraph 15.01, for more than 90 consecutive days through no fault or negligence of the CONTRACTOR, and notice to resume work or to terminate the agreement has not been received from the OWNER within this time period; or, (2) the OWNER should fail to pay the CONTRACTOR any monies due him in accordance with the terms of the Contract Documents and within 60 days after presentation to the OWNER by the CONTRACTOR of a request therefore, unless within said 10-day period the OWNER shall have remedied the condition upon which the payment delay was based. In the event of such termination, the CONTRACTOR shall have no claims against the OWNER except for those claims specifically enumerated in Paragraph 15.03, and as determined in accordance with the requirements of that paragraph.

ARTICLE 16 - NOTICE

16.01 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 delivered in person to the individual or to a member of the firm or to an officer of the corporation for whom it is intended, or if delivered at or sent by registered or certified mail, postage prepaid, to the last business address known to the giver of the notice.

16.02 TITLE TO MATERIALS FOUND ON THE WORK

- A. The OWNER reserves the right to retain title to all soils, stone, sand, gravel, and other materials developed and obtained from excavations and other operations connected with the WORK. Unless otherwise specified in the Contract Documents, neither the CONTRACTOR nor any Subcontractor shall have any right, title, or interest in or to any such materials. The CONTRACTOR will be permitted to use in the WORK, without charge, any such materials which meet the requirements of the Contract Documents.

16.03 RIGHT TO AUDIT

- A. If the CONTRACTOR submits a claim to the OWNER for additional compensation, the OWNER shall have the right, as a condition to considering the claim, and as a basis for evaluation of the claim, and until the claim has been settled, to audit the CONTRACTOR's books. This right shall include the right to examine books, records, documents, and other evidence and accounting procedures and practices, sufficient to discover and verify all direct and indirect costs of whatever nature claimed to have been incurred or anticipated to be incurred and for which the claim has been submitted. The right to audit shall include the right to inspect the CONTRACTOR's plants, or such parts thereof, as may be or have been engaged in the performance of the WORK. The CONTRACTOR further agrees that the right to audit encompasses all subcontracts and is binding upon subcontractors. The right to examine and inspect herein provided for shall be exercisable through such representatives as the OWNER deems desirable during the CONTRACTOR's normal business hours at the office of the CONTRACTOR. The CONTRACTOR shall make available to the OWNER for auditing, all relevant accounting records and documents, and other financial data, and upon request, shall submit true copies of requested records to the OWNER.

16.04 HAZARDOUS MATERIALS

- A. If the CONTRACTOR during the course of work observes the existence of hazardous material, the CONTRACTOR shall promptly notify the OWNER. The OWNER shall consult with others regarding removal or encapsulation of the hazardous material and the CONTRACTOR shall not perform any work pertinent to the hazardous material prior to receipt or special instruction from the OWNER.

ARTICLE 17 - SUBCONTRACT LIMITATIONS

17.01 SUBCONTRACT LIMITATIONS

- A. In addition to the provisions of Paragraph 6.05 of the General Conditions, the CONTRACTOR shall perform not less than 30 percent of the WORK with its own forces (i.e., without subcontracting). The 30 percent requirement shall be understood to refer to the WORK, the value of which totals not less than 30 percent of the Contract Price.

ARTICLE 18 - PATENTS AND COPYRIGHTS

18.01 PATENTS AND COPYRIGHTS

- A. The CONTRACTOR shall indemnify and save harmless the OWNER, the ENGINEER, and their officers, agents, and employees, against all claims or liability arising from the use of any patented or copyrighted design, device, material, or process by the CONTRACTOR or any of his subcontractors in the performance of the WORK.

-END OF SECTION-

SECTION 00800

SUPPLEMENTARY GENERAL CONDITIONS

PART 1 - GENERAL

These Supplementary General Conditions make additions, deletions, or revisions to the General Conditions as indicated herein. All provisions which are not so added, deleted, or revised remain in full force and effect. Terms used in these Supplementary General Conditions which are defined in the General Conditions have the meanings assigned to them in the General Conditions.

SGC-1 DEFINITIONS

Add the following definitions to Article 1:

OWNER - The OWNER is further defined as South Valley Water Reclamation Facility, 7495 South 1300 West, West Jordan, Utah 84084. Telephone No.: (801) 566-7711.

OWNER'S REPRESENTATIVE - The OWNER'S REPRESENTATIVE is defined in SGC - 9.03 on page 00800-5. The OWNER'S REPRESENTATIVE for this project shall be Taigon Worthen.

BIDDER - The person, firm, or corporation, partnership or joint venture or LLC submitting a Bid for the Work.

CONTRACTOR - The person, firm, or corporation, partnership or joint venture or LLC with whom the OWNER has executed the Agreement.

ENGINEER - Defined as Carollo Engineers, Inc. 7090 South Union Park Avenue, Suite 600, Midvale, Utah 84047.

SGC-2.02 COPIES OF DOCUMENTS

The OWNER shall furnish to the CONTRACTOR 1 copies of the Contract Documents which may include bound reduced drawings, if any, together with 1 sets of full-scale Drawings if requested. Additional quantities of the Contract Documents will be furnished at reproduction cost plus mailing costs if copies are mailed.

SGC-4.02 REPORTS OF PHYSICAL CONDITIONS

In the preparation of the Contract Documents, the OWNER has relied upon:

- A. The following report of physical conditions in or relating to existing surface and subsurface structures (except Underground utilities) which are at or contiguous to the site of the WORK.
 1. Report dated May 10, 2023 revised December 2024 prepared by Infinity Corrosion Group, Inc. and Carollo Engineers, entitled "Capital Facilities Plan: Cathodic Protection Section"

- B. Copies of this report may be examined at the office of the OWNER, during regular business hours. As provided in Paragraph 4.02 of the General Conditions and as identified and established above, the CONTRACTOR may rely upon the accuracy of the technical data contained in such reports and drawings, except for such physical dimensions that can be field verified; however, the interpretation of such technical data, including any interpolation or extrapolation thereof, and opinions contained in such reports and drawings are not to be relied on by the CONTRACTOR.

SGC-5.01 BONDS

Delete the first sentence of Paragraph 5.1A and add the following:

The CONTRACTOR shall furnish a satisfactory Performance Bond in the amount of 100 percent of the Contract Price and a satisfactory Payment Bond in the amount of 100 percent of the Contract Price as security for the faithful performance and payment of all the CONTRACTOR's obligations under the Contract Documents.

SGC-5.02 INSURANCE

- A. Substitute for Paragraph 5.02.B. the following:

All insurance required by the Contract Documents to be purchased and maintained by the CONTRACTOR shall be obtained from insurance companies that are duly licensed, admitted, and authorized to issue insurance policies for the limits and coverage so required in the State in which the Project is located. Such insurance companies shall have a current Best's Rating of at least an "A" (Excellent) general policy holder's rating and a Class VIII financial size category and shall also meet such additional requirements and qualifications as may be provided in the Supplementary General Conditions.

- B. Add the following to Paragraph 5.02.B.5:

If the OWNER finds it necessary to occupy or use a portion or portions of the project prior to Substantial Completion, the OWNER shall provide notice of occupancy without the need for mutual agreement between the OWNER and the CONTRACTOR and to which the insurance company providing the Builder's Risk Insurance has consented by endorsement to the policy or policies.

- C. The limits of liability for the insurance required by Paragraph 5.2 of the General Conditions shall provide coverage for not less than the following amounts or greater where required by Laws and Regulations. Limits may be provided by a combination of primary and excess liability policies or through a single policy. If the limits are provided by a combination of primary and excess liability policies, then the excess or umbrella liability coverages shall include commercial general, comprehensive automobile, and employer's liability and shall provide coverage at least as broad as the underlying policies.

- 1. Workers' Compensation:

a. State:	Statutory
b. Applicable Federal (e.g. USHL&H):	Statutory
c. Employer's Liability:	\$1,000,000

2. Comprehensive or Commercial General Liability:

Combined Single Limit:

a. Premises/operations

\$ 1,000,000
\$ 2,000,000

Each Occurrence
Annual Aggregate

b. Products/completed operations

\$ 1,000,000
\$ 2,000,000

Each Occurrence
Annual Aggregate

c. Personal Injury

\$ 1,000,000
\$ 2,000,000

Each Occurrence
Annual Aggregate

d. Policies shall include premises/operations, products, completed operations, independent contractors, owners' and contractors' protective, explosion, collapse, underground hazards, broad form contractual, personal injury with employment contractual exclusions deleted, and broad form property damage.

e. If policies are written on a Commercial General Liability form, the General Aggregate shall be at least two times the each occurrence limit or be written on a "per project" basis.

f. All policies shall be written on an occurrence basis. If the CONTRACTOR would like to substitute any "claims made" liability policies, then these must be pre-approved in writing according to the terms and conditions they may impose.

g. If policies are written for split limits, limits shall be equal for bodily injury and property damage liability.

3. Comprehensive Automobile Liability (including owned, hired, and non-owned vehicles):

Combined Single Limit:

a. Bodily Injury and Property Damage: \$2,000,000 each accident.

b. If policies are written for split limits, limits shall be equal for bodily injury per person, bodily injury per accident and property damage.

4. Excess Liability Insurance:

a. \$4,000,000 over all underlying coverage lines.

5. Builder's Risk Insurance:

a. In an amount equal to the replacement cost of the completed value of the

project or \$4,000,000 whichever is greater.

- b. Any deductibles of self-insured retentions shall be as agreed to by the OWNER and CONTRACTOR.
 - c. The CONTRACTOR shall include flood and earthquake coverage in the Builder's Risk Insurance requirements under Paragraph 5.02.B.5 of the General Conditions, with a minimum limit of \$4,000,000 per event or occurrence.
- D. All policies shall provide that the CONTRACTOR agrees to waive all rights of subrogation against the OWNER, the ENGINEER, and their subconsultants, employees, officers and directors, for WORK performed under the Agreement. Endorsements shall be provided with certificates of insurance.
- E. All policies shall also specify that the insurance provided by the CONTRACTOR will be considered primary and not contributory to another insurance available to the OWNER or ENGINEER.
- F. All policies except Workers' Compensation and Builders Risk shall name the OWNER, including their officers, directors or board members, employees agents or any others associated with the management or operations of South Valley Water Reclamation Facility; Engineer, their consultants, subconsultants, shall be additional insureds on the Auto Liability and Commercial General Liability policies. The Builders Risk insurance shall name the CONTRACTOR, OWNER, and ENGINEER as named insureds and subcontractors and additional insureds. The Workers' Compensation policy shall name the OWNER as additional insured by means of an alternative employer endorsement, with respect to the employer's liability coverage only.
- G. All policies shall provide for 60 days' notice prior to any cancellation, reduction in coverage or nonrenewal.
- H. The deductible or self-insured retention on Comprehensive or Commercial General Liability shall not be greater than \$25,000. All deductibles are the responsibility of the CONTRACTOR.

SGC-6.05 SUBCONTRACT LIMITATIONS

Add the following as paragraph 6.05.B of the General Conditions

- B. The CONTRACTOR shall perform not less than 30 percent of the WORK with its own forces (i.e., without subcontracting). The 30 percent requirement shall be understood to refer to the WORK, the value of which totals not less than 30 percent of the Contract Price.

SGC-6.06 PERMITS

- A. The CONTRACTOR shall acquire and comply with the following permits if applicable:
 - 1. State permits to construct and/or operate sources of air pollution.

2. Certificates and permits are required for sources such as, but not limited to, the following:
 - a. Land disturbing activities.
 - b. Processing equipment (sand, gravel, concrete batch plant, etc.).
3. Encroachment Permit.

SGC-9.03 PROJECT REPRESENTATION

- A. The OWNER's Representative, will act as directed by and under the supervision of the OWNER and will confer with the OWNER regarding its actions. The OWNER's REPRESENTATIVE dealings in matters pertaining to the WORK shall, in general, be only with the OWNER and the CONTRACTOR, and dealings with Subcontractors shall only be through or with the full knowledge of the CONTRACTOR.
- B. The OWNER's REPRESENTATIVE shall have the duties and responsibilities set forth in this paragraph.
 1. Review the progress schedule of Shop Drawing submittals and schedule of values prepared by the CONTRACTOR and consult with the ENGINEER concerning their acceptability, as applicable.
 2. Attend preconstruction conferences. Arrange a schedule of progress meetings and other job conferences as required and notify in advance those expected to attend.
Attend meetings and maintain and circulate copies of minutes thereof.
 3. Serve as the OWNER's liaison with the CONTRACTOR, working principally through the CONTRACTOR's superintendent and assist said superintendent in understanding the intent of the Contract Documents.
 4. Receive Shop Drawings and samples furnished by the CONTRACTOR.
 5. Conduct on-site observations of the WORK in progress to assist the OWNER in determining if the WORK is proceeding in accordance with the Contract Documents.
 6. Transmit to the CONTRACTOR the OWNER's or ENGINEER's clarifications and interpretations of the Contract Documents.
 7. Consider and evaluate the CONTRACTOR's suggestions for modifications in the Contract Documents and report them with recommendations to the OWNER.
 8. Review applications for payment with the CONTRACTOR for compliance with the established procedure for their submittal and forward them with recommendations to the OWNER, noting particularly their relation to the schedule of values, work completed, and materials and equipment delivered at the Site but not incorporated in the WORK.
 9. During the course of the WORK, verify that certificates, maintenance and operation manuals, and other data required to be assembled and furnished by the CONTRACTOR are applicable to the items actually installed.

10. Before the OWNER prepares a Notice of Completion, as applicable, submit to the CONTRACTOR a list of observed items requiring completion or correction.
11. Conduct final inspection in the company of the ENGINEER, the OWNER, and the CONTRACTOR, and prepare a punch list of items to be completed or corrected.
12. Verify that all items on the punch list have been completed or corrected and make recommendations concerning acceptance.

SGC-11.03D EQUIPMENT

The CONTRACTOR will be paid for the use of equipment at the rental rate listed for such equipment specified in the current edition of the following reference publication:

- A. "Rental Rate Blue Book for Construction Machinery" as published by the Machinery Information Division of the K-III Directory Corporation, telephone number (800) 669-3282.

SGC-12.02 WEATHER DELAYS

The CONTRACTOR's construction schedule shall anticipate 5 days of delay due to unusually severe weather.

SGC-14.03C AMOUNT OF RETENTION

Add the following to Paragraph 14.03C of the General Conditions:

Unless otherwise prescribed by law, the OWNER may retain a portion of the amount otherwise due to the CONTRACTOR, as follows:

1. Retention of 5 percent of each approved progress payment until the WORK is certified as having reached substantial completion.

SGC-14.03D VALUE OF MATERIALS STORED AT THE SITE

Unless otherwise prescribed by law or prescribed in Assigned Purchase Order Agreements, the value of materials stored at the SVWRF shall be 95 percent of the value of such materials.

SGC-14.05.A REVIEW OF APPLICATIONS FOR PROGRESS PAYMENT

Replace the last sentence with the following: "Forty-Five days after presentation of the Application for Payment with the ENGINEER'S recommendation, the amount recommended will (subject to the provisions of Paragraph 14.05B) become due and when due will be paid by the OWNER to the CONTRACTOR."

SGC-14.07.A DAMAGES

Add the following sentence: "The amount of liquidated damages shall be \$500 per calendar day."

-END OF SECTION-

SECTION 00810

SUPPLEMENTARY GENERAL CONDITIONS (UTAH)

SGC-18 UTAH STATE REQUIREMENTS

- A. Retainage of Compensation to CONTRACTOR: Pursuant to Utah Code Ann. 13-8-5, any retainage of CONTRACTOR's compensation hereunder shall be placed in an interest-bearing escrow account and the interest which accrues thereon shall do so for the benefit of CONTRACTOR and Subcontractors. Release of the retainage shall be as contemplated by the General Conditions and Supplementary General Conditions, Article 14 – Payments to Contractor, Liquidated Damages and Completion. Any interest which has accrued on the retainage and which is released to the CONTRACTOR shall be promptly disbursed by CONTRACTOR to itself and/or to Subcontractors on a pro rata basis.
- B. Certification of Change Orders: Pursuant to Utah Code Ann. Section 63G-6-602, no change order shall be authorized without a written certification, signed by an official representative of the OWNER responsible for monitoring and reporting the status of the costs of the total Project or the contract budget, stating that funds are available for the subject change order.
- C. Adjustments in Price: Pursuant to Utah Code Ann. Section 63G-6-601, any adjustment in compensation due CONTRACTOR under this agreement shall be computed in one or more of the following ways:
1. By agreement on a fixed-price adjustment before commencement of the pertinent performance or as soon as practicable;
 2. By unit prices specified in the contract or subsequently agreed upon;
 3. By the costs attributable to the events or situations with adjustment of profit or fee, all as specified in the contract or subsequently agreed upon;
 4. In any other manner as OWNER and CONTRACTOR may mutually agree;
 5. In the absence of agreement between CONTRACTOR and OWNER, by a unilateral determination by OWNER of the costs attributable to the events or situations with adjustment of profit or fee, all as computed by the OWNER in accordance with Utah Code Ann. Section 63G-6-415 and/or the rules and regulations promulgated thereunder.
- D. Cost Principles: CONTRACTOR shall comply in all respects with applicable provisions of Utah Code Ann. Section 63G-6-415, and the rules and regulations promulgated thereunder. To the extent that such provisions are inconsistent with the other terms and conditions of this agreement, the former shall prevail. OWNER may, at reasonable times and places, audit the books and records of CONTRACTOR, any Subcontractor, or any other person who has submitted cost or pricing data pursuant to said section. The books and records of CONTRACTOR shall be maintained for 3 years following the end of the fiscal year in which final payment is made under the Contract. The books and records of the Subcontractor and all other persons shall be maintained for 3 years following the end of the fiscal year in which final payment is made under the subcontract and/or to the person, unless a shorter period is otherwise authorized in writing.

- E. Project Safety: CONTRACTOR shall comply in all respects with the Utah Occupational Safety and Health Act, Utah Code Ann. Sections 34A-6-101 et seq., and the rules, regulations and standards promulgated thereunder by the Utah State Industrial Commission, as such act, rules, regulations or standards now exist or may be amended during the term of this agreement. Specifically, but not in limitation, CONTRACTOR shall comply with Construction Standards, Rules and Regulations, promulgated by the Utah Occupation and Safety and Health Division, Utah State Industrial Commission.
- F. Protection of Underground Utility Facilities: CONTRACTOR shall comply in all respects with Utah Code Ann. Section 54 Chapter 8a et seq. and the rules and regulations promulgated thereunder, as it now exists or may be amended during the term of this agreement, with regard to the protection of underground utility facilities. Specifically, but not in limitation, CONTRACTOR shall notify the appropriate public utility(s) when making an excavation with power equipment. CONTRACTOR shall further refrain from proceeding with excavation until such time as the appropriate public utility(s) have advised CONTRACTOR of the location of any underground facilities in the area proposed for excavation by marking such facilities with stakes, paint, or other customary way, indicating horizontal location within 24 inches of the outside dimensions of both sides of the underground facility.
- G. Review of Construction by OWNER: OWNER may, at its option, assign a field representative to review the construction of the Project in progress. Said representative will cooperate with the ENGINEER/OWNER in attempting to note deviations from, or necessary adjustments to, the Contract Documents or deficiencies or defects in the construction. Said representative's presence on the Project, however, shall in no way relieve CONTRACTOR of its primary responsibility for construction of the Project in accordance with the Contract Documents.
- H. OWNER Inspection: Pursuant to Utah Code Ann. Section 63G-6-418, OWNER may, at reasonable times, inspect the plant or place of business of the CONTRACTOR or any Subcontractor which is related to the performance of this contract or any subcontract entered into hereunder.
- I. Code Requirements: The provisions of the latest editions of the International Building Code, National Electric Code, and Utah Plumbing Code, as adopted or followed in Utah, including standards adopted in relation thereto, as supplemented or amended, shall apply to the Project except as specific variances may be expressly authorized by the OWNER. If the Contract Documents fail to meet the minimum standards of the referenced codes, CONTRACTOR shall be responsible to bring such information to the attention of the architect/OWNER associated with the Project. Subcontractors shall also inform CONTRACTOR of any infractions of the above-referenced codes regarding their own particular trades. In the event that workmanship or incidental materials are not specified or indicated, they shall at least conform to the above-referenced codes and shall be incorporated into the Work without any additional cost to the OWNER. If the Contract Documents call for items or workmanship which exceed code requirements, the Contract Documents shall take precedence over such requirements.
- J. Workers Compensation: CONTRACTOR shall comply in all respects with Utah Code Ann. Section 34A-2-101, et seq. and the rules and regulations promulgated thereunder by the Utah State Industrial Commission, as such law, rules or regulations now exist or may be amended during the term of this agreement.
- K. Archaeological, Anthropological, or Paleontological Findings: CONTRACTOR shall comply with Utah Code Ann. Section 9-8-301 et seq., with respect to the discovery of archaeological, anthropological, or paleontological findings at or on the Project site.

Specifically, but not in limitation, CONTRACTOR shall promptly notify the Utah Division of State History of any such findings.

L. Nondiscrimination Equal Employment Opportunity: CONTRACTOR shall comply in all respects with the Utah Anti-Discrimination Act of 1965, Utah Code Ann. Section 34A-5-101 et seq., and the rules and regulations promulgated thereunder by the Utah State Industrial Commission and/or its Anti-Discrimination Division, as such act, rules or regulations now exist or may be amended during the term of this agreement, specifically:

1. CONTRACTOR shall not discriminate against any employee or applicant for employment because of race, color, sex, religion, ancestry or national origin.
2. In all solicitations or advertisements for employees, CONTRACTOR shall state that all qualified applicants shall receive consideration without regard to race, color, sex, religion, ancestry or national origin.
3. CONTRACTOR shall send to each labor union or worker's representative notices to be provided, stating the CONTRACTOR's responsibilities under the statute.
4. CONTRACTOR shall furnish such information or reports as are requested by the Utah State Industrial Commission and/or its Anti-Discrimination Division, for the purpose of determining compliance with the statute.
5. CONTRACTOR shall include the provisions of paragraphs 1 through 4 above in all subcontracts for this Project.
6. Failure of the CONTRACTOR to comply with the statute, the rules and regulations promulgated thereunder, and this provision, shall be deemed a breach of contract entitling OWNER, in its discretion, to cancel, terminate, or suspend this agreement in whole or in part.

M. Affirmative Action: CONTRACTOR shall take affirmative action to insure that applicants are employed and that employees are treated during employment without regard to their race, color, religion, sex or national origin. Such action shall include, but shall not be limited to: employment; upgrading; demotion or transfer; recruitment or recruitment advertising; layout or termination; rates of pay or other forms of compensation; and selection for training, including apprenticeship.

At its discretion, OWNER may perform a compliance review at CONTRACTOR's place of business and/or the Project site to verify CONTRACTOR's compliance with this provision. Such compliance verifications may be conducted with such frequency as is needed to assure CONTRACTOR's compliance with this provision.

N. Citizens Preferred: Pursuant to Utah Code Ann. Section 34-30-1, CONTRACTOR shall give preference in hiring to citizens of the United States or those having declared their intention to become citizens; failure to comply may render this contract null and void at the discretion of OWNER.

- O. Veterans' Preference: Pursuant to Utah Code Ann. Section 71-10-2, CONTRACTOR shall give preference in hiring to honorable discharged veterans who have served in the Armed Forces of the United States during a period of conflict, war, or other national emergencies as defined by Congress, and to any un-remarried surviving spouse of an honorably discharged veteran, if they possess qualifications for that employment and if the honorably discharged veteran is or, if deceased, was a resident of the State of Utah.

- P. Specific OWNER Requirements: CONTRACTOR shall comply with the specific rules and regulations promulgated by OWNER pursuant to authority granted or retained under the Utah Procurement Code, Utah Code Ann. Section 63G-6-101, et seq.

-END OF SECTION-

APPENDIX A - SPRINKLER RECORD DRAWING

DOCUMENT 00823

ESCROW BID DOCUMENTS

ARTICLE 1 - SCOPE

- 1.01 The 3 lowest Bidders shall submit, within the specified time after receipt of Bids, 1 copy of all documentary information generated in preparation of Bid prices for this Project. This material is hereinafter referred to as "Escrow Bid Documents." The Escrow Bid Documents of the Successful Bidder will be held in escrow for the duration of the contract.
- 1.02 The Successful Bidder agrees, as a condition of award of the contract, that the Escrow Bid Documents constitute the complete, only, and all documentary information used in preparation of his Bid. No other Bid preparation information shall be considered in resolving disputes.
- 1.03 Nothing in the Escrow Bid Documents shall change or modify the terms or conditions of the Contract Documents.

ARTICLE 2 - OWNERSHIP

- 2.01 The Escrow Bid Documents are, and shall always remain, the property of Contractor, subject only to joint review by Owner and Contractor, as provided in this Document.
- 2.02 Owner stipulates and expressly acknowledges that the Escrow Bid Documents, as defined in this Document, constitute trade secrets. This acknowledgment is based on Owner's express understanding that the information contained in the Escrow Bid Documents is not known outside the Bidder's business, is known only to a limited extent and only by a limited number of employees of the Bidder, is safeguarded while in Bidder's possession, is extremely valuable to Bidder, and could be extremely valuable to Bidder's competitors by virtue of it reflecting Bidder's contemplated techniques of construction. Owner acknowledges that the Bidder expended substantial sums of money in developing the information included in the Escrow Bid Documents and further acknowledges that it would be difficult for a competitor to replicate the information contained therein. Owner further acknowledges that the Escrow Bid Documents and the information contained therein are made available to Owner only because such action is an express prerequisite to award of the contract. Owner further acknowledges that the Escrow Bid Documents include a compilation of information used in the Bidder's business, intended to give the Bidder an opportunity to obtain an advantage over competitors who do not know of or use the contents of the documentation. Owner agrees to safeguard the Escrow Bid Documents, and all information contained therein, against disclosure to the fullest extent permitted by law.

ARTICLE 3 - PROGRAM

- 3.01 Escrow Bid Documents will be used to assist in the negotiation of price adjustments and Change Orders and in the settlement of disputes, claims, and other controversies. They will not be used for pre-award evaluation of Contractor's anticipated methods of construction or to assess Contractor's qualifications for performing the Work.

ARTICLE 4 - FORMAT AND CONTENTS

- 4.01 Bidders may submit Escrow Bid Documents in their usual cost-estimating format. It is not the intention of this section to cause the Bidder extra work during the preparation of the Bid, but to ensure that the Escrow Bid Documents will be adequate to enable complete understanding and proper interpretation for their intended use. The Escrow Bid Documents shall be in the language of the Specifications.
- 4.02 It is required that the Escrow Bid Documents clearly itemize the estimated costs of performing the work of each Bid item contained in the Bid schedule. Bid items should be separated into subitems as required to present a complete and detailed cost estimate and allow a detailed cost review. The Escrow Bid Documents shall include all quantity takeoffs; crew; equipment; calculations of rates of production and progress; copies of quotations from equipment manufacturers, Subcontractors, and Suppliers; and memoranda, narratives, consultants' reports, add/deduct sheets, and all other information used by the Bidder to arrive at the prices contained in the Bid Form. Estimated costs should be broken down into the Bidder's usual estimate categories, such as direct labor, repair labor, equipment operation, equipment ownership, expendable materials, permanent materials, and subcontract costs as appropriate. Plant and equipment and indirect costs should be detailed in the Bidder's usual format. Contractor's allocation of plant and equipment, indirect costs, contingencies, markup, and other items to each Bid item shall be included.
- 4.03 All costs shall be identified. For Bid items amounting to less than \$10,000, estimated unit costs are acceptable without a detailed cost estimate, provided that labor, equipment, materials, and subcontracts, as applicable, are included, and provided that indirect costs, contingencies, and markup, as applicable, are allocated.
- 4.04 Bidding Documents provided by the Owner should not be included in the Escrow Bid Documents unless needed to comply with the requirements of this section.

ARTICLE 5 - SUBMITTAL

- 5.01 The Escrow Bid Documents shall be submitted in a sealed container within 72 hours after the time of receipt of Bids. The container shall be clearly marked on the outside with the Bidder's name, date of submittal, project name, and the words "Escrow Bid Documents."
- 5.02 The Escrow Bid Documents shall be accompanied with the Bid Documentation Certification, signed by an individual authorized by the Bidder to execute the Bid Form, stating that the material in the Escrow Documentation constitutes the complete, only, and all documentary information used in preparation of the Bid and that he has personally examined the contents of the Escrow Bid Documents container and has found that the documents in the container are complete.

- 5.03 Prior to award, Escrow Bid Documents of the apparent Successful Bidder will be unsealed, examined, organized, and inventoried by representatives of Owner, together with members of Contractor's staff who are knowledgeable in how the Bid was prepared.
- 5.04 This examination is to ensure that the Escrow Bid Documents are authentic, legible, and complete. It will not include review of, and will not constitute approval of, proposed construction methods, estimating assumptions, or interpretations of Contract Documents. This examination is subject to the condition that, as trade secrets, the Escrow Bid Documents are proprietary and confidential as described in this Document. Examination will not alter any condition(s) or term(s) of the contract.
- 5.05 If all the documentation required in this Document has not been included in the original submittal, additional documentation shall be submitted, at Owner's discretion, prior to award of the contract. The detailed breakdown of estimated costs shall be reconciled and revised, if appropriate, by agreement between Contractor and Owner before making the award.
- 5.06 If the contract is not awarded to the apparent Successful Bidder, the Escrow Bid Documents of the Bidder next to be considered for award shall be processed as described above.
- 5.07 Timely submission of complete Escrow Bid Documents is an essential element of the Bidder's responsibility and a prerequisite to contract award. Failure to provide the necessary Escrow Bid Documents will be sufficient cause for Owner to reject the Bid.
- 5.08 If the Bidder's proposal is based on subcontracting any part of the Work, each Subcontractor whose total subcontract price exceeds 5 percent of the total Contract Price proposed by the Bidder shall provide separate Escrow Bid Documents to be included with those of the Bidder. These documents will be opened and examined in the same manner and at the same time as the examination described above for the apparent Successful Bidder.
- 5.09 If Contractor subcontracts any portion of the Work after award, Owner retains the right to require Contractor to submit Escrow Bid Documents from the Subcontractor before the subcontract is approved.
- 5.10 Escrow Bid Documents submitted by unsuccessful Bidders will be returned unopened, unless opened as provided above, as soon as they are no longer needed by Owner and no later than immediately following award of the contract.

ARTICLE 6 - STORAGE

- 6.01 The Escrow Bid Documents of the Successful Bidder will be placed in escrow prior to award of the contract, for the life of the contract, in a mutually agreeable institution. The cost of storage will be paid by Owner.

ARTICLE 7 - EXAMINATION AFTER AWARD OF CONTRACT

- 7.01 The Escrow Bid Documents shall be examined by both Owner and Contractor, at any time deemed necessary after award of the contract by either Owner or Contractor, to assist in the negotiation of price adjustments and Change Orders, or the settlement of disputes.
- 7.02 Examination of the Escrow Bid Documents after award of the contract is subject to the following conditions:
1. As trade secrets, the Escrow Bid Documents are proprietary and confidential as described in this Document.
 2. Owner and Contractor shall each designate, in writing to the other party and a minimum of 10 days prior to examination, representatives who are authorized to examine the Escrow Bid Documents. No other person shall have access to the Escrow Bid Documents.
 3. Access to the Escrow Bid Documents will take place only in the presence of duly designated representatives of both Owner and Contractor.

ARTICLE 8 - FINAL DISPOSITION

- 8.01 The Escrow Bid Documents will be returned to Contractor at such time as the contract has been completed and final settlement has been achieved.

BID DOCUMENTATION

---- CERTIFICATION ----

I, THE UNDERSIGNED, HEREBY CERTIFY THAT THE BID DOCUMENTATION CONTAINED IN THIS DOCUMENT CONSTITUTES THE COMPLETE, ONLY, AND ALL DOCUMENTARY INFORMATION USED IN PREPARATION OF THE BID AND THAT I HAVE PERSONALLY EXAMINED THESE CONTENTS AND HAVE FOUND THAT THIS BID DOCUMENTATION IS COMPLETE.

BY: _____

TITLE: _____

FIRM: _____

DATE: _____

END OF DOCUMENT

**SECTION 01110
SUMMARY OF WORK**

PART 1 GENERAL

1.01 SECTION INCLUDES

- A. This section describes the project and the work to be performed under this contract. Detailed requirements and extent of work are stated in the applicable Specification sections and shown on the Drawings.
- B. Construct work as described in the Contract Documents and as specified herein.
 - 1. Provide the materials, equipment, and incidentals required to make the project fully functional and operational.
 - 2. Provide the labor, equipment, tools, and consumable supplies required for a complete project.
 - 3. Test and place the completed project in operation.
 - 4. Provide the special tools, spare parts, lubricants, supplies, or other materials as required.
 - 5. Drawings and specifications do not indicate or describe all of the work required to complete the project. Any additional details required for the correct installation of selected products are to be provided by the Contractor and coordinated with the Engineer.

1.02 ORGANIZATION AND INTERPRETATION OF CONTRACT DOCUMENTS

- A. Specifications included in these Contract Documents establish the performance, quality requirements, location and general arrangement of materials and equipment, and establish the minimum standards of quality of workmanship and appearance.
- B. Specification sections have not been divided into groups for work of subcontractors or various trades.
- C. A part of the work that is necessary or required to make each installation satisfactory and operable for its intended purpose, even though it is not specifically included in the Specifications or shown on the Drawings, shall be performed as incidental work as if it were described in the Contract Documents.
- D. Whenever in the Technical Specifications, requirements are expressed with active verbs and no subjects, the words, "The Contractor shall," have been omitted as a matter of style, and it is intended that the Contractor is the party responsible for taking the action required.

1.03 DESCRIPTION OF PROJECT

- A. Work under this contract document consists of the following primary tasks:
 - 1. Installation of cathodic protection test stations, galvanic anodes, and remote corrosion monitoring stations as shown on the Drawings and provided in the specifications.

2. Site and surface restoration for Work activities in all areas including, but not limited to asphalt, sidewalks, topsoil and sod replacement, sprinklers, landscape fabric and rock, and unimproved areas.

1.04 SPECIFIC WORK REQUIRED

- A. CONTRACTOR shall provide labor, equipment, and materials to complete the installations and work as defined in the Contract Documents and shown on the Drawings.
- B. CONTRACTOR shall obtain all permits from local, county, and State entities, as required, before beginning work. Submit all permits at least 10 business days in advance of beginning work.
- C. CONTRACTOR shall coordinate with the Engineer and Owner personnel before beginning work to identify temporary work easements and permanent easements.
- D. Where required, Contractor shall coordinate with local Power Company.
- E. Completion of all work shall result in fully functioning equipment and systems.
- F. The following specific work is included in the project:
 1. Vacuum excavation for locating existing utilities and pipes to receive cathodic protection will be required.
 2. Installation of Cathodic Protection Test Stations and associated facilities as shown on Drawings.
 3. Excavation, backfill, site restoration as noted, purchasing of cathodic protection materials is the responsibility of the bidding Contractor.

1.05 SCHEDULE OF WORK

- A. Work will be performed under the following schedule:
 1. Anticipated Notice to Proceed: July 2026
 2. Substantial Completion: 90 days from Notice to Proceed
 3. Final Completion: 15 days from Substantial Completion.
- B. Contractor shall prepare and submit a project schedule along with a list of proposed personnel and equipment which indicate the ability to meet the project schedule.

1.06 ACTUAL DAMAGES

- A. Actual damages will be assessed in accordance with the Agreement, General Conditions, and Supplemental Conditions of Owner's Contract Document.

1.08 PROJECT MEETINGS

- A. Preconstruction Conference:
 1. Prior to the commencement of WORK at the site, a preconstruction conference will be held at a mutually agreed time and place and shall be attended by the CONTRACTOR's Project Manager, CONTRACTOR's superintendent, and

Subcontractors as the CONTRACTOR deems appropriate. Other attendees will be:

- a. ENGINEER and the Project Representative.
 - b. Representatives of the OWNER.
 - c. Government representatives as appropriate.
 - d. Others as requested by CONTRACTOR, OWNER, or ENGINEER.
2. The purpose of the conference is to designate responsible personnel and establish a working relationship. Matters requiring coordination will be discussed and procedures for handling such matters established. The complete agenda will be furnished to the CONTRACTOR prior to the meeting date. The CONTRACTOR should be prepared to discuss all of the items listed below.
- a. CONTRACTOR's tentative schedules.
 - b. Discussion of CONTRACTOR's submittals provided prior to meeting.
 - c. Maintaining record drawings.
 - d. Field decisions and change orders.
 - e. Use of project site, office and storage areas, security, housekeeping, and OWNER's needs.
 - f. Major equipment deliveries and priorities.
 - g. CONTRACTOR's assignments for safety and first aid. Progress Meetings
3. The OWNER's REPRESENTATIVE shall schedule weekly on-site progress meetings with the CONTRACTOR and OWNER as requested or as required by progress of the WORK. The CONTRACTOR, ENGINEER, and all Subcontractors active on the site must attend each meeting. CONTRACTOR may at its discretion request attendance by representatives of its Suppliers, manufacturers, and other Subcontractors.
4. The OWNER's REPRESENTATIVE shall conduct the meetings and will arrange for keeping and distributing the minutes. The purpose of the meetings will be to review the progress of the WORK, maintain coordination of efforts, discuss changes in scheduling, and resolve other problems which may develop. During each meeting, the CONTRACTOR is required to present any issues which may impact his work, with a view to resolve these issues expeditiously.

PART 2 PRODUCTS - (Not Used)

PART 3 EXECUTION - (Not Used)

END OF SECTION

SECTION 01116

CONTRACT DOCUMENT LANGUAGE

PART 1 GENERAL

1.01 SUMMARY

- A. Section Includes: Explanation of arrangement, language, reference standards, and format.

1.02 REFERENCES

- A. Construction Specifications Institute (CSI):
 1. MasterFormat™.
 2. SectionFormat™.
 3. PageFormat™.

1.03 PROJECT MANUAL ARRANGEMENT

- A. Document and Section numbers used in Project Manual, and Project Manual arrangement are in accordance with CSI MasterFormat™, except where departures have been deemed necessary.
- B. Sections are written in CSI SectionFormat™, Three-Part Section Format, except where departures have been deemed necessary.
- C. Page format for Sections in the Project Manual is in PageFormat™, except where departures have been deemed necessary.

1.04 CONTRACT DOCUMENT LANGUAGE

- A. Specification Section Paragraphs entitled "Section Includes" summarize briefly what is generally included in the section.
 1. Requirements of Contract Documents are not limited by "Section Includes" paragraphs.
- B. Specifications have been partially streamlined by intentionally omitting words and phrases, such as "the Contractor shall," "in conformity therewith," "shall be" following "as indicated," "a," "an," "the" and "all."
 1. Assume missing portions by inference.
- C. Phrase "by Engineer" modifies words such as "accepted," "directed," "selected," "inspected," and "permitted," when they are unmodified.
- D. Phrase "to Engineer" modifies words such as "submit," "report," and "satisfactory," when they are unmodified.

- E. Colons (:) are used to introduce a list of particulars, an appositive, an amplification, or an illustrative quotation:
 - 1. When used as an appositive after designation of product, colons are used in place of words "shall be."
- F. Word "provide" means to manufacture, fabricate, deliver, furnish, install, complete, assemble, erect in place, test, or render ready for use or operation, including necessary related material, labor, appurtenances, services, and incidentals.
- G. Words "Contractor shall" are implied when direction is stated in imperative mood.
- H. Term "products" includes materials and equipment as specified in Section 01600 - Product Requirements.

PART 2 PRODUCTS

Not Used.

PART 3 EXECUTION

Not Used.

END OF SECTION

SECTION 01140

WORK RESTRICTIONS

PART 1 GENERAL

1.01 SUMMARY

- A. Section includes: Requirements for scheduling the Work affected by existing site and facility, work restrictions, and coordination between construction operations and plant operations.

1.02 GENERAL CONSTRAINTS ON WORK AND SCHEDULING OF WORK

- A. Plant access for Contractor will be provided at the front gate.
- B. Perform abandoned pipe Work as specified in Section 01738 - Selective Alterations and Demolition.
- C. Wastewater projects:
 - 1. The South Valley Water Reclamation Facility treats wastewater for the surrounding cities and is the only means of treating domestic and industrial wastewater prior to discharging to Jordan River. Impairing the operational capabilities of this treatment plant will result in serious environmental damage and monetary fines.
 - 2. Conduct Work in a manner that will not impair the operational capabilities of essential elements of the treatment process or reduce the capacity of the entire treatment plant below levels sufficient to treat the quality of raw wastewater to the water quality limitations specified in the discharge permit.

1.03 SHUTDOWN AND CONSTRUCTION CONSTRAINTS

- A. General shutdown constraints:
 - 1. Execute the Work while the existing facility is in operation.
 - 2. All activities may be accomplished without a shutdown.
 - 3. Apply to activities of construction regardless of process or work area.
- B. Working Schedule Constraints:
 - a. Working hours on site are from 7 a.m. to 5 p.m. each day
 - b. Working days are Monday through Friday
 - c. Scheduling
 - 1) If work is required outside of the times/dates indicated, coordinate with the Owner.
 - d. Unplanned shutdowns due to emergencies are not defined in this Section.

1.04 REQUIREMENTS FOR OPERATION OF PLANT AND MAINTAINING CONTINUOUS OPERATION OF EXISTING FACILITIES

- A. Facilities or conditions required to keep the existing plant operational include, but are not limited to, the following:
 - 1. Electrical power including transformers, distribution wiring, and motor control centers.
 - 2. Buried process piping and appurtenances.
 - 3. Fencing and gates.
 - 4. Instrumentation, meters, controls, and telemetry equipment.
 - 5. Safety equipment and features.
 - 6. Parking for District's employees and vehicles required for operation and maintenance of the
 - 7. Telephone system.
 - 8. Storm drainage.
 - 9. Natural gas service.

1.05 OPERATIONS AND MAINTENANCE ACCESS

- A. Provide safe, continuous access to process control equipment for plant operations personnel.

1.06 UTILITIES

- A. Provide advance notice to and utilize services of Blue Stake for location and marking of underground utilities operated by utility agencies other than the Owner.
- B. Maintain electrical, telephone, water, gas, sanitary facilities, and other utilities within existing facilities in service. Provide temporary utilities when necessary.
- C. New yard utilities were designed using existing facility drawings.
 - 1. Field verification of utilities locations was not performed during design.
 - 2. Services crossed or located nearby by new yard utilities may require relocation and possible shutdowns.
 - 3. Pipe alignments as indicated on the Drawings.

PART 2 PRODUCTS

Not Used.

PART 3 EXECUTION

Not Used.

END OF SECTION

ATTACHMENT D - SAFETY CHECKLIST

SAFETY CHECKLIST
(Just prior to commencing work)

Checklist provided as a guide but is not all inclusive.

1. Location awareness:
 - a. Emergency exits: _____
 - b. Emergency shower and eyewash: _____
 - c. Telephones and phone numbers: _____
 - d. Shut-off valve: _____
 - e. Electrical disconnects: _____
2. Inspect work area:
 - a. Take time to survey the area you are working in. Ensure that what you want to do will work. Do you have enough clearance? Is your footing secure? Do you have adequate lighting and ventilation? Are surrounding utilities out of the way for you to perform your work?
3. SDS (Safety Data Sheets):
 - a. Understand the chemicals and substances in the area you are working in by reading the SDS.
4. Lockout/Tagout Procedure:
 - a. Lockout/tagout energy sources before beginning work.
 - b. Make sure all valves associated with the work are locked out and tagged out on each side of the penetration.
 - c. Make sure the lines are depressurized.
5. Overhead work:
 - a. Use appropriate personal protective equipment; i.e., safety harness, lifeline, etc.
 - b. Select appropriate tie-off points; i.e., structurally adequate, not a pipe or conduit, etc.
 - c. Spotter assigned and in position.
 - d. Pipe rack access; i.e., check design capacity, protective decking or scaffolding in place, exposed valves or electrical switches identified and protected.
6. Safety equipment:
 - a. Shepherd's hook.
 - b. ARC flash protection.
 - c. Fire extinguisher.
 - d. Other: _____.
7. Accidents:
 - a. Should accidents occur, do not shut off and do not attempt to correct the situation, unless you are absolutely positive that your action will correct the problem and not adversely affect other people or equipment.
8. Review process start-up documents:
 - a. In the event the system is shutdown, the Control Center should have a working knowledge of the process start-up procedures in order to deal effectively with unforeseen events.
9. Evacuation procedures:
 - a. Do not obstruct evacuation routes.
 - b. Take time to survey the area for evacuation routes.

**SECTION 01250
MEASUREMENT AND PAYMENT**

PART 1 GENERAL

1.01 ADMINISTRATIVE SUBMITTALS

- A. Application for Payment: In accordance with the General Conditions and as specified herein.
- B. Final Application for Payment: As specified herein.

1.02 APPLICATION FOR PAYMENT

- A. Reference applicable paragraphs in General Conditions.
- B. Preparation:
 - 1. Round values to nearest dollar.
 - 2. List each Change Order and Written Amendment executed prior to date of submission as separate line item. Totals to equal those shown on the Summary Sheet for each schedule as applicable.
 - 3. Submit Application for Payment, including a Transmittal Summary Form and detailed Application for Payment Form for each schedule as applicable, a listing of materials on hand for each schedule as applicable, and such supporting data as may be requested by ENGINEER.

1.03 MEASUREMENT - GENERAL

- A. Weighing, measuring, and metering devices used to measure quantity of materials for Work shall be suitable for purpose intended and conform to tolerances and specifications as specified in National Institute of Standards and Technology, Handbook 44.
- B. All materials which are specified for measurement by the cubic yard "measured in the vehicle" shall be hauled in vehicles of such type and size that the actual contents may be readily and accurately determined. Unless all vehicles are of uniform capacity, each vehicle must bear a plainly legible identification mark indicating its water level capacity. All vehicles shall be loaded to at least their water level capacity. Loads hauled in vehicles not meeting the above requirements or loads of a quantity less than the capacity of the vehicle, measured after being leveled off as above provided, will be subject to rejection, and no compensation will be allowed for such material.
- C. Unit of measure shown on the Bid Form shall be as follows unless specified otherwise.

<u>Item</u>	<u>Method of Measurement</u>
CY	Cubic Yard-Field Measure by ENGINEER within the limits specified
or shown CY-VM	Cubic Yard-Measured in the Vehicle by Volume
EA	Each-Field Count by ENGINEER
GAL	Gallon-Field Measured by ENGINEER

<u>Item</u>	<u>Method of Measurement</u>
HR	Hour, Crew
HR-MAN	Hour, per Man
LB	Pound(s)-Weight Measure by Scale
LF	Linear Foot-Field Measure by ENGINEER
LS	Lump Sum-Unit is one; no measurement will be made
SF	Square Foot
SY	Square Yard
T	Ton-Weight Measure by Scale (2,000 pounds)

1.04 PAYMENT

- A. General: Progress payments will be made monthly on the date established at the preconstruction meeting.
- B. Following description of the Work included in the Payment of Unit Price items is not inclusive. When there is no separate Unit Price item in Bid Form for work necessary to complete a unit of Work shown or specified, such Work shall be furnished and installed. Full compensation for furnishing and installing such Work shall be considered as included in Contract Price and no additional compensation will be allowed.
- C. Payment for work performed will be based on bid costs from Bid Schedules A through F.
- D. Bid Items:

1. Bid Schedule

No.	Bid Item	Description of Work Included
1	Mobilization	Includes all transportation, fuel, labor, and material costs for mobilization of equipment and materials to the project sites and as required for setup.
2	Cathodic Protection Test Stations	Includes materials, equipment, and labor required for furnishing and installing test stations, test wire connections to buried pipe, reference cells, galvanic anodes, including all excavation, backfill, and surface restoration, complete
3	Remote Corrosion Monitoring Test Stations (MetriCorr)	Includes materials, equipment, and labor required for furnishing and installing remote corrosion monitoring test stations, test wire connections to buried pipe, reference cells, including all excavation, backfill, and surface restoration, complete
4	Demobilization	Includes all transportation, fuel, labor, and material costs for demobilization of equipment and materials to the project sites and as required for setup.

1.05 NONPAYMENT FOR REJECTED OR UNUSED PRODUCTS

A. Payment will not be made for following:

1. Loading, hauling, and disposing of rejected material.
2. Quantities of material wasted or disposed of in manner not called for under Contract Documents.
3. Rejected loads of material, including material rejected after it has been placed by reason of failure of CONTRACTOR to conform to provisions of Contract Documents.
4. Material not unloaded from transporting vehicle.
5. Defective Work not accepted by OWNER.
6. Material remaining on hand after completion of Work.

1.06 PARTIAL PAYMENT FOR STORED MATERIALS AND EQUIPMENT

- A. Partial Payment: Reference the General Conditions. No partial payments will be made for materials and equipment delivered or stored unless Shop Drawings are acceptable to ENGINEER.
- B. Final Payment: Will be made only for materials incorporated in Work; remaining materials, for which partial payments have been made, shall revert to CONTRACTOR unless otherwise agreed, and partial payments made for those items will be deducted from final payment.

1.07 FINAL APPLICATION FOR PAYMENT

- A. Reference applicable paragraphs in the General Conditions, and as may otherwise be required in Contract Documents.
- B. Prior to submitting final application, make acceptable delivery of required documents, including but not limited to:
1. Final Inventory of Materials Utilized at Each Project Site / Structure
 2. Contractor's Daily Quality Control and Inspection Reports
 - a. Organized by Site / Structure and Date

PART 2 PRODUCTS (Not Used)

PART 3 EXECUTION (Not Used)

END OF SECTION

SECTION 01260

CONTRACT MODIFICATION PROCEDURES

PART 1 GENERAL

1.01 SUMMARY

- A. Section Includes:
 - 1. Administrative and procedural requirements for executing a change in the Work.

1.02 PRELIMINARY REQUIREMENTS

- A. Change Order Cost Basis Summary Form:
 - 1. Submit a sample to Engineer for review within 15 calendar days following Notice to Proceed.
 - a. Items will be reviewed, and their value, percentage, or calculation method mutually agreed to by the Contractor and Owner prior to executing a Change Order on the Project.
 - 2. Used by the Contractor for pricing each Change Order required for additions, deletions, or revisions in the Work.
 - 3. Include the following information:
 - a. Agreed upon markups, percentages, and procedures for calculating all surcharges, etc. associated with the Cost of the Change Order Work.
 - b. References for unit price information and special unit price information.
 - c. Attachments with the following information:
 - 1) Certified labor rates breakdown.
 - 2) Equipment rates.
 - 3) Bond and insurance rates (PI&I).

1.03 REQUEST FOR INFORMATION OR INTERPRETATION (RFI)

- A. Contractor may issue RFIs to request interpretation of the documents or to request for information that may be missing.
- B. General Instructions:
 - 1. Number RFIs consecutively.
 - a. Add a consecutive letter to the RFI number on modified submittals of the same RFI (i.e., RFI 4B).
 - 2. Provide RFI for 1 item.
 - a. There may be exceptions when multiple items are so functionally related that expediency indicates review of the group of items as a whole.
 - b. RFIs with multiple items will be rejected without review.
 - 3. Contractor sign and date RFIs indicating review and approval.
 - a. Contractor's signature indicates that they have satisfied RFI review responsibilities and constitutes Contractor's written approval of RFI.
 - b. RFIs without Contractor's signature will be returned to the Contractor unreviewed. Subsequent submittal of this information will be counted as the first resubmittal.

- C. Engineer will render a written clarification, interpretation, or decision on the issue submitted or initiate an amendment or supplement to the Contract within 14 days.
 - 1. In the event the Contractor identifies an RFI as critical to the progress of the project, Engineer will make every effort to reduce the RFI response time.

1.04 PRELIMINARY PROCEDURES

- A. Owner or Engineer may initiate changes by submitting a Request for Proposal (RFP) to Contractor including the following information:
 - 1. Detailed description of the Change, Products, and location of the change in the Project.
 - 2. Supplementary or revised drawings or specifications.
 - 3. Projected time span for making the change, and a specific statement if overtime work is authorized.
 - 4. A specific period of time during which the requested price will be considered valid.
 - 5. Such request is for information only, and is not an instruction to execute the changes, or to stop work in progress.
- B. Contractor may initiate changes by submitting a Change Proposal to Engineer containing the following:
 - 1. Description of proposed changes.
 - 2. Reason for making changes.
 - 3. Specific period of time during which requested price will be considered valid.
 - 4. Effect on Total Contract Cost and/or Contract Time.
 - 5. Documentation supporting any change in Total Contract Cost and/or Contract Time, as appropriate.

1.05 WORK CHANGE DIRECTIVE AUTHORIZATION

- A. In lieu of a Request for Proposal (RFP), Engineer may issue a Work Change Directive Authorization for Contractor to proceed with a change for subsequent inclusion in a Change Order.
- B. Authorization will describe changes in the Work, both additions and deletions, with attachments of revised Contract Documents to define details of the change and will designate method of determining any change in the Contract Sum and/or the Contract Time, as appropriate.
- C. Owner and Engineer will sign and date the Work Change Directive Authorization as authorization for the Contractor to proceed with the changes.
- D. Contractor may sign and date the Work Change Directive Authorization to indicate agreement with the terms.

1.06 DOCUMENTATION OF CHANGE PROPOSALS

- A. Change proposal:
 - 1. Support with sufficient substantiating data to allow Engineer to evaluate the quotation.
 - a. Lump sum.
 - b. Unit prices: Use previously established unit prices.

- c. Time-and-material/force account basis:
 - 1) Name of the Owner's authorized agent who ordered the work, and date of the order.
 - 2) Dates and times work was performed, and by whom.
 - 3) Time record, summary of hours worked, and hourly rates paid.
 - 4) Receipts and invoices for:
 - a) Equipment used, listing dates and times of use.
 - b) Products used, listing of quantities.
 - c) Subcontracts.
- 2. Provide additional data to support time and cost computations:
 - a. Labor required.
 - b. Equipment required.
 - c. Products required:
 - 1) Recommended source of purchase and unit cost.
 - 2) Quantities required.
 - d. Taxes, insurance, and bonds.
 - e. Credit for work deleted from Contract, similarly documented.
 - f. Overhead and profit.
 - g. Justification for change to Contract Time.

1.07 PREPARATION OF CHANGE ORDERS AND FIELD ORDERS

- A. Engineer will prepare each Change Order and Field Order.
- B. Change Orders:
 - 1. Will describe changes in the Work, both additions and deletions, with attachments of revised Contract Documents to define details of the change.
 - 2. Will provide an accounting of the adjustment in the Contract Sum and in the Contract Time.
 - 3. Recommendation of Change Proposal is indicated by Engineer's signature.
 - 4. Upon signature and execution by Owner, the Change Proposal becomes a Change Order altering the Contract Time and Total Contract Cost, as indicated.
 - a. Owner's Representative will transmit one signed copy each to Contractor and Engineer.
 - 5. Contractor may only request payment for changes in the Work against an approved Change Order.
 - 6. If either Engineer or Owner's Representative disapproves the Change Proposal, the reason for disapproval will be stated.
 - a. A request for a revised proposal or cancellation of the proposal will be shown.
- C. Field Orders:
 - 1. Order minor changes in the Work without changes in Contract Price or Contract Times.

1.08 LUMP-SUM/FIXED PRICE CHANGE ORDER

- A. Content of Change Orders will be based on, either:
 - 1. Engineer's Proposal Request and Contractor's responsive Change Proposal as mutually agreed between Owner and Contractor.
 - 2. Contractor's Change Proposal for a change, as recommended by Engineer.

- B. Owner and Engineer will sign and date the Change Order to establish the change in Contract Sum and in Contract Time and serve as authorization for the Contractor to proceed with the changes.
- C. Contractor will sign and date the Change Order to indicate agreement with the terms.

1.09 UNIT PRICE CHANGE ORDER

- A. Content of Change Orders will be based on, either:
 - 1. Engineer's definition of the scope of the required changes.
 - 2. Contractor's Change Proposal for a change, recommended by Engineer.
 - 3. Survey of completed work.
- B. The amounts of the unit prices to be:
 - 1. Those stated in the Contract.
 - 2. Those mutually agreed upon between Owner and Contractor.
- C. When quantities of each of the items affected by the Change Order can be determined prior to start of the work:
 - 1. Owner and Engineer will sign and date the Change Order as authorization for Contractor to proceed with the changes.
 - 2. Contractor will sign and date the Change Order to indicate agreement with the terms.
- D. When quantities of the items cannot be determined prior to start of the work:
 - 1. Engineer or Owner will issue a Work Change Directive authorization directing Contractor to proceed with the change on the basis of unit prices, and will cite the applicable unit prices.
 - 2. At completion of the change, Engineer will determine the cost of such work based on the unit prices and quantities used.
 - 3. Contractor shall submit documentation to establish the number of units of each item and any claims for a change in Contract Time.
- E. Owner and Engineer will sign and date the Change Order to establish the change in Contract Sum and in Contract Time and serve as authorization for the Contractor to proceed with the changes.
- F. Contractor will sign and date the Change Order to indicate their agreement with the terms.

1.10 TIME AND MATERIAL/FORCE ACCOUNT CHANGE ORDER/WORK CHANGE DIRECTIVE AUTHORIZATION

- A. Engineer will issue a Work Change Directive for the Owner's signature authorizing Contractor to proceed with the changes.
- B. At completion of the change, Contractor shall submit itemized accounting and supporting data as specified in this Section.
- C. Engineer will determine the allowable cost of such work, as provided in the Contract Documents.

- D. Owner and Engineer will sign and date the Change Order to establish the change in Contract Sum and in Contract Time and serve as authorization for the Contractor to proceed with the changes.
- E. Contractor will sign and date the Change Order to indicate their agreement.

1.11 CORRELATION WITH CONTRACTOR'S SUBMITTALS

- A. Periodically revise Schedule of Values and Applications for Payment forms to record each Change Order as a separate item of Work, and to record the adjusted Contract Sum.
- B. Periodically revise the Construction Schedule to reflect each change in Contract Time. Revise subschedules to show changes for other items of work affected by the changes.
- C. Upon completion of work under a Change Order, enter pertinent changes in Record Documents.

PART 2 PRODUCTS

Not Used.

PART 3 EXECUTION

Not Used.

END OF SECTION

SECTION 01292

SCHEDULE OF VALUES

PART 1 GENERAL

1.01 SUMMARY

- A. Section includes: Requirements for preparation, format, and submittal of Schedule of Values.

1.02 PREPARATION

- A. Schedule of Values shall be a listing of all cost loaded, on-site construction activities from the progress schedule, listed in numerical order, showing that the sum total of all cost-loaded activities equal the Contract value.
- B. When the schedule is changed or revised to include added or deleted work, the Schedule of Values shall also be revised such that the sum total of all cost-loaded activities continuously equal the current Contract value.
 - 1. Equate the aggregate of these costs to the Lump Sum Contract Price.
- C. Prepare Schedule of Values identifying costs of Major Items of Work.

1.03 SUBMITTALS

- A. Submit Schedule of Values for the Preliminary Schedule as specified in, Section 01321 - Schedules and Reports.

PART 2 PRODUCTS

Not Used.

PART 3 EXECUTION

Not Used.

END OF SECTION

SECTION 01294

APPLICATIONS FOR PAYMENT

PART 1 GENERAL

1.01 SUMMARY

- A. Section includes: Procedures for preparation and submittal of Applications for Payment.

1.02 FORMAT

- A. Develop satisfactory spreadsheet-type form generated by downloading cost data from the Progress Schedule.
 - 1. Submit payment requests and attach spreadsheet with cost data related to Progress Schedule.
- B. Fill in information required on form.
- C. When Change Orders are executed, add Change Orders at end of listing of scheduled activities:
 - 1. Identify change order by number and description.
 - 2. Provide cost of change order in appropriate column.
- D. After completing, submit Application for Payment.
- E. Engineer will review application for accuracy. When accurate, Engineer will transmit application to Owner for processing of payment.
- F. Execute application with signature of responsible officer of Contractor.

1.03 SUBSTANTIATING DATA

- A. Provide Substantiating Data identifying:
 - 1. Project.
 - 2. Application number and date.
 - 3. Cost flow summary.
 - 4. Updated schedule of values.
 - 5. Progress schedule.
 - 6. Detailed list of enclosures.
 - 7. For stored products with item number and identification on application, description of specific material, and proof of insurance coverage for offsite stored products.
 - 8. Submit "certified" payroll, if applicable.

1.04 SUBMITTALS

- A. Submit 1 copy of Application for Payment and Substantiating Data with cover letter.

1.05 PAYMENT REQUESTS

- A. Prepare progress payment requests on a monthly basis. Base requests on the breakdowns of costs for each scheduled activity and the percentage of completion for each activity.
- B. Indicate total dollar amount of work planned for every month of the project. Equate sum of monthly amounts to Lump Sum Contract Price.
- C. Generate Progress Payment request forms by downloading cost data from the schedule information to a spreadsheet type format.
- D. Identify each activity on the Progress Schedule that has a cost associated with it, the cost for each activity, the estimated percent complete for each activity, and the value of work completed for both the payment period and job to date.
- E. Prepare summary of cost information for each Major Item of Work listed in the Schedule of Values. Identify the value of work completed for both the payment period and job to date.
- F. Payment period:
 - 1. Monthly Application for Payment period shall begin on the 1st day of each month, and end on the last day of each month.
 - 2. Submit Application for Payment to Engineer no later than the 5th day of each month for work completed the previous month.
 - 3. Engineer will finalize and submit recommendation for Application for Payment to Owner by the 15th day of each month to allow time for processing and approval.

1.06 COST SUMMARIES

- A. Prepare Summary of Cost Information for each Major Item of Work listed in the Schedule of Values. Identify the Value of Work Completed for both the payment period and job to date.
- B. Cash flow summary: Prepare cash flow summary, indicating total dollar amount of work planned for each month of the project. Equate sum of monthly amounts to Lump Sum contract price.

PART 2 PRODUCTS

Not Used.

PART 3 EXECUTION

Not Used.

END OF SECTION

SECTION 01312
PROJECT MEETINGS

PART 1 GENERAL

1.01 SUMMARY

- A. Section includes: Requirements for conducting conferences and meetings for the purposes of addressing issues related to the Work, reviewing and coordinating progress of the Work and other matters of common interest, and includes the following:
 - 1. Qualifications of Meeting Participants.
 - 2. Pre-construction Conference.
 - 3. Progress Meetings.
 - 4. Close-out meeting.

1.02 QUALIFICATIONS OF MEETING PARTICIPANTS

- A. Representatives of entities participating in meetings shall be qualified and authorized to act on behalf of entity each represents.

1.03 BASIC MEETING REQUIREMENTS

- A. Attendees:
 - 1. Meeting leader shall require attendance of parties directly affecting, or affected by, Work being discussed at the meeting.
- B. Notification:
 - 1. Meeting leader shall notify attendees of meeting a minimum of 3 days prior to meeting.
- C. Agenda:
 - 1. Meeting leader shall submit meeting agenda to attendees a minimum of 3 days prior to meeting.
 - 2. Meeting leader shall prepare copies of agenda for participants and distribute at the meeting.
- D. Meeting minutes:
 - 1. Meeting leader shall provide draft minutes within 3 days of meeting and send to all attendees for comment within 3 days.
 - 2. Meeting leader shall incorporate comments from attendees and submit final meeting minutes to attendees within 3 days of receipt of comments.

1.04 PRE-CONSTRUCTION CONFERENCE

- A. Engineer leads the meeting.
- B. Timing:
 - 1. Upon issuance of Notice to Proceed, or earlier when mutually agreeable.

- C. Location:
 - 1. In location convenient for most invitees.
- D. Attendees:
 - 1. Contractor's project manager and superintendent, Owner, Engineer, representatives of utilities, major subcontractors and others involved in performance of the Work, and others necessary to agenda.
- E. Purpose of conference:
 - 1. To establish working understanding between parties and to discuss Construction Schedule, shop drawing and other submittals, cost breakdown of major lump sum items, processing of submittals and applications for payment, and other subjects pertinent to execution of the Work.
- F. Agenda minimum requirements:
 - 1. Adequacy of distribution of Contract Documents.
 - 2. Distribution and discussion of list of major subcontractors and suppliers.
 - 3. Proposed progress schedules and critical construction sequencing.
 - 4. Major equipment deliveries and priorities.
 - 5. Project coordination.
 - 6. Designation of responsible personnel.
 - 7. Procedures and processing of:
 - a. Field decisions.
 - b. Proposal requests.
 - c. Submittals.
 - d. Change Orders.
 - e. Request for Information/Interpretations.
 - f. Applications for Payment.
 - g. Record Documents.
 - 8. Use of premises:
 - a. Office, construction, and storage areas.
 - b. Owner's requirements.
 - 9. Construction facilities, controls, and construction aids.
 - 10. Temporary utilities.
 - 11. Safety and first aid procedures.
 - 12. Security procedures.
 - 13. Housekeeping procedures.

1.05 PROGRESS MEETINGS

- A. Engineer will lead the meeting.
- B. Timing:
 - 1. Hold meetings throughout progress of the Work at monthly intervals.
- C. Attendance required:
 - 1. Owner, Engineer, Contractor, Contractor's Project Manager, superintendent, quality control manager, project scheduler, major subcontractors and suppliers as appropriate to agenda topics for each meeting.
- D. Additional invitees:
 - 1. Owner utility companies when the Work affects their interests, and others necessary to agenda.

- E. Agenda minimum requirements:
 - 1. Review minutes of previous meeting/minutes.
 - 2. Safety and security.
 - 3. Construction schedule summary.
 - 4. Review of 6 weeks schedule.
 - 5. Review of off-site fabrication and delivery schedules.
 - 6. Review of submittals schedule and status of submittals.
 - 7. Request for information (RFI's) status.
 - 8. MOP's/shutdown coordination.
 - 9. Change order management status.
 - 10. Maintenance of quality standards (QA/QC).
 - 11. Field observations, problems, and conflicts.
 - 12. Commissioning.
 - 13. Partnering recognition status (optional).
 - 14. General Items.
 - 15. Action items.
 - 16. Next meeting.

1.06 CLOSE-OUT MEETING

- A. Engineer leads the meeting.
- B. Attendees:
 - 1. Owner, Engineer, Contractor, Contractor's Project Manager, and Superintendent.
- C. Agenda minimum requirements:
 - 1. Review punch list completion.
 - 2. Transfer of record documents.
 - 3. Finalize payment.

PART 2 PRODUCTS

Not Used.

PART 3 EXECUTION

Not Used.

END OF SECTION

SECTION 01321

SCHEDULES AND REPORTS

PART 1 GENERAL

1.01 SUMMARY

- A. Section includes: Schedules and reports.

1.02 SUBMITTAL REQUIREMENTS

- A. Submit preliminary and baseline schedule of values.
- B. Submit, on a monthly basis, updated schedules as specified.
- C. Submit revised schedules as specified.

1.03 SCHEDULER

- A. Designate, in writing and within 5 calendar days after Notice of Award, the person responsible for preparation, maintenance, updating, and revision of all schedules.
- B. Qualifications of scheduler:
 - 1. Authority to act on behalf of Contractor.
 - 2. A minimum of 5 years verifiable experience in preparation of construction schedules for projects of similar value, size, and complexity.
 - 3. Knowledge of critical path method (CPM) scheduling utilizing Primavera P6 Professional or SureTrak or Microsoft Project software.
- C. Owner reserves the right to disapprove scheduler when submitted by Contractor if not qualified.
- D. Owner reserves the right to remove scheduler from the project if found to be unqualified.

1.04 SCHEDULING FORMAT AND SOFTWARE

- A. Schedule format: Utilize CPM format.
- B. Prepare computerized schedule utilizing Primavera P6 Professional or SureTrak or Microsoft Project software, most current version.
 - 1. The provided copy of the software shall be a standalone version for installation on a standalone computer.
- C. Contractor and Engineer must agree on the format.

1.05 PRECONSTRUCTION SCHEDULING MEETING

- A. Engineer will conduct Preconstruction Scheduling Meeting with Contractor's Project Manager, General Superintendent, and scheduler within 5 calendar days after Notice to Proceed.
- B. Filing: Post submitted files to Owner's construction document control system.

1.06 REVIEW AND ACCEPTANCE OF SCHEDULES

- A. Engineer will review Baseline Schedule, Schedule Updates, Schedule Revisions and Time Impact Analyses to ascertain compliance with specified project constraints, compliance with milestone dates, reasonableness of durations and sequence, accurate inter-relationships, and completeness.
- B. Engineer and Owner will issue written comments following completion of review of Baseline Schedule within 14 calendar days after receipt.
- C. Written comments on review of Schedule Updates and Schedule Revisions and Time Impact Analyses will be returned to Contractor within 7 calendar days after receipt by Engineer.
- D. Revise and resubmit schedule in accordance with Engineer's comments within 7 calendar days after receipt of such comments, or request joint meeting to resolve objections.
- E. If Engineer requests a meeting, the Contractor and all major subcontractors must participate in the meeting with Engineer.
 - 1. Revise and resubmit schedule within 7 calendar days after meeting.
- F. Use accepted schedule for planning, organizing, and directing the work and for reporting progress.
- G. Engineer's submittal review response:
 - 1. When schedule reflects Owner's and Contractor's agreement of project approach and sequence, schedule will be accepted by Owner.
 - 2. Engineer's submittal review response for schedule submittal will be "Receipt Acknowledged - Filed for Record" including applicable comments.
 - 3. Acceptance of the schedules by the Owner is for general conformance with the Contract Documents and for Owner's planning information, and does not relieve the Contractor of sole responsibility for planning, coordinating, and executing the Work within the contract completion dates. Omissions and errors in the accepted schedules shall not excuse performance less than that required by the Contract Documents. Acceptance by the Owner in no way constitutes an evaluation or validation of the Contractor's plan, sequence or means, methods, and techniques of construction.

1.07 SCHEDULE UPDATES

- A. Any update:
 - 1. Prepare update using most recent accepted version of schedule including:
 - a. Actual start dates of activities that have been started.
 - b. Actual finish dates of activities that have been completed.

- c. Percentage of completion of activities that have been started but not finished.
- d. Actual dates on which milestones were achieved.
- e. Update activities by inputting percent complete figures with actual dates.
- f. Use retained logic in preparing Schedule Updates.
- g. When necessary, input remaining durations for activities whose finish dates cannot be calculated accurately with a percent complete figure only.
- h. Revisions to the schedule may be included that have been previously approved as specified in this Section under Revisions to Schedule.

B. Monthly updates:

- 1. Submit written narrative report in conjunction with each Schedule Update including descriptions of the following:
 - a. Activities added to or deleted from the schedule are to adhere to cost and other resource loading requirements.
 - 1) Identify added activities in manner distinctly different from original activity designations.
 - b. Changes in sequence or estimated duration of activities.
 - c. Current or anticipated problems and delays affecting progress, impact of these problems and delays and measures taken to mitigate impact.
 - d. Assumptions made and activities affected by incorporating change order work into the schedule.
- 2. Submit updated schedule and materials specified under Submittal of Progress Schedules, 5 calendar days before the monthly schedule update meeting.
- 3. Since Monthly Schedule Update is the application for progress payment required as specified in Section 01294 - Applications for Payment, submittal and acceptance of the monthly Schedule Update is a condition precedent to the making of any progress payments.

1.08 ADJUSTMENT OF CONTRACT TIMES

A. Contract Time will be adjusted only for causes specified in Contract Documents.

- 1. Non-excusable delay:
 - a. Non-excusable delays include actions or inactions of the Contractor, or events for which the Contractor has assumed contractual responsibility (including actions or inactions of subcontractors, suppliers, or material manufacturers at any tier) that would independently delay the completion of the Work beyond the current Contract completion date).
 - b. No time extensions will be granted for non-excusable delays.
- 2. Excusable delay:
 - a. Events which are unforeseeable, outside the control of, and without the fault or negligence of either the Owner or the Contractor (or any party for whom either is responsible), which would independently delay the completion of the Work beyond the current Contract completion date.
 - b. The Contractor is entitled to a time extension only.
 - c. No other damages will be approved.
- 3. Compensable delay:
 - a. Actions or inactions of the Owner, or events for which the Owner has assumed contractual responsibility, which would independently delay the completion of the Work beyond the current Contract completion date.
 - b. The Contractor is entitled to a time extension and delay damages.

4. Concurrent delay:
 - a. Concurrent delay is any combination of the above 3 types of delay occurring on the same calendar date.
 - b. Exception to concurrent delay: Cases where the combination consists of 2 or more instances of the same type of delay occurring on the same calendar date. When one cause of delay is Owner-caused or caused by an event which is beyond the control and without the fault or negligence of either the Owner or the Contractor and the other Contractor-caused, the Contractor is entitled only to a time extension and no delay damages.

- B. If the Contractor believes that the Owner has impacted its work, such that the project completion date will be delayed, the Contractor must submit proof demonstrating the delay to the critical path.
 1. This proof, in the form of a Time Impact Analysis, may entitle the Contractor to an adjustment of Contract Time.

- C. Time Impact Analysis:
 1. Use the accepted schedule update that is current relative to the time frame of the delay event (change order, third party delay, or other Owner-caused delay). Represent the delay event in the schedule by:
 - a. Inserting new activities associated with the delay event into the schedule.
 - b. Revising activity logic.
 - c. Revising activity durations.
 2. If the project schedule's critical path and completion date are impacted as a result of adding this delay event to the schedule, a time extension equal to the magnitude of the impact may be warranted.
 3. The Time Impact Analysis submittal must include the following information:
 - a. A fragment of the portion of the schedule affected by the delay event.
 - b. A narrative explanation of the delay issue and how it impacted the schedule.
 - c. A schedule file used to perform the Time Impact Analysis.

- D. When a delay to the project as a whole can be avoided by revising preferential sequencing or logic, and the Contractor chooses not to implement the revisions, the Contractor will be entitled to a time extension and no compensation for extended overhead.

- E. Indicate clearly that the Contractor has used, in full, all project float available for the work involved in the request, including any float that may exist between the Contractor's planned completion date and the Contract completion date.
 1. Utilize the latest version of the Schedule Update accepted at the time of the alleged delay, and all other relevant information, to determine the adjustment of the Contract Time.

- F. Adjustment of the Contract Times will be granted only when the Contract Float has been fully utilized and only when the revised date of completion of the Work has been pushed beyond the Contract completion date.
 1. Adjustment of the Contract Times will be made only for the number of days that the planned completion of the work has been extended.

- G. Actual delays in activities which do not affect the critical path work or which do not move the Contractor's planned completion date beyond the Contract completion date will not be the basis for an adjustment to the Contract Time.
- H. If completion of the project occurs within the specified Contract Time, the Contractor is not entitled to jobsite or home office overhead beyond the Contractor's originally planned occupancy of the site.
- I. Notify Engineer of a request for Contract Time adjustment.
 - 1. Submit request as specified in the Contract Documents.
 - 2. In cases where the Contractor does not submit a request for Contract Time adjustment for a specific change order, delay, or Contractor request within the specified period of time, then it is mutually agreed that the particular change order, delay, or Contractor request has no time impact on the Contract completion date and no time extension is required.
- J. The Engineer will, within 30 calendar days after receipt of a Contract Time adjustment, request any supporting evidence, review the facts, and advise the Contractor in writing.
 - 1. Include the new Progress Schedule data, if accepted by the Owner, in the next monthly Schedule Update.
 - 2. When the Owner has not yet made a final determination as to the adjustment of the Contract Time, and the parties are unable to agree as to the amount of the adjustment to be reflected in the Progress Schedule, reflect that amount of time adjustment in the Progress Schedule as the Engineer may accept as appropriate for such interim purpose.
 - 3. It is understood and agreed that any such interim acceptance by the Engineer shall not be binding and shall be made only for the purpose of continuing to schedule the Work, until such time as a final determination as to any adjustment of the Contract Time acceptable to the Engineer has been made.
 - 4. Revise the Progress Schedule prepared thereafter in accordance with the final decision.

1.09 WEATHER DAY ALLOWANCE

- A. Definition:
 - 1. Weather conditions that prevent or inhibit the Contractor's performance of the Work and affect the Critical Path indicated on the Schedule shall be referred to as a Weather Day.
 - 2. A Weather Day is defined as the Contractor being unable to perform at least 4 hours of work on the Critical Path.
- B. Allowance:
 - 1. Include as a separate identifiable activity on the critical path, an activity labeled "Weather Days Allowance".
- C. Actual weather day:
 - 1. Insert a weather delay activity in critical path to reflect actual weather day occurrences when weather days are experienced and accepted by Engineer.
 - 2. Reduce duration of Weather Days Allowance activity as weather delays are experienced and inserted into the Schedule. Remaining weather days in Weather Day Allowance at completion of project is considered float.

3. The Contractor shall provide a written notice to the Engineer of the occurrence of a weather day within 2 days after the onset of such weather and shall describe in reasonable detail the type of weather encountered and the Work interfered with or interrupted.
 - a. A schedule update will not suffice as a written notice.
 - b. The Engineer will determine if the weather day constitutes a use of a portion of the Weather Day Allowance.
 - c. After use of all the Weather Day Allowance, the Engineer will determine if the Contractor is entitled to an extension of the Contract Time due to weather conditions.
 - d. Weather days are considered excusable delay as defined in this Section.

1.10 SCHEDULE OF SUBMITTALS

- A. Schedule of Submittals shall include submittals required in the Contract Documents but not limited to test plans, training plans, test procedures, operation and maintenance manuals, shop drawings, samples, record documents, and specifically required certificates, warranties, and service agreements.
 1. Data for "Or Equals" or substitutions shall be submitted with the Schedule of Submittals.
- B. Preliminary Schedule of Submittals:
 1. Due date: After Preliminary Schedule has been submitted and accepted by Owner.
 2. Format:
 - a. Include submittals anticipated in the first 90 calendar days after award of contract using early start dates.
 - b. Indicate week and month anticipated for submittal to Engineer.
 - c. Indicate "Priority" submittals where review time can impact Contractor's schedule.
 - 1) "Priority" indication will not alter review times specified in Section 01330 - Submittal Procedures.
 - 2) Engineer will endeavor to provide early review of "Priority" submittals where possible.
 - d. List of "Or Equals" or substitutions.
 3. Submittal of Preliminary Schedule of Submittals shall be a condition precedent to Owner making progress payments during the first 90 calendar days after award of contract.
- C. Final Schedule of Submittals:
 1. Due date: 30 days after Baseline Schedule has been submitted and accepted by Owner.
 2. Format:
 - a. Include submittals using early start dates.
 - b. Include all submittals, including those required in the Preliminary Schedule of Submittals.
 - c. Indicate week and month anticipated for submittal to Engineer.
 - d. Indicate "Priority" submittals where review time can impact Contractor's schedule.
 - 1) "Priority" indication will not alter review times specified in Section 01330 - Submittal Procedures.

- 2) Engineer will endeavor to provide early review of "Priority" submittals where possible.
 - e. Data for "Or Equals" or substitutions.
 3. Submittal of Final Schedule of Submittals shall be a condition precedent to Owner making progress payments after the first 90 calendar days after Notice to Proceed.
- D. Provide updated Schedule of Submittals with updated schedules if schedule revisions change listing and timing of submittals.

1.11 BASELINE SCHEDULE AND BASELINE SCHEDULE OF VALUES

- A. Due date: No more than 45 calendar days after Notice to Proceed.
- B. Format:
 1. Schedule: Show sequence and interdependence of all activities required for complete performance of all Work, beginning with date of Notice to Proceed and concluding with date of final completion of Contract.
 2. Schedule of Values: As specified in Section 01292 - Schedule of Values.

1.12 PROGRESS SCHEDULE AND UPDATED SCHEDULE OF VALUES

- A. Due date: Submit on a monthly basis as specified in Section 01294 - Applications for Payment.
- B. Format: Schedule of Values: As specified in Section 01292 - Schedule of Values.
- C. Retainage will not be released until final Schedule Update is provided.

PART 2 PRODUCTS

Not Used.

PART 3 EXECUTION

Not Used.

END OF SECTION

**SECTION 01330
SUBMITTAL PROCEDURES**

PART 1 GENERAL

1.01 SUMMARY

- A. Section includes: Requirements and procedures for submittals.

1.02 GENERAL

- A. Reference applicable paragraphs of General Conditions.
- B. Inquiries: Direct to ENGINEER regarding procedure, purpose, or extent of Submittal.
- C. As provided in General Conditions, as specified herein, unless specified otherwise in Division 2 through Division 16, and as may otherwise be established during the preconstruction conference.
- D. OWNER's Authorization: At any time, OWNER may authorize changes to procedures and requirements for Submittals, as necessary to accomplish specific purpose of each Submittal. Such authorization will be by Field Order or Work Change Directive.
- E. Timeliness: Schedule and make submissions in accordance with requirements of individual Specification sections and in such sequence as to cause no delay in Work or in work of other contractors.
- F. Identification of Submittals:
 - 1. Complete, sign, and transmit with each Submittal package, one Transmittal of Contractor's Submittal Form attached at the end of this section.
 - 2. Identify each Submittal with numbering and tracking system approved by ENGINEER:
 - a. Sequentially number each Submittal.
 - b. Resubmission of a Submittal will have original number with sequential alphabetic suffix.
 - 3. Submittal Number Format: SSSSS_NN_V.
 - a. SSSSS: Representing section number.
 - b. NN: Submittal number (01 through 99).
 - c. V: Resubmission version with sequential alphabetic suffix.
 - 4. Show date of submission and dates of previous submissions.
 - 5. Show Project title and OWNER's contract identification and contract number.
 - 6. Show names of CONTRACTOR, Subcontractor or Supplier, and manufacturer as appropriate.
- G. Identify, as applicable, Contract Document section and paragraph to which Submittal applies.

- H. Incomplete Submittal Submissions:
1. At Engineer's sole discretion, ENGINEER will either (i) return the entire Submittal for CONTRACTOR's revision/correction and resubmission, or (ii) retain portions of the Submittal and request submission/resubmission of specified items or as noted thereon.
 2. Submittals which do not clearly bear CONTRACTOR's specific written indication of CONTRACTOR review and approval of Submittal or which are transmitted with an unsigned or uncertified submission form or as may otherwise be required under Contract Documents, will be returned to CONTRACTOR without reviewed for resubmission in accordance with Contract Documents.
 3. Delays, resequencing, or other impact to Work resulting from CONTRACTOR's submission of unchecked or unreviewed, incomplete, inaccurate or erroneous, or nonconforming Submittals, which will require CONTRACTOR's resubmission of a Submittal for Engineer's review, shall not constitute a basis of claim for adjustment in Contract Price or Contract Times.
- I. Nonspecified Submissions: Submissions not required under these Contract Documents and not shown on submissions will not be reviewed and will be returned to CONTRACTOR.
- J. Submittals to ENGINEER:
- Infinity Corrosion Group, Inc.
Attn: Erik Llewellyn, P.E., Corrosion
Engineer 1987 Kidd Circle
Park City, UT 84098
ellewellyn@infinitycorrosion.com
[m](#)
- Carollo
Attn: Jacob Baer, P.E.
7090 Union Park Ave, Suite 600
Midvale, UT 84047
JBaer@carollo.com
- K. Disposition of Submittals, Except Shop Drawings and Samples: ENGINEER will review, stamp, and indicate requirements for resubmission or acceptance on Submittal as follows:
1. No Exceptions Taken:
 - a. Reference General Conditions for intent regarding schedules. Acceptance of other Submittals will indicate that Submittal conforms to intent of Contract Documents as to form and substance.
 - b. CONTRACTOR may proceed to perform Submittal related Work.
 - c. One copy furnished OWNER.
 - d. Two copies for Engineer's file.
 - e. Two copies returned to CONTRACTOR, one for onsite records.
 2. Rejected as Noted (Revise/Correct or Develop Replacement and Resubmit):
 - a. Revise/correct in accordance with Engineer's comments and resubmit.
 - b. One copy to Engineer's file.
 - c. One copy returned to CONTRACTOR appropriately annotated.
 - d. Remaining copy will be destroyed.

- L. Engineer's Review: ENGINEER will act upon CONTRACTOR's Submittal and transmit response to CONTRACTOR not later than 10 days after receipt, unless: (i) specified otherwise or (ii) accepted by ENGINEER as set forth in Paragraph Engineer's Duties below and identified on current accepted submissions. Resubmittals will be subject to the same review time.
- M. Engineer's Duties:
 - 1. Review Submittals with reasonable promptness and in accordance with current accepted submissions.
 - a. No adjustment of Contract Times or Price will be allowed due to Engineer's review of Submittals, unless all of following criteria are met:
 - (1) CONTRACTOR has notified ENGINEER in writing that timely review of Submittal in question is critical to progress of Work, and has received Engineer's written acceptance to reflect such on current accepted submissions and progress schedule. Written agreement by the ENGINEER to reduce the above Submittal review time will be made only for unusual and CONTRACTOR-justified reasons. Acceptance of a progress schedule containing Submittal review times less than specified above or less than agreed to in writing by ENGINEER will not constitute Engineer's acceptance of the review times.
 - (2) ENGINEER has failed to review and return first submission of a Submittal within agreed time indicated on current accepted schedule of submissions or, if no time is indicated thereon, within 30 days.
 - (3) CONTRACTOR demonstrates that delay in progress of Work is directly attributable to Engineer's failure to return Submittal within time indicated and accepted by ENGINEER.
 - b. No adjustment of Contract Times or Price will be allowed due to delays in progress of Work caused by rejection and subsequent resubmission of Submittals, including multiple resubmissions.
 - 2. Review, return for correction, reject, or accept or approve Submittals submissions only as set forth in applicable paragraphs of General Conditions.
 - 3. Stamp and indicate requirements for resubmission and acceptance or approval of Submittal submission.
 - 4. Return Submittals to CONTRACTOR for distribution or revision and resubmission.
 - 5. Transmit to CONTRACTOR without review Submittal submissions received directly from Subcontractors, Suppliers, manufacturers, and nonrequired submissions from CONTRACTOR.

1.03 ADMINISTRATIVE SUBMITTALS

- A. Description: Submittals required by Contract Documents that are not Shop Drawings or Samples, or that do not reflect quality of product or method of construction. Administrative Submittals may include, but will not be limited to those Submittals identified below.
- B. Copies: Submit 1 digital copy as PDF.
- C. Applications for Payment (and Cash Allowance Data and Values): Meet requirements of Section 01294, APPLICATIONS FOR PAYMENT.
- D. Schedules :
 - 1. General: Meet the requirements of applicable paragraphs of the General Conditions.

2. Submissions:
 - a. Prepare and submit, preliminary list of submissions grouped by Contract Document article/paragraph number or Specification section number, with identification, numbering and tracking system as specified under Paragraph Identification of Submittals and as approved by ENGINEER.
 - b. Include only the following required submissions:
 - (1) Shop Drawings and Samples.
 - (2) Training plans.
 - (3) Test procedures.
 - (4) Record documents.
 - (5) Specifically required certificates, warranties, and service agreements.

1.04 SHOP DRAWINGS

- A. Copies: Submit 1 digital copy as PDF.
- B. Submit Shop Drawings to ENGINEER in accordance with the General Conditions and as specifically required by individual Specification sections for equipment and materials to be furnished under these Contract Documents.
- C. Identify and Indicate:
 1. Pertinent Drawing sheet(s) and detail number(s), products, units and assemblies, and system or equipment identification or tag numbers.
 2. Critical field dimensions and relationships to other critical features of Work.
- D. Resubmissions: Clearly identify each correction or change made.
- E. Preparation:
 1. Present in a clear and thorough manner and of sufficient detail to show kind, size, arrangement, and function of components, materials, and devices and compliance with Contract Documents. Identify details by reference to sheet and detail, and schedule or room numbers shown on Drawings.
 2. Product Data: Clearly mark each copy to identify pertinent products or models and show performance characteristics and capacities, dimensions and clearances required, wiring or piping diagrams and controls, and external connections, anchorages, and supports required.
- F. Design Data:
 1. Provide an appropriately licensed professional engineer to perform design, oversee preparation of Shop Drawings, manufacturing, and installation, as appropriate, and to stamp and certify Shop Drawings conform to design requirements and requirements of Laws and Regulations and governing agencies.
 2. When specified, provide Project-specific information as required and as necessary to clearly show calculations, dimensions, logic and assumptions, and referenced standards and codes upon which design is based.

- G. Disposition: ENGINEER will review, mark, and stamp Shop Drawings as appropriate and distribute marked-up copies as noted.
1. No Exceptions Taken (for incorporation in Work):
 - a. One copy furnished OWNER.
 - b. Two copies retained in Engineer's file.
 - c. Remaining copies will be returned to CONTRACTOR appropriately annotated.
 - (1) One copy to be kept on file as record document at CONTRACTOR's office at site.
 - (2) Remaining copies for CONTRACTOR's office file, Subcontractors, or Suppliers.
 - d. CONTRACTOR may begin to implement (i) activities to incorporate specific product(s) or (ii) Work covered by Shop Drawing as shown on approved Shop Drawing.
 2. Make corrections Noted (for incorporation in Work):
 - a. One copy furnished OWNER.
 - b. Two copies retained in Engineer's file.
 - c. Remaining copies will be returned to CONTRACTOR appropriately annotated.
 - (1) One copy to be kept on file as a record document at CONTRACTOR's office at the site.
 - (2) Remaining copies for CONTRACTOR's office file, Subcontractors, or Suppliers.
 - d. CONTRACTOR may begin to implement (i) activities to incorporate product(s) or (ii) Work covered by Shop Drawing and in accordance with Engineer's notations on Shop Drawing.
 - e. Revise copies of Submittal data in operation and maintenance manuals according to exceptions as noted.
 3. Revise/Correct and Resubmit or Develop Replacement and Submit:
 - a. One copy retained in Engineer's file.
 - b. One copy will be returned to CONTRACTOR appropriately annotated.
 - c. Remaining copies, if any, will be destroyed.
 - d. CONTRACTOR is responsible to revise, correct, and to resubmit Shop Drawing (in same manner and quantity as specified for original submission).
 - e. Shop Drawing is not approved.
 4. Rejected/Incomplete:
 - a. Complete and Submit or Resubmit Missing Portion(s):
 - (1) ENGINEER will retain copies of incomplete Submittal and transmit a written list of deficiencies.
 - (2) CONTRACTOR shall submit specified item(s) to correct the incomplete Submittal.
 - b. Shop Drawing is not approved.

1.05 QUALITY CONTROL SUBMITTALS

A. Certificates:

1. Manufacturer's Certificate of Compliance:
 - a. When specified in individual Specification sections or where products are specified to a recognized standard or code, submit prior to shipment of product or material to the site.
 - b. ENGINEER may permit use of certain materials or assemblies prior to sampling and testing if accompanied by accepted certification of compliance.
 - c. Signed by product manufacturer certifying that materials, manufacture, and

product specified conforms to or exceeds specified requirements and intent for which product will be used. Submit supporting reference data, affidavits, and certifications as appropriate.

- d. May reflect recent or previous test results on material or product, but must be acceptable to ENGINEER.
 2. Certificates of Successful Testing or Inspection: Submit when testing or inspection is required by Laws and Regulations or governing agency or specified in the individual Specification sections.
- B. Field Samples: Provide as required by individual Specifications and as may be required by ENGINEER during progress of Work.
- C. Written Test Reports of Each Test and Inspection : As a minimum, include the following:
1. Date of test and date issued, Project title and number, testing laboratory name, address, and telephone number, and name and signature of laboratory inspector.
 2. Date and time of sampling or inspection and record of temperature and weather conditions.
 3. Identification of product and Specification section, location of Sample, test or inspection in the Project, type of inspection or test with referenced standard or code, certified results of test.
 4. Compliance with Contract Documents and identifying corrective action necessary to bring materials and equipment into compliance.
 5. Provide an interpretation of test results, when requested by ENGINEER.

1.06 CONTRACT CLOSEOUT SUBMITTALS

- A. As specified in applicable Sections.

PART 2 PRODUCTS - (Not Used)

PART 3 EXECUTION - (Not Used)

**END OF
SECTION**

SECTION 01340

PHOTOGRAPHIC AND VIDEOGRAPHIC DOCUMENTATION

PART 1 GENERAL

1.01 SUMMARY

- A. Section includes requirements for photographs and videos.
- B. The purpose of the photographs and videos is to document the condition of the facilities prior to the Contractor beginning work at the Project site, the progress of the Work, and the Project site after Substantial Completion of the Work.
- C. The scope of the photographic and videographic documentation shall be the sole responsibility of the Contractor but shall be acceptable to the Engineer.

1.02 SUBMITTALS

- A. Photographer qualifications.
- B. Pre-construction photographs and videos: Submit prior to beginning work at the Project site or prior to the Preconstruction Conference specified in Section 01312 - Project Meetings, whichever occurs earlier.
- C. Construction photographs and videos: Submit with each application for payment.
- D. Post-construction photographs and videos: Submit with project closeout documents as specified in Section 01770 - Closeout Procedures.

1.03 PHOTOGRAPHER

- A. Photographer qualified and equipped to photograph either interior or exterior exposures, with lenses ranging from wide angle to telephoto.
- B. Submit example work of previous photographs and video recording meeting the requirements of this Section.
 - 1. Provide to Engineer no later than the pre-construction conference.
 - 2. Provide photographs used for site examination.
 - 3. Provide video of site examination.
 - 4. Provide samples that used same camera and lighting equipment proposed for the Work.
 - 5. Engineer will review work examples to determine if the quality of the images is acceptable.
 - 6. Contractor is responsible for modifications to equipment and/or inspection procedures to achieve report material of acceptable quality.
 - 7. Do not commence Work prior to approval of the material by the Engineer.
 - 8. Once accepted, the standard report material shall serve as a standard for the remaining work.

1.04 KEY PLAN

- A. Submit key plan of Project site with notation of vantage points marked for location and direction of each photograph.
- B. Include the same label information as the corresponding set of photographs.

1.05 PHOTOGRAPHS

- A. Provide prints of each photograph for each area of Work.
- B. Provide a digital copy of each photograph for each area of Work.
 - 1. Monthly: Indexed digital flash drive.
 - 2. Project record documents:
 - a. Catalog and index prints in chronological sequence.
 - b. Include typed table of contents.

1.06 PRE-CONSTRUCTION PHOTOGRAPHS AND VIDEOS

- A. Provide photographs and video of the condition entire site including each area of Work prior to the start of Work.
 - 1. Areas to be photographed and videoed shall include the site of the Work and all existing facilities, either on or adjoining the Project site, including the interior of existing structures, that could be damaged as a result of the Contractor's Work.
 - 2. Include general condition, structures, vegetation, staging, storing, working, parking areas and excavation areas.

1.07 CONSTRUCTION PHOTOGRAPHS AND VIDEOS

- A. Provide photographs and videos of construction in each area of Work throughout progress of Work including a key plan designating where each photograph was taken.
- B. Take site and interior photographs and videos from differing directions of building demolition, pre-excavation, footing excavation, soil testing, utility crossings, installation of bypass piping, excavation of access pits, installation of lining system in pipes, rehabilitation of manholes, building modifications, utilities, electrical and instrumentation modifications, and other applicable activities indicating relative progress of the work.
- C. Take photos a maximum of 7 calendar days prior to submittal.

1.08 POST-CONSTRUCTION PHOTOGRAPHS AND VIDEOS

- A. Provide photographs of the entire site including each area of Work at the completion of Work.
 - 1. Include general condition, structures, vegetation, staging, storing, working, parking areas and excavation areas.
 - 2. Take photos and video from same points in same direction as pre-construction examination.
- B. Submittal of photos and videos is a condition of final payment.

PART 2 PRODUCTS

2.01 MEDIA

- A. Paper media:
 - 1. Commercial grade, glossy surface, acid-free photographic paper.
 - 2. Submit 3 prints of each photographic view within 7 days of taking photographs.
 - 3. Format:
 - a. Ground photos: Color, matte finish, 8-1/2-inch by 11-inch size, mounted on soft card stock.
 - b. Aerial photos: Color, matte finish, 11-inch by 17-inch size, mounted on soft card stock.
 - c. Mount each print in a separate, archival type, non-glare, 3-hole punched protector.
 - 4. Identification: On photograph, provide the following information:
 - a. Name of project.
 - b. Date stamp: Unless otherwise indicated, date and time stamp each photograph as it is being taken so stamp is integral to photograph.
 - c. Description of vantage point, indicating location and direction by compass point.
 - 5. Provide a suitably sized 3-ring binder for each set of prints.
 - a. Furnish binders in sufficient quantities to hold entire set of prints taken for the duration of the Contract.
 - b. Label binder spine and front with project name.
- B. Digital media:
 - 1. Flash drive compatible with current Microsoft Windows.
 - 2. Provide photos as individual, indexed JPG files with the following characteristics:
 - a. Compression shall be set to preserve quality over file size.
 - b. Highest resolution JPG images shall be submitted. Resizing to a smaller size when high resolution JPGs are available shall not be permitted.
 - c. JPG image resolution shall be 5 megapixels at 2,400 by 1,800 or higher.
 - d. Images shall have rectangular clean images. Artistic borders, beveling, drop shadows, etc., are not permitted.
 - 3. Identification: On photograph, provide the following information:
 - a. Name of project.
 - b. Date stamp: Unless otherwise indicated, date and time stamp each photograph as it is being taken so stamp is integral to photograph.
 - c. Description of vantage point, indicating location and direction by compass point.
- C. Videos:
 - 1. Video quality shall be 720p HD or greater in MPG, AVCHD, AVI, or MP4 format.
 - 2. Digital color video format.
 - 3. Provide audio portion of the composite video sufficiently free from electrical interference and background noise to provide complete intelligibility of oral report.
 - 4. Identification: On each copy provide a label with the following information:
 - a. Name of project.
 - b. Date video was recorded.

5. Submit 1 copy of each video within 7 days of recording.
6. Display continuous running time.
7. At start of each video recording, record weather conditions from local newspaper or television and the actual temperature reading at Project site.

PART 3 EXECUTION

Not Used.

END OF SECTION

SECTION 01400
COORDINATION AND SITE CONDITIONS

PART 1 GENERAL

1.01 SECTION INCLUDES

- A. Requirements for coordinating and sequencing the work under the Contract, and requirements regarding existing site conditions.

1.02 JOB SITE COORDINATION

- A. The project shall be coordinated with the normal Operation and Maintenance of the water reclamation facilities per the Owner's direction.
- B. CONTRACTOR shall coordinate and schedule project work to be completed on or before the specified completion date as to not adversely impact operations or cause damage to completed work.
- C. CONTRACTOR shall coordinate and schedule project work and implement required project controls to maintain safe and efficient traffic flow during Work.

1.03 SUBMITTALS

- A. CONTRACTOR shall submit the following information as applicable to coordinate activities:
 - 1. Work Plan and Schedule for completing all Work,
 - 2. Work Plan for installation of anode groundbeds,
 - 3. Work Plan for installation of test stations.
 - 4. Work Plan for restoration of landscaping and site appurtenances including sprinklers, and sod replacement.

1.04 SITE CONDITIONS

- A. Information of Site Conditions: Available information regarding site conditions, topography, existing construction of site facilities as applicable, and similar data are not available.
- B. CONTRACTOR is encouraged to inspect the project site to acquire such information as needed to complete the work under this Contract.
- C. Existing Utilities:
 - 1. CONTRACTOR shall exercise reasonable care to verify locations of utilities and facilities that may be affected by the work.
 - 4. Contractor Responsibilities:
 - a. Where CONTRACTOR's operations could cause damage or inconvenience to railway, telephone, television, power, oil, gas, water, sewer, storm drains, or irrigation systems, the CONTRACTOR shall make arrangements necessary for the protection of these utilities and services. Replace existing utilities removed or damaged during construction, unless otherwise provided

for in these Contract Documents.

- b. CONTRACTOR shall be solely and directly responsible to owner and operator of such properties for damage, injury, expense, loss, inconvenience, delay, suits, actions, or claims of any character brought because of injuries or damage which may result from construction operations under this Contract.
- c. Neither OWNER nor its officers or agents shall be responsible to CONTRACTOR for damages as a result of CONTRACTOR's failure to protect utilities encountered in the work.

C. Interfering Structures:

- 1. Take necessary precautions to prevent damage to existing structures whether on the surface, aboveground, or underground.
- 2. CONTRACTOR may remove and replace in equal or better than original condition, small structures such as fences that interfere with CONTRACTOR's operations only after approval by the OWNER.

D. Salvage of Materials:

- 1. Materials and equipment removed as part of the Work under this Contract shall become the property of the CONTRACTOR, unless specifically stated otherwise.
- 2. CONTRACTOR will remove materials and equipment with extreme care so as not to damage adjacent equipment or surfaces.
- 3. Salvaged material and equipment shall be removed from the project site by the CONTRACTOR in a timely manner and before final completion of the project.

1.05 PROJECT MEETINGS

- A. Preconstruction Conference: A preconstruction conference will be held at the site of work or where requested by the OWNER or ENGINEER following award of a construction contract.
- B. Progress Meetings: OWNER or ENGINEER will schedule regular progress meetings at least weekly to review work progress, schedules, and other matters needing discussion and resolution.

1.06 SEQUENCE OF WORK

A. Operation and Shutdown of Existing Facilities:

- 1. Schedule and conduct activities to enable other facilities on the project site to operate continuously, unless otherwise specified.
- 2. Conduct work outside normal work hours as may be necessary to meet project schedule and avoid undesirable conditions as approved by the OWNER.
- 3. Provide 7 days advance notice to Project Representative of need to shut down a process or facility. Do not proceed with work affecting a facility's operation without obtaining OWNER's advance approval of the need for, and duration of, such work.

B. Time of Work:

1. Normal working hours are between 7:00 AM and 5:00 PM, five days per week.
2. No work will be done between 8:00 PM and 7:00 AM, without prior approval.
3. Requests to work outside specified periods must be submitted at least 72 hours in advance and are subject to Owner approval.
4. Work may be allowed on Sundays or legal holidays, upon request by Contractor and with the written permission of the OWNER.

PART 2 PRODUCTS (Not used)

PART 3 EXECUTION

3.01 CUTTING AND FITTING

A. General:

1. Execute cutting and fitting of work, required to:
 - a. Removal of equipment or materials as required under this Contract.
2. CONTRACTOR shall not, without written consent of OWNER:
 - a. Cut or alter work of another Contractor.
 - b. Cut structural or reinforcing steel.
 - c. Endanger existing or new structures or facilities.
 - d. Shut down or disrupt existing operations.
3. Materials for replacement of work removed shall comply with applicable sections of these Specifications for corresponding type of work to be done.
4. Provide all tools and equipment required to accomplish cutting and patching.

B. Inspection and Preparation

1. Inspect existing conditions of work, including elements subject to movement or damage during disassembly and reassembly.
2. Provide appropriate safety protection before all Work.

C. Procedures:

1. Restore work, which has been cut or removed; install new products to provide completed work in accordance with specified requirements.
2. Refinish entire surfaces as necessary to provide an even finish.
 - a. Refinish continuous surfaces to nearest intersection.
 - b. Refinish entire assemblies.
3. Restore structures and surfaces damaged that are to remain in the completed work including piping, conduit, and other utilities.

4. Make restorations with new materials and appropriate methods as specified for new work of similar nature; if not specified, use best recommended practice of manufacturer or appropriate trade association.
5. Restore damaged work so there is a secure and intimate bond or fastening between new and old work. Finish restored surfaces to such planes, shapes, and textures that no transition between new and old work is evident in finished surfaces.

**END OF
SECTION**

SECTION 01410
REGULATORY REQUIREMENTS

PART 1 GENERAL

1.01 SUMMARY

- A. Section includes: Regulatory authorities and codes.

1.02 AUTHORITIES HAVING JURISDICTION (AHJ)

- A. Also referred to as the permitting agency.
- B. Building Department: West Jordan City.
- C. Fire Department: West Jordan City.

1.03 APPLICABLE CODES

- A. International Code Council (ICC):
 - 1. Electrical code:
 - a. National Fire Protection Association (NFPA), NFPA 70: National Electrical Code (NEC), 2020.
 - 2. Fire code:
 - a. International Fire Code (IFC), 2021.
 - 3. Mechanical code:
 - a. International Mechanical Code (IMC), 2021.
 - 4. Plumbing code:
 - a. International Plumbing Code (IPC), 2021.
- B. Products in contact with drinking water:
 - 1. Materials in contact with drinking waters: In accordance with NSF 61 and NSF 372.
 - a. Certification by an independent ANSI accredited third party, including, but not limited to, NSF International, as being lead-free.

PART 2 PRODUCTS

Not Used.

PART 3 EXECUTION

Not Used.

END OF SECTION

**SECTION 01450
QUALITY CONTROL**

PART 1 GENERAL

1.01 SECTION INCLUDES

- A. Contractor's quality control program procedures in executing the work.
- B. Applicable dates of reference standards.
- C. Product standardization and installation.
- D. Protection of finished work.
- E. Cleaning during construction.

1.02 SUBMITTALS

- A. Submit the following information associated with the quality control:
 - B. Statement and description of Contractor's overall quality control (QC) program, which shall include field supervision, inspection hold points, inspection process, inspection documentation, shop drawing coordination and checking, and equipment installation procedures.
 - C. Name, qualifications, and prior experience of Contractor's designated Quality Control person responsible for the Work for the proposes for OWNER's consideration.
 - D. Name, qualifications, and prior experience of inspection and testing laboratories that Contractor proposes for OWNER's consideration.

1.03 QUALITY CONTROL (QC) PROGRAM

- A. Contractor's QC program shall include the following activities, as a minimum:
 - 1. Field supervision and inspection practices.
 - 2. Quality control over subcontractors, suppliers and other services engaged in the project.
 - 3. Procedures for correcting non-compliant work.
 - 4. Shop drawing coordination and checking procedures, including submittals from product manufacturers and subcontractors.

1.04 REFERENCE STANDARDS

- A. Where referenced to an industry standard does not include a date of issue, conform to issue current as of Contract execution date.
- B. Where reference to an industry standard includes a date of issue, conform to issue current as of the date specified.

1.05 PRODUCT STANDARDIZATION AND INSTALLATION

- A. Like items of products furnished and installed throughout the project shall be end products of one manufacturer to achieve standardization for appearance, operation and maintenance, spare parts and replacement, and manufacturers services.
- B. Installation of materials and equipment: In conformance with manufacturer's written instructions.

1.06 PROTECTION OF WORK

- A. Included in Section 01500 TEMPORARY FACILITIES AND CONTROLS.

PART 2 PRODUCTS - (Not Used)

PART 3 EXECUTION

3.01 QUALITY CONTROL FOR SPECIFIC WORK ACTIVITIES

- A. Contractor shall provide quality control as specified in this section and as specified in the sections related to specific work activities.
- B. **CLEANING DURING CONSTRUCTION**
 - 1. Contractor shall keep Owner's property clean at all times and maintain a clean work site. Contractor shall properly dispose of waste materials, debris, and rubbish (i.e., cigarettes, wrappers, drink containers, etc.) in approved containers to assure that buildings, grounds, roads, and public properties are maintained free from accumulations of waste materials on a daily basis and as identified by Owner or Owner's representative. Contractor shall assure that site is free of all uncontained garbage at the end of each workday.
 - 2. Provide appropriate containment of dust, debris, and over spray.
 - 3. Remove grease, dust, stains, labels, fingerprints, and other foreign materials from exposed and partially exposed surfaces.
 - 4. Handle materials in a controlled manner with as few handlings as possible; do not drop or throw materials from heights.
 - 5. Schedule cleaning operations so that dust and other contaminants resulting from cleaning process will not fall on wet, newly painted surfaces.

6. Use only cleaning materials recommended by manufacturer of surfaces to be cleaned. Use cleaning material only on surfaces recommended by cleaning manufacturer.

C. COMPLETION INSPECTION

1. Contractor shall conduct an inspection of their work near the end of the work, or any increment of the work established by Owner, Engineer, Completion of Work, or by the specifications. Document a punch list of items which do not conform to the approved drawings and specification. Include within the list of deficiencies the estimated date by which the deficiencies will be corrected.
2. Final Acceptance Inspection shall be scheduled upon Contractor's assurance that all specific items previously identified as being unacceptable, along with all remaining work performed under the Contract, will be complete and acceptable by the date scheduled for the final acceptance inspection.
3. Final Acceptance Inspection shall include the Contractor's Quality Control Inspection personnel, superintendent or other primary management person, Owner, and Engineer. Failure of the Contractor to have all contract work acceptably complete for the Final Acceptance Inspection may be cause for the Owner to bill the Contractor for the additional inspection costs.

D. NOTIFICATION OF NONCOMPLIANCE

1. The Owner / Engineer will notify the Contractor of any detected noncompliance with the foregoing requirements. Take immediate corrective action after receipt of such notice. Such notice, when delivered to the Contractor at the work site, will be deemed sufficient for the purpose of notification. If the Contractor fails or refuses to comply promptly, the Owner or engineer can issue an order stopping all or part of the work until satisfactory corrective action has been taken. No part of the time lost due to such stop orders will be made the subject of claim for extension of time or for excess costs or damages by the Contractor.

END OF SECTION

**SECTION 01500
TEMPORARY FACILITIES AND CONTROLS**

PART 1 GENERAL

1.01 SUBMITTALS

- A. Meet requirements of Section 01330, SUBMITTAL PROCEDURES, as applicable. Provide Submittals required below before starting Work at the site or in accordance with accepted schedule of Submittals submissions.
- B. Shop Drawings:
 - 1. Temporary Construction Submittals:
 - a. Equipment and Materials Staging area location plan.
 - b. Work Schedule for the following:
 - (1) Anode Groundbed Installation
 - (2) Cathodic Protection Station Site Restoration
 - (3) Test Station Installation
 - c. Contractor Coordination Plan.
 - d. Waste Collection, Storage, and Disposal Plan.
 - e. Safety Plan.
 - f. QA/QC Plan.

1.02 MOBILIZATION

- A. Reference applicable paragraphs of the General Conditions.
- B. Mobilization shall include, but not be limited to, these principal items:
 - 1. Obtaining required permits.
 - 2. Moving CONTRACTOR's equipment required for first month operations onto site.
 - 3. Installing temporary construction power, wiring, and lighting facilities.
 - 4. Providing onsite sanitary facilities and potable water facilities as specified and as required by Laws and Regulations, and governing agencies.
 - 5. Arranging for and erection of CONTRACTOR's work and storage yard.
 - 6. Posting OSHA required notices and establishing safety programs and procedures.
 - 7. Having the CONTRACTOR's superintendent at the site full time.
 - 8. Submitting initially acceptable schedules as required in Section 01 00 00, General Requirements.

1.03 CONTRACTOR'S USE OF PREMISES

- A. Reference applicable paragraphs of the General Conditions.
- B. Should additional lands and access thereto for temporary construction facilities or storage of materials and equipment be required, reference requirements provided in the General Conditions.

1.04 PERMITS

- A. Permits, Licenses, or Approvals: Obtain in accordance with the General Conditions and as otherwise may be provided in the Supplementary Conditions and retain onsite.

1.05 PROTECTION OF WORK AND PROPERTY

- A. Reference the General Conditions.
- B. Comply with OWNER's safety rules while on OWNER's property.
- C. Keep OWNER informed of accidents on the site and related claims.
- D. Use of Explosives: No blasting or use of explosives will be allowed on the site.
- E. During the performance of the Work, CONTRACTOR is responsible for adapting its means, methods, techniques, sequences and procedures of construction to allow OWNER to maintain operation at the existing level of facility production and consistent with applicable permit requirements, and Laws and Regulations. In performing such Work and in cooperating with the OWNER to maintain operations, it may be necessary for the CONTRACTOR to plan, design, and provide various temporary services, utilities, connections, temporary piping and heating, access, and similar items which will be included within the Contract Price.

PART 2 PRODUCTS - (Not Used)

PART 3 EXECUTION

3.01 TEMPORARY UTILITIES

- A. Power: Electric power may be available at the site(s) for use by Contractor. Determine the type and amount available and make arrangements with the OWNER for obtaining temporary electric power service.
- B. Lighting: Provide temporary lighting to meet all applicable safety requirements to allow erection, application or installation of materials and equipment, and observation or inspection of the Work.
- C. Water: Utility Water and Potable Water are available from the Owner at the project site(s). Coordinate with the OWNER. Contractor to provide a separate drinking water source at Contractor's own expense.
- D. Sanitary and Personnel Facilities: Provide and maintain facilities for CONTRACTOR's employees, Subcontractors, and all other onsite employer's employees. Service, clean, and maintain facilities and enclosures.
- E. Telephone Service: Telephone Service is not available from the Owner at the project site(s).
- F. Fire Protection: Furnish and maintain on the site adequate firefighting equipment capable of extinguishing incipient fires. Comply with applicable parts of the National Fire Prevention Standard for Safeguarding Building Construction Operations (NFPA No. 241).

3.02 PROTECTION OF WORK AND PROPERTY

A. General:

1. Perform Work within rights-of-way and easements in a systematic manner that minimizes inconvenience to property owners and the public.
2. No residence or business shall be cut off from vehicular traffic for a period exceeding 4 hours unless special arrangements have been made.
3. Maintain in continuous service all existing oil and gas pipelines, underground power, telephone or communication cable, water mains, irrigation lines, sewers, poles and overhead power, and all other utilities encountered along the line of work, unless other arrangements satisfactory to owners of said utilities have been made.
4. Where completion of Work requires temporary or permanent removal and/or relocation of an existing utility, coordinate all activities with owner of said utility and perform all work to their satisfaction.
5. Keep fire hydrants and water control valves free from obstruction and available for use at all times.
6. In areas where the CONTRACTOR's operations are adjacent to or near a utility such as gas, telephone, television, electric power, water, or sewer and such operations may cause damage or inconvenience, suspend operations until arrangements necessary for protection thereof have been made by the CONTRACTOR.
7. Notify property owners and utility offices that may be affected by the construction operation at least 2 days in advance.
8. Before exposing a utility, obtain utility owner's permission. Should service of utility be interrupted due to the CONTRACTOR's operation, notify proper authority immediately. Cooperate with said authority in restoring service as promptly as possible and bear costs incurred.
9. Do not impair operation of existing sewer systems. Prevent construction material, pavement, concrete, earth, volatile and corrosive wastes, and other debris from entering sewers, pump stations, or other sewer structures. Maintain original site drainage wherever possible.

B. Site Security: Not Used.

C. Barricades and Lights:

1. Provide as necessary to prevent unauthorized entry to construction areas and affected roads, streets, and alleyways, inside and outside of fenced area, and as required to ensure public safety and the safety of CONTRACTOR's employees, other employer's employees, and others who may be affected by the Work.
2. Provide to protect existing facilities and adjacent properties from potential damage.
3. Locate to enable access by facility operators and property owners.
4. Protect streets, roads, highways, and other public thoroughfares that are closed to traffic by effective barricades with acceptable warning signs.
5. Locate barricades at the nearest intersecting public thoroughfare on each side of the blocked section.

D. Existing Structures: Where CONTRACTOR considers removal of small structures such as fences, mailboxes, signposts, and culverts that interfere with CONTRACTOR's operations, obtain

approval of property owner and ENGINEER. Replace those removed in a condition equal to or better than original.

E. Waterways:

1. Keep ditches, culverts, and natural drainages continuously free of construction materials and debris.

F. Dewatering: Construct, maintain, and operate channels, sumps, pumps, or other temporary diversion and protection works. Furnish materials required, install, maintain, and operate necessary pumping and other equipment for the environmentally safe removal and disposal of water from the various parts of the Work. Maintain the foundations and parts of the Work free from water.

3.03 TEMPORARY CONTROLS

A. Air Pollution Control:

1. Minimize air pollution from construction operations.
2. Burning of waste materials, rubbish, or other debris will not be permitted on or adjacent to the site.
3. Provide and maintain temporary dust-tight partitions, bulkheads, or other protective devices during construction to permit normal operation of existing facilities. Construct partitions of plywood, insulating board, plastic sheets, or similar material. Construct partitions in such a manner that dust and dirt from demolition and cutting will not enter other parts of existing building or facilities. Remove temporary partitions as soon as the need no longer exists.

B. Noise Control:

1. Provide acoustical barriers so noise emanating from tools or equipment will not exceed legal noise levels.
2. Noise Control Plans: Proposed plan to mitigate construction noise impacts and to comply with noise control ordinances including method of construction, equipment to be used, and acoustical treatments.
3. The project site is located near businesses; unnecessary loud noises such as radios, foul or objectionable language, yelling, etc. will not be permitted. Contractor's employees shall employ only orderly and competent people and upon notice from the OWNER that any of the Contractor's employees are, in the opinion of the OWNER, objectionable or disorderly, such employees shall be dismissed.

C. Water Pollution Control:

1. Do not dispose of volatile wastes such as mineral spirits, oil, chemicals, or solvents on the project site or in storm or sanitary drains. Disposal of wastes into streams or waterways is prohibited.
2. Provide acceptable containers for onsite collection and storage and offsite disposal of waste materials, debris, and rubbish.
3. Waste solvents are the property of the CONTRACTOR and as such, the CONTRACTOR shall be responsible for recycling or proper disposal at an approved facility.
4. Protect stormwater catchments with filter inserts or sock barriers. Contractor to follow Storm Water Pollution Prevention Plan best management practices.

- D. Traffic Control:
 - 1. Provide barriers and protective measures necessary to protect the public and Work areas in or adjacent to roadways and prevent unauthorized access to Work areas in or adjacent to roadways.
 - 2. Provide barriers and protective measures necessary to prevent unauthorized access to Work areas in or adjacent to roadways.
- E. Construction hoists, elevators, scaffolds, stages, shoring, and similar temporary facilities shall be of ample size and capacity to adequately support and move the loads to which they will be subjected. Railings, enclosures, safety devices, and controls required by law or for adequate protection of life and property shall be provided. All facilities shall meet OSHA requirements and all applicable federal, state, county, and local requirements.

3.04 STORAGE YARDS AND BUILDINGS

- A. Temporary Storage Yards: Construct temporary storage yards for storage of products that are not subject to damage by weather conditions.
- B. Temporary Storage Buildings:
 - 1. Provide environmental control systems that meet recommendations of manufacturers of equipment and materials stored.
 - 2. Arrange or partition to provide security of contents and ready access for inspection and inventory.
 - 3. Store combustible materials (paints, solvents, fuels, etc.) in a well-ventilated and remote building, meeting safety standards.

3.05 PARKING AREAS

- A. Control vehicular parking to preclude interference with public traffic or parking, access by emergency vehicles, OWNER's operations, or construction operations.
- B. Provide parking facilities for personnel working on the Project. No employee or equipment parking will be permitted on OWNER's existing paved areas, except as specifically designated for CONTRACTOR's use.

3.06 VEHICULAR TRAFFIC

- A. Comply with Laws and Regulations regarding closing or restricting the use of public streets or highways. No public or private road shall be closed, except by written permission of the proper authority. Assure the least possible obstruction to traffic and normal commercial pursuits.
- B. Conduct Work to interfere as little as possible with public travel, whether vehicular or pedestrian.
- C. Contractor shall not obstruct, block, or impede the flow of traffic along the fire lane along the north or east sides of the parking garage without prior approval of the OWNER.

3.07 SAFETY

A. Safety Responsibilities:

1. CONTRACTOR shall do whatever is necessary of safety and be solely and completely responsible for conditions of the jobsite, including safety of all persons (including employees) and property during the Contract period. This requirement shall apply continuously and not be limited to normal working hours.
2. ENGINEER's duty to conduct construction review of the CONTRACTOR's performance is not intended to include a review or approval of the adequacy of CONTRACTOR's safety supervisor, safety program, or safety measures taken in, on, or near the construction site.

B. Safety Requirements:

1. Safety provisions shall conform to Federal and State Department of Labor Occupational Safety and Health Act (OSHA), and other applicable federal, state, county, and local laws, ordinances, codes, requirements set forth herein, and regulations that may be specified in other parts of these Contract Documents. Where these are in conflict, the more stringent requirement shall be followed.

3.08 CLEANING DURING CONSTRUCTION

A. General:

1. In accordance with the General Conditions and as may be specified in specific Specification sections, and as required herein.
2. Wet down exterior surfaces prior to sweeping to prevent blowing of dust and debris. Daily, sweep all floors, and pick up all debris and dispose.
3. Provide approved containers for collection and disposal of waste materials, debris, and rubbish. At least at weekly intervals, dispose of such waste materials, debris, and rubbish offsite.
4. Daily, brush sweep the entry drive and roadways, and all other streets and walkways affected by Work and where adjacent to Work.
5. Remove snow and ice from access roads and construction areas as necessary to maintain access by OWNER and ENGINEER and to maintain progress of work.

END OF SECTION

SECTION 01600
PRODUCT REQUIREMENTS

PART 1 GENERAL

1.01 SUMMARY

- A. Section includes: Requirements for tangible materials, raw or manufactured, that become part of the project.

1.02 REFERENCES

- A. NSF International (NSF):
 - 1. 60 - Technical Requirements.
 - 2. 61 - Drinking Water System Components - Health Effects.

1.03 DEFINITIONS

- A. Certificates: Documents that the work is in accordance with the Contract Documents.
- B. Extra stock materials: Extra stock materials provided for the Owner's use in facility operation and maintenance.
- C. Manufacturer's instructions:
 - 1. Stipulations, directions, and/or recommendations issued form by the manufacturer of the product addressing handling, installation, erection, and/or application of the product.
- D. Products:
 - 1. Raw materials, finished goods, equipment, systems, and shop fabrications.
- E. Product data:
 - 1. Public information about the product which is found in the manufacturer's catalogs or on their web site including catalog pages, data sheets, bulletins, layout drawings, exploded views, and brochures.
- F. Samples:
 - 1. As defined in the General Conditions and Supplementary Conditions.
 - 2. Full-size actual products or pieces of products intended to illustrate the products to be incorporated into the project. Sample submittals are often necessary for such characteristics as colors, textures, and other appearance issues.
- G. Schedules:
 - 1. Product parts and materials lists.
- H. Shop drawings:
 - 1. As defined in the General Conditions and Supplementary Conditions.

2. Shop drawings are prepared specifically for the project to illustrate details, dimensions, and other data necessary for satisfactory fabrication or construction that are not shown in the contract documents. Shop drawings could include graphic line-type drawings and single-line diagrams.
- I. Spare parts:
 1. Duplicate parts necessary to replace a damaged or worn part of the product.
 2. Consumables such as operating fluids.
 - J. Special tools:
 1. Special wrenches, gauges, circuit setters, and other similar devices required for the proper operation or maintenance of a system that would not normally be in the Owner's tool kit and that have been specifically made for use on a product for assembly, disassembly, repair, or maintenance.
 - K. Submittals:
 1. As defined in the General Conditions and Supplementary Conditions.
 2. Samples, product data, shop drawings, and others that demonstrate how Contractor intends to conform to the Contract Documents.

1.04 SUBMITTALS

- A. Products in contact with drinking water:
 1. Provide certification by an independent ANSI accredited third party.
 - a. In accordance with NSF 61.
 - b. Weighted average lead content of less than 0.25 percent in accordance with NSF 372.

1.05 GENERAL REQUIREMENTS

- A. Provide products by same manufacturer when products are of similar nature, unless otherwise specified.
- B. Provide like parts of duplicate units that are interchangeable.
- C. Provide equipment or product that has not been in service prior to delivery, except as required by tests.
- D. Provide products produced by manufacturers regularly engaged in the production of these products.

PART 2 PRODUCTS

2.01 MATERIAL

- A. Dissimilar metals:
 1. Separate contacting surfaces with dielectric material.
 2. Neoprene, bituminous impregnated felt, heavy bituminous coatings, nonmetallic separators or washers, or other materials as specified.

- B. Products in contact with drinking water or water in the process of becoming drinking water in accordance with NSF 60 or NSF 61 by an independent ANSI accredited third party.
- C. Edge grinding:
 - 1. Sharp projections of cut or sheared edges of ferrous metals which are not to be welded shall be ground to a radius required to ensure satisfactory paint adherence.
- D. Use anti-galling compound on threads of stainless steel fasteners during factory assembly.
- E. Provide anti-galling compound with stainless steel fasteners shipped for field assembly.
- F. Aluminum in contact with concrete or masonry: Apply epoxy mastic as specified in Section 09960 - High-Performance Coatings, coating system EPX-M-5.
- G. Provide new pipe manufactured for the project, not from manufacturer's inventory, under the following conditions:
 - 1. Pipes 24-inch diameter and larger.
 - 2. Pipe manufactured more than 6 months prior to delivery if the pipe material or its coating is subject to UV degradation.
 - 3. Ductile iron pipe with cement-mortar lining manufactured more than 6 months prior to delivery to the project.
 - 4. Steel pipe 6-inch diameter and larger.
- H. Mark each length of pipe in accordance with applicable standards.

2.02 PRODUCT SELECTION

- A. Provide products with Engineer approved submittals.
- B. When products are specified by standard or specification designations of technical societies, organizations, or associations only, provide products that meet or exceed reference standard and Specifications.
- C. When products are specified with names of manufacturers but no model numbers or catalog designations, provide Products by one of named manufacturers that meet or exceed Specifications.
- D. When products are specified with names of manufacturers and model numbers or catalog designations, provide Products with model numbers or catalog designations by one of named manufacturers.
- E. When products are specified with names of manufacturers, but with brand or trade names, model numbers, or catalog designations by one manufacturer only, provide:
 - 1. Products specified by brand or trade name, model number, or catalog designation.
 - 2. Products by one of named manufacturers proven, in accordance with requirements for an "or equal", including Engineer's approval, to meet or exceed quality, appearance and performance of specified brand or trade name, model number, or catalog designation.

- F. When Products are specified with only one manufacturer followed by "or Equal," provide:
 - 1. Products meeting or exceeding Specifications by specified manufacturer.
 - 2. Engineer deemed "or equal" evidenced by an approved shop drawing or other written communication.

2.03 SHIPMENT

- A. Requirements prior to shipment of equipment:
 - 1. Engineer approved shop drawings.
 - 2. Engineer approved Manufacturer's Certificate of Source Testing as specified in the Technical Sections.
 - 3. Draft operations and maintenance manuals, as specified in Section 01782 - Operation and Maintenance Manuals, when required by specifications.
- B. Prepare products for shipment by:
 - 1. Tagging or marking to agree with delivery schedule or shop drawings.
 - 2. Including complete packing lists and bills of material with each shipment.
 - 3. Packaging products to facilitate handling and protection against damage during transit, handling, and storage.
 - 4. Securely attach special instructions for proper field handling, storage, and installation to each piece of equipment before packaging and shipment.
- C. Transport products by methods that avoid product damage.
- D. Deliver products in undamaged condition in manufacturer's unopened containers or packaging.

2.04 SPARE PARTS, MAINTENANCE PRODUCTS, AND SPECIAL TOOLS

- A. Provide spare parts and maintenance products as required by Technical Sections.
 - 1. Submit completed Attachment A - Spare Parts, Maintenance Products, and Special Tools Inventory List.
- B. Provide one set of special tools required to install or service the equipment.
- C. Box, tag, and clearly mark items.
- D. Contractor is responsible for spare parts, maintenance products, and special tools until acceptance by Owner.

PART 3 EXECUTION

3.01 DELIVERY AND HANDLING

- A. Handle equipment in accordance with manufacturer's instructions.
- B. Provide construction equipment and personnel to handle products by methods to prevent soiling or damage.

- C. Upon delivery, promptly inspect shipments:
 - 1. Verify compliance with Contract Documents, correct quantities, and undamaged condition of products.
 - 2. Acceptance of shipment does not constitute final acceptance of equipment.

- D. Spare parts, maintenance products, special tools.
 - 1. Immediately store in accordance with the manufacturer's instructions.
 - 2. Store spare parts, maintenance products, and special tools in enclosed, weather-proof, and lighted facility during the construction period.
 - a. Protect parts subject to deterioration, such as ferrous metal items and electrical components with appropriate lubricants, desiccants, or hermetic sealing.
 - 3. With Owner's written request for advanced delivery of spare parts, maintenance products, and special tools.
 - a. Deliver requested items and deduct them from the inventory list.
 - b. Provide transmittal documentation.
 - 4. Store large items individually:
 - a. Weight: Greater than 50 pounds.
 - b. Size: Greater than 24 inches wide by 18 inches high by 36 inches long.
 - c. Clearly labeled:
 - 1) Equipment tag number.
 - 2) Equipment manufacturer.
 - 3) Subassembly component, if appropriate.
 - 4) Store smaller items in spare parts box:
 - d. Weight: Less than 50 pounds.
 - e. Size: Less than 24 inches wide by 18 inches high by 36 inches long.
 - f. Clearly labeled:
 - 1) Equipment tag number.
 - 2) Equipment manufacturer.
 - 3) Subassembly component, if appropriate.
 - 4) Spare parts and special tools box:
 - g. Box material: Waterproof, corrosion resistant.
 - h. Hinged cover:
 - 1) Locking hasp.
 - i. Spare parts inventory list taped to underside of cover.
 - j. Clearly labeled:
 - 1) The words "Spare Parts and/or Special Tools".
 - 2) Equipment tag number.
 - 3) Equipment manufacturer.
 - 4) Subassembly component, if appropriate.

3.02 STORAGE AND PROTECTION

- A. Immediately store and protect products until installed in Work.

- B. Furnish covered, weather-protected storage structures providing a clean, dry, noncorrosive environment for mechanical equipment, valves, architectural items, electrical and instrumentation equipment and special equipment to be incorporated into this project.
 - 1. Storage of equipment shall be in strict accordance with the "instructions for storage" provided by the manufacturer.
 - a. Including connection of heaters, lubrication, rotating shafts, etc.

2. The Contractor shall furnish a copy of the manufacturer's instructions for storage to the Engineer prior to storage of equipment and materials.
- C. Store products with seals and legible labels intact.
 - D. Protect painted or coated surfaces against impact, abrasion, discoloration, and damage.
 1. Repaint or recoat damaged painted or coated surfaces.
 - E. Exterior storage of fabricated products:
 1. Place on aboveground supports that allow for drainage.
 2. Cover products subject to deterioration with impervious sheet covering.
 3. Provide ventilation to prevent condensation under covering.
 - F. Store moisture sensitive products in watertight enclosures.
 - G. Store loose granular materials on solid surfaces in well-drained area.
 1. Prevent materials mixing with foreign matter.
 2. Provide access for inspection.
 - H. Payment will not be made for equipment and materials improperly stored or stored without providing Engineer with the manufacturer's instructions for storage.
 - I. Provide an equipment log and stored products log with monthly pay applications.
 1. Data includes as a minimum: The storage location, equipment or product identification, date stored, date of inspection/maintenance, date removed from storage, copy of manufacturer's recommended storage guidelines, description of inspection/maintenance activities performed, and signature of party performing inspection/maintenance.

3.03 INSTALLATION

- A. Inspect hardware or fittings prior to product installation.
- B. Use anti-galling compound on stainless steel threads used for field assembly.

3.04 PROTECTION AFTER INSTALLATION

- A. Provide substantial coverings as necessary to protect installed products from damage from traffic and subsequent construction operations.
 1. Remove covering when no longer needed.
 2. Replace corroded, damaged, or deteriorated equipment, product, or parts before acceptance of the project.
- B. Update equipment log with monthly pay applications.
 1. Data includes as a minimum: Description of maintenance activities performed in accordance with the manufacturer's recommendation and industry standards and signature of party performing maintenance.

END OF SECTION

**APPENDIX A - SPARE PARTS, MAINTENANCE PRODUCTS,
AND SPECIAL TOOLS INVENTORY LIST**

SPARE PARTS, MAINTENANCE PRODUCTS, AND SPECIAL TOOLS INVENTORY LIST

Owner: _____ Date: _____
 Contractor: _____ Project No.: _____
 Project Name: _____

Inventory List				
Spec Number: _____		Spec Title _____		
Equipment Tag No.: _____		Equipment Manufacturer: _____		
Quantity	Subassembly Component	Description	Manufacturer's Part Number	Storage Location

SECTION 01610

PROJECT DESIGN CRITERIA

PART 1 GENERAL

1.01 SUMMARY

- A. Section includes: Project design criteria such as temperature and site elevation.

1.02 PROJECT DESIGN CRITERIA

- A. Equipment and materials for the project are to be suitable for performance in wastewater treatment plant environment and under following conditions:
 - 1. Design temperatures are:
 - a. Outdoor temperatures: 0 to 105 degrees Fahrenheit.
 - 2. Design groundwater depth: 5 feet.
 - 3. Freeze-thaw conditions.
 - 4. Moisture conditions: Defined in individual equipment sections.
 - 5. Site elevation: Approximately 4,300 feet above mean sea level.

PART 2 PRODUCTS

Not Used.

PART 3 EXECUTION

Not Used.

END OF SECTION

SECTION 01738

SELECTIVE ALTERATIONS AND DEMOLITION

PART 1 GENERAL

1.01 SUMMARY

- A. Section includes:
 - 1. Cutting or modifying of existing and new work.
 - 2. Partial demolition of structures.
 - 3. In-place abandonment of pipe.

1.02 REFERENCES

- A. American National Standards Institute (ANSI):
 - 1. A10.6 - Safety and Health Program Requirements for Demolition Operations.
- B. International Concrete Repair Institute (ICRI):
 - 1. Guideline No. 310.2R - Selecting and Specifying Concrete Surface Preparation for Sealers, Coatings, Polymer Overlays, and Concrete Repair.
 - 2. Guideline No. 310.3R - Guide for the Preparation of Concrete Surfaces for Repair Using Hydrodemolition Methods.

1.03 DEFINITIONS

- A. Chipping hammer: A hand-operated electrical or pneumatic demolition device for removal of hardened concrete or masonry materials having a weight of less than 15 pounds and an impact frequency of greater than 2,000 blows/minute.
- B. Concrete breaker: A hand-operated electrical or pneumatic demolition device for removal of hardened concrete or masonry materials having a weight greater or impact frequency less than the limits defined for a chipping hammer.
- C. Coring equipment: Non-impact rotary drill with diamond cutting edges.
- D. Heavy abrasive blast: Cleaning procedure by which various abrasives materials, or steel shot, are forcibly propelled by high pressure against a surface to remove loose material and produce a concrete surface roughened to ICRI Surface Profile CSP-7, or higher, as specified in ICRI 301.3R.

1.04 DESCRIPTION OF WORK

- A. The work includes partial demolition, cutting, and modifying of existing facilities, utilities, and/or structures.
- B. These facilities may be occupied and/or operational. Satisfactory completion of the work will require that the Contractor plan activities carefully to work around unavoidable obstacles and to maintain overall stability of structures and structural elements. It will further require restoration of existing facilities, utilities, and

structures that are to remain in place and that are damaged by demolition or removal operations.

1.05 SUBMITTALS

- A. General:
 - 1. Submit specified in Section 01330 - Submittal Procedures.
- B. Shop drawings: Include:
 - 1. The location of all embedded items shall be documented using diagrams and/or other media that clearly show dimensions and locations of existing structural elements, existing embedded items and any new embedded items and their relationship to each other.
- C. Submittals for information only:
 - 1. Permits and notices authorizing demolition.
 - 2. Certificates of severance of utility services.
 - 3. Permit for transport and disposal of debris.
 - 4. Selective Demolition Plan.
 - 5. Pipe Abandonment Plan.
- D. Quality assurance submittals:
 - 1. Qualifications of non-destructive testing agency/agencies.
- E. Project record documents.
- F. Drawings and/or other media documenting locations of service lines and capped utilities.

1.06 QUALITY ASSURANCE

- A. Qualifications:
 - 1. Assign relocation, removal, cutting, coring and patching to trades and workers qualified to perform the Work in manner that causes the least damage and that provides means of returning surfaces to an appearance at least equal to that of the surrounding areas unaffected by the Work.
 - 2. Non-destructive testing agencies: Minimum of 5 years' experience performing non-destructive testing for location of steel reinforcement in existing concrete under conditions similar to that required for this Work.

1.07 SEQUENCING

- A. Perform Work in sequences and within times specified in Section 01140 - Work Restrictions.
- B. If the facility or utility to be modified cannot be removed from service, perform the Work while the facility is in operation using procedures and equipment that do not jeopardize operation or materially reduce the efficiency of that facility.
- C. Coordinate the Work with operation of the facility:
 - 1. Do not begin alterations of designated portions of the Work until specific permission for activities in each area has been granted by Owner in writing.
 - 2. Engineer will coordinate the planned procedure with facility manager.

3. Complete Work as quickly and with as little delay as possible.
- D. Owner will cooperate in every way practicable to assist in expediting the Work.
- E. When necessary for the proper operation or maintenance of portions of the facility, reschedule operations so the Work will not conflict with required operations or maintenance.

1.08 REGULATORY REQUIREMENTS

- A. Dispose of debris in accordance with governing regulatory agencies.
- B. Comply with applicable air pollution control regulations.
- C. Obtain permits for building demolition, transportation of debris to disposal site and dust control.

1.09 PREPARATION

1.10 PROJECT CONDITIONS

- A. Do not interfere with use of adjacent structures and elements of the facility not subject to the Work described in this Section. Maintain free and safe passage to and from such facilities.
- B. Provide, erect, and maintain barricades, lighting, guardrails, and protective devices as required to protect building occupants, general public, workers, and adjoining property:
 1. Do not close or obstruct roadways without permits.
 2. Conduct operations with minimum interference to public or private roadways.
- C. Prevent movement, settlement, or collapse of structures adjacent services, sidewalks, driveways and trees
 1. Provide and place bracing or shoring.
 2. Cease operations and notify Engineer immediately when safety of structures appears to be endangered. Take precautions to properly support structure. Do not resume operations until safety is restored.
 3. Assume liability for movement, settlement, or collapse. Promptly repair damage.
- D. Arrange and pay for capping and plugging utility services. Disconnect and stub off.
 1. Notify affected utility company in advance and obtain approval before starting demolition.
 2. Place markers to indicate location of disconnected services.
- E. Unknown conditions:
 1. The drawings may not represent all conditions at the site and adjoining areas. Compare actual conditions with drawings before commencement of Work.
 2. Existing utilities and drainage systems below grade are located from existing documents and from surface facilities such as manholes, valve boxes, area drains, and other surface fixtures.
 3. If existing active services encountered are not indicated or otherwise made known to the Contractor and interfere with the permanent facilities under

construction, notify the Engineer in writing, requesting instructions on their disposition. Take immediate steps to ensure that the service provided is not interrupted, and do not proceed with the Work until written instructions are received from the Engineer.

PART 2 EXECUTION

2.01 EXAMINATION

- A. Prior to beginning selective demolition operations, perform a thorough inspection of the facility and site, and report to the Engineer defects and structural damage to or deterioration of existing construction to remain.
- B. Examine areas affected by the Work and verify the following conditions prior to commencing demolition:
 - 1. Disconnection of utilities as required.
 - 2. That utilities serving occupied or active portions of surrounding facilities will not be disturbed, except as otherwise indicated.
- C. If unsatisfactory conditions exist, notify the Engineer, and do not begin demolition operations until such conditions have been corrected.

2.02 PREPARATION

- A. Protection:
 - 1. Erect weatherproof closures to protect the interior of facilities and elements or equipment that are not designed for exposure to the weather. Provide temporary heat, cooling, and humidity control as necessary to prevent damage to existing and new construction. Maintain existing exiting paths and/or provide new paths in compliance with Building Code requirements.
 - 2. Erect and maintain dustproof partitions as required to prevent spread of dust, to other parts of building. Maintain negative pressure in the area where the Work is being performed to prevent the accidental spread of dust and to minimize the spread of fumes related to the Work.
 - 3. Upon completion of Work, remove weatherproof closures and dustproof partitions, and repair damaged surfaces to match adjacent surfaces.
 - 4. Provide and maintain protective devices to prevent injury from falling objects.
 - 5. Locate guardrails in stairwells and around open shafts to protect workers. Post clearly visible warning signs.
 - 6. Cause as little inconvenience to adjacent building areas as possible.
 - 7. Protect landscaping and existing construction to remain from damage or displacement.
 - 8. Carefully remove designated materials and equipment to be salvaged by Owner or reinstalled.
 - 9. Store and protect materials and equipment to be reinstalled.

2.03 DEMOLITION

- A. General:
 - 1. Perform demolition work in accordance with ANSI A10.6.
 - 2. Conduct demolition and removal work in a manner that will minimize dust and flying particles.

- a. Use water or dust palliative when necessary to prevent airborne dust.
 - b. Provide and maintain hoses and connections to water main or hydrant.
3. Sawcut concrete to establish the edges of demolition, wherever possible.
 - a. Do not use a concrete breaker within 6 inches of reinforcing or structural metals that are designated to remain.
 - b. At edges that are not sawcut, remove the final 6 inches of material with a chipping hammer as defined herein. At surfaces where material is removed with a chipping hammer, follow with a heavy abrasive blast to remove all loose material and microcracking.
 - c. Alternate techniques to remove concrete may be used if acceptable to the Engineer; however, techniques other than those deemed by ICRI Guideline No. 310.2R to provide a low risk of introducing microcracking will require a subsequent procedure to remove loose material.
 4. Remove materials carefully, to the extent indicated and as required.
 - a. Provide neat and orderly junctions between existing and new materials.
 - b. Use methods that terminate surfaces in straight lines at natural points of division.
 5. Do not remove anything beyond the limits of Work indicated without prior written authorization of the Engineer. If in doubt about whether to remove an item, obtain written authorization of the Engineer prior to proceeding.
 6. Perform work so as to provide the least interference and most protection to existing facilities to remain.
- B. Immediately upon discovery, remove and dispose of contaminated, vermin-infested, or dangerous materials using safe means that will not endanger health of workers and public.
 - C. Remove trees and shrubs within marked areas; clear undergrowth and dead plant material as specified in Section 02300 - Earthwork.
 - D. Backfill open pits and holes caused by demolition as specified in Section 02300 - Earthwork.
 - E. Rough grade areas affected by demolition.
 - F. Remove demolished materials, tools, and equipment upon completion of demolition.

2.04 RESTORATION

- A. General:
 1. Repair damage caused by demolition to conditions equal to those that existing prior to beginning of demolition.
 - a. Patch and replace portions of existing finished surfaces that are damaged, lifted, and discolored with matching material. Refinish patched portion surfaces in a manner which produces uniform color and texture to entire surface.
 - b. When existing finish cannot be matched, refinish entire surface to nearest change of plane where angle of change exceeds 45 degrees.
 2. The cost of repairs shall be at the Contractor's expense at no increase in the Contract Price.

3. When new construction abuts or finishes flush with existing construction, make smooth transitions. Match finish of existing construction.
4. Where partitions are removed, patch floors, walls, and ceilings with finish materials that match existing materials.
5. Where removal of partitions results in adjacent spaces becoming one, rework floors, walls, and ceilings to provide smooth planes without breaks, steps, or bulkheads.
6. Where changes of plane exceed 2 inches, request instructions for making transition.
7. Trim and refinish existing doors as necessary to clear new floors.
8. Match patched construction with adjacent construction in texture and appearance so that patch or transition is invisible at 5-foot distance.
9. When finished surfaces are cut so that smooth transition is impossible, terminate existing surface in neat manner along straight line at natural line of division and provide appropriate trim.
10. Landscaping restoration to include sod as specified. Spreading seed will not be allowed.

2.05 FIELD QUALITY CONTROL

- A. Do not proceed with demolition without Engineer's inspection of lay out.
- B. Do not deviate from the submitted demolition plan without notifying the Engineer prior to Work.

END OF SECTION

SECTION 01770
CLOSEOUT PROCEDURES

PART 1 GENERAL

1.01 SUMMARY

- A. Section includes: Contract closeout requirements.

1.02 REFERENCES

- A. American Water Works Association (AWWA).

1.03 FINAL CLEANING

- A. Perform final cleaning prior to inspections for Final Completion
- B. Employ skilled workers who are experienced in cleaning operations.
- C. Use cleaning materials which are recommended by manufacturers of surfaces to be cleaned.
- D. Prevent scratching, discoloring, and otherwise damaging surfaces being cleaned.
- E. Remove dust, cobwebs, and traces of insects and dirt.
- F. Clean grease, mastic, adhesives, dust, dirt, stains, fingerprints, paint, blemishes, sealants, plaster, concrete, and other foreign materials from sight-exposed surfaces, and fixtures and equipment.
- G. Remove non-permanent protection and labels.
- H. Polish waxed woodwork and finish hardware.
- I. Wax and buff hard floors, as applicable.
- J. Wash and polish glass, inside and outside.
- K. Wash and shine mirrors.
- L. Polish glossy surfaces to clear shine.
- M. Vacuum carpeted and soft surfaces.
- N. Clean permanent filters and replace disposable filters when heating, ventilation, and air conditioning units were operated during construction.
- O. Clean ducts, blowers, and coils when units were operated without filters during construction.

- P. Clean light fixtures and replace burned-out or dim lamps.
- Q. Probes, elements, sample lines, transmitters, tubing, and enclosures have been cleaned and are in like-new condition.

1.04 WASTE DISPOSAL

- A. Arrange for and dispose of surplus materials, waste products, and debris off-site:
 - 1. Prior to making disposal on private property, obtain written permission from Owner of such property.
- B. Do not fill ditches, washes, or drainage ways which may create drainage problems.
- C. Do not create unsightly or unsanitary nuisances during disposal operations.
- D. Maintain disposal site in safe condition and good appearance.
- E. Complete leveling and cleanup prior to Final Completion of the Work.

1.05 TOUCH-UP AND REPAIR

- A. Touch-up or repair finished surfaces on structures, equipment, fixtures, and installations that have been damaged prior to inspection for Final Completion
- B. Refinish or replace entire surfaces which cannot be touched-up or repaired satisfactorily.

1.06 CLOSEOUT DOCUMENTS

- A. Submit the following Closeout Submittals before Substantial Completion:
 - 1. Punch list of items to be completed or corrected with the request for issuance of Substantial Completion.
 - 2. Evidence of Compliance with Requirements of Governing Authorities.
 - 3. Project Record Documents.
 - 4. Approved Operation and Maintenance Manuals.
 - 5. Approved Warranties and Bonds.
 - 6. Keys and Keying Schedule.
 - 7. Completed contract requirements for commissioning and process start-up.
- B. Submit the following Closeout Submittals before final completion of the Work and at least 7 days prior to submitting Application for Final Payment:
 - 1. Punch list of items have been completed and Engineer and Owner are satisfied that all deficiencies are corrected.
 - 2. Evidence of Payment and Release of Liens or Stop Payment Notices as outlined in Conditions of the Contract.
 - 3. Release of claims as outlined in Conditions of the Contract.
 - 4. Submit certification of insurance for products and completed operations, as specified in the General Conditions.
 - 5. Final statement of accounting.
 - 6. Submit Final (As-Built) Schedule as specified in Section 01321 - Schedules and Reports.

1.07 PROJECT RECORD DOCUMENTS

- A. Maintain at Project site, available to Owner and Engineer, 1 copy of the Contract Documents, shop drawings, and other submittals in good order:
1. Mark and record field changes and detailed information contained in submittals and change orders.
 2. Record actual depths, horizontal and vertical location of underground pipes, duct banks, and other buried utilities. Reference dimensions to permanent surface features.
 3. Identify specific details of pipe connections, location of existing buried features located during excavation, and the final locations of piping, equipment, electrical conduits, manholes, and pull boxes.
 4. Identify location of spare conduits including beginning, ending, and routing through pull boxes and manholes. Record spare conductors, including number and size, within spare conduits and filled conduits.
 5. Provide schedules, lists, layout drawings, and wiring diagrams.
 6. Make annotations in electronic format conforming to the following color code:

Additions:	Red
Deletions:	Green
Comments	Blue
Dimensions:	Graphite

- B. Maintain documents separate from those used for construction:
1. Label documents "RECORD DOCUMENTS."
- C. Keep documents current:
1. Record required information at the time the material and equipment is installed and before permanently concealing.
 2. Engineer will review Record Documents weekly to ascertain that changes have been recorded.
- D. Affix civil engineer's or professional land surveyor's signature and registration number to Record Drawings to certify accuracy of information shown.
- E. Deliver Record Documents with transmittal letter containing date, Project title, Contractor's name and address, list of documents, and signature of Contractor.
- F. Record Documents will be reviewed monthly to determine the percent complete for the monthly pay application.
- G. Updated Record Documents are a condition for Engineer's recommendation for progress payment.
- H. Final Schedule Submittal as specified in Section 01321 - Schedules and Reports.

1.08 MAINTENANCE SERVICE

- A. Maintenance service as specified in technical specifications.

1.09 SUBSTANTIAL COMPLETION

- A. Obtain Certificate of Substantial Completion.

1.10 FINAL COMPLETION

- A. When Contractor considers the Work is complete, submit written certification that:
 - 1. Work has been completed in accordance with the Contract Documents:
 - 2. Punch list items have been completed or corrected.
 - 3. Work is ready for final inspection.
- B. Engineer will make an inspection to verify the status of completion with reasonable promptness.
- C. Should the Engineer consider that the Work is incomplete or defective:
 - 1. Engineer will promptly notify the Contractor in writing, listing the incomplete or defective work.
 - 2. Contractor shall take immediate steps to remedy the stated deficiencies and send a second written certification to the Engineer that the Work is complete.
 - 3. Engineer shall re-inspect the Work.

1.11 FINAL ADJUSTMENT OF ACCOUNTS

- A. Submit a final statement of accounting to the Engineer at least 7 days prior to final Application for Payment.
- B. Statement shall reflect all adjustments to the Contract amount.
 - 1. The original Contract amount.
 - 2. Additions and deductions resulting from:
 - a. Change Orders.
 - b. Units installed and unit prices.
 - c. Set-offs for uncorrected or incomplete Work.
 - d. Set-offs for liquidated damages.
 - e. Set-offs for reinspection payments.
 - f. Extended engineering and/or inspection services and inspection overtime.
 - g. Excessive shop drawings review cost by the Engineer.
 - h. Other adjustments.
 - 3. Total Contract amount, as adjusted.
 - 4. Previous payments.
 - 5. Remaining payment due.
- C. Engineer will prepare a final Change Order reflecting approved adjustments to the Contract amount which were not previously made by Change Orders.

1.12 FINAL APPLICATION FOR PAYMENT

- A. Contractor shall submit the final Application for Payment reflecting the agreed upon information provided in the final statement of accounting.

PART 2 PRODUCTS

2.01 SPARE PARTS

- A. Owner may request advanced delivery of spare parts, maintenance products, and special tools.
 - 1. Deduct the delivered items from the inventory list and provide transmittal documentation.

- B. Prior to Substantial Completion, arrange to deliver spare parts, maintenance products, and special tools to Owner at a location on site chosen by the Owner.
 - 1. Provide itemized list of spare parts and special tools that matches the identification tag attached to each item.
 - 2. Owner and Engineer will review the inventory and the itemized list to confirm it is complete and in good condition prior to signing for acceptance.

PART 3 EXECUTION

Not Used.

END OF SECTION

SECTION 01782

OPERATION AND MAINTENANCE MANUALS

PART 1 GENERAL

1.01 SUMMARY

- A. Section includes: Preparation and submittal of Operation and Maintenance Manuals.

1.02 GENERAL

- A. Submit Operation and Maintenance Manuals as specified in technical sections.

1.03 SUBMITTALS

- A. Make approved manuals available at project site for use by construction personnel and Owner.
- B. Draft Operation and Maintenance Manuals:
 - 1. Submit prior to shipment of equipment or system to site.
 - 2. Shipment will be considered incomplete without the draft Operation and Maintenance Manuals.
- C. Final Operation and Maintenance Manuals:
 - 1. Make additions and revisions in accordance with Owner's and Engineer's review comments on draft manuals.
 - 2. Submit approved Operation and Maintenance Manuals at least 30 days prior to Functional Testing and at least 60 days prior to Owner Training.

1.04 PREPARATION

- A. General requirements:
 - 1. Provide dimensions in English units.
 - 2. Assemble material, where possible, in the same order within each volume.
 - 3. Reduce drawings and diagrams to 8 1/2 by 11-inch size, if possible unless otherwise specified.
 - 4. Complete forms on computer, handwriting not acceptable.
 - 5. Delete items or options not provided in the supplied equipment or system.
 - 6. Provide package control system annotated ladder logic for PLC, if applicable.
- B. Hard copy requirements:
 - 1. Binders: 3-ring with rigid covers.
 - a. Break into separate binders as needed to accommodate large size.
 - 2. Utilize numbered tab sheets to organize information.
 - 3. Provide original and clear text on reproducible non-colored paper, 8 1/2 by 11-inch size, 24-pound paper.
 - 4. Drawings larger than 8 1/2 by 11 inch:
 - a. Fold drawings separately and place in envelope bound into the manual.
 - b. Label each drawing envelope on the outside regarding contents.

C. Electronic requirements:

1. File format:
 - a. Entire manual in PDF format.
 - 1) Include text and drawing information.
 - 2) Provide a single PDF file even if the hard copy version is broken into separate binders due to being large.
 - 3) Create PDF from the native format of the document (Microsoft Word, graphics programs, drawing programs, etc.).
 - a) If material is not available in native format and only available in paper format, remove smudges, fingerprints, and other extraneous marks before scanning to PDF format.
 - b) Hard copy record drawing requirements:
 - (1) Provide a single multipage PDF file of each set of the scanned drawings.
 - (2) Page 1 shall be the cover of the drawing set.
 - c) At file opening, display the entire cover.
 - (1) Scan drawings at 200 to 300 dots per inch (DPI), black and white, Group IV Compression, unless otherwise specified.
 - (2) Scan drawings with photos in the background at 400 dots per inch (DPI), black and white, Group IV Compression.
 - 4) Pagination and appearance to match hard copy.
 - 5) Searchable.
 - 6) Scanned images are not acceptable.
 - 7) Bookmarks:
 - a) Bookmarks shall match the table of contents.
 - b) Bookmark each section (tab) and heading.
 - c) Drawings: Bookmark at a minimum, each discipline, area designation, or appropriate division.
 - d) At file opening, display all levels of bookmarks as expanded.
 - 8) Thumbnails optimized for fast web viewing.
 - b. Drawing requirements:
 - 1) Provide additional copy of drawings in most current version of MicroStation or AutoCAD format.
 - 2) Drawings shall have a white background.
 - 3) Drawing shapes shall not degrade when closely zoomed.
 - 4) Screening effects intended to de-emphasize detail in a drawing must be preserved.
 - 5) Delete items or options not provided in the supplied equipment or system.
2. Media:
 - a. USB flash drive.
 - b. Secure File Transfer Protocol (SFTP).
3. Label media with the following information:
 - a. Operation and Maintenance Manual.
 - b. Equipment name.
 - c. Specification Section Number
 - d. Equipment tag number.
 - e. Owner's name.
 - f. Project number and name.
 - g. Date.
4. If multiple submittals are made together, each submittal must have its own subdirectory that is named and numbered based on the submittal number.

1.05 CONTENTS

- A. Label the spines:
 - 1. Equipment name.
 - 2. Tag number.
 - 3. Project name.
 - 4. Owner name.

- B. Cover page:
 - 1. Operation and Maintenance Manual.
 - 2. Equipment name.
 - 3. Specification Section Number
 - 4. Equipment tag number.
 - 5. Owner's name.
 - 6. Project number and name.
 - 7. Date.

- C. Table of Contents: General description of information provided within each tab section.

- D. Complete Attachment A - Equipment Summary Form.

- E. Complete Attachment B - Electric Motor Technical Data Form.

- F. Description of system and components.

- G. Description of equipment function, normal operating characteristics, and limiting conditions.

- H. Manufacturer's product data sheets:
 - 1. Where printed material covers more than 1 specific model, indicate the model number, calibrated range, and other special features.
 - 2. Equipment with bearings:
 - a. Include manufacturer and model number of every bearing.
 - b. Include calculated ball pass frequencies of the installed equipment for both the inner and outer raceways.

- I. Assembly, installation, alignment, adjustment, and checking instructions.

- J. Storage instructions.

- K. Control diagrams:
 - 1. Internal and connection wiring, including logic diagrams, wiring diagrams for control panels, ladder logic for computer based systems, and connections between existing systems and new additions, and adjustments such as calibrations and set points for relays, and control or alarm contact settings.
 - 2. Complete set of 11-inch by 17-inch drawings of the control system.
 - 3. Complete set of control schematics.

- L. Programming: Copies of Contractor furnished programming.

- M. Start-up procedures: Recommendations for installation, adjustment, calibration, and troubleshooting.

- N. Operating procedures:
 - 1. Step-by-step instructions including but not limited to the following:
 - a. Safety precautions and applicable Safety Data Sheets.
 - b. Guidelines.
 - c. Manual keyboard entries.
 - d. Entry codes.
 - e. System responses.
 - f. Other information as needed for safe system operation and maintenance.
 - 2. Modes:
 - a. Startup.
 - b. Routine and normal operation.
 - c. Regulation and control.
 - d. Shutdown under specified modes of operation.
 - e. Emergency operating shutdown.
- O. Preventative maintenance procedures:
 - 1. Recommended steps and schedules for maintaining equipment.
 - 2. Troubleshooting.
- P. Lubrication information: Required lubricants and lubrication schedules.
- Q. Overhaul instructions: Directions for disassembly, inspection, repair and reassembly of the equipment; safety precautions; and recommended tolerances, critical bolt torques, and special tools that are required.
- R. Parts list:
 - 1. Complete parts list for equipment including but not limited to the following information:
 - 2. Catalog data: Generic title and identification number of each component part of equipment.
 - 3. Include bearing manufacturer, model and ball or roller pass frequencies for every bearing.
 - 4. Availability.
 - 5. Service locations.
- S. Spare parts list: Recommended number of parts to be stored at the site and special storage precautions.
- T. Engineering data:
 - 1. Drawings: Complete set of 11-inch by 17-inch equipment drawings.
 - 2. Exploded view or plan and section views with detailed callouts.
 - 3. Outline, cross-section, and assembly drawings.
 - 4. System drawings: Provide interconnection and wiring diagrams, plan views, panel layouts, bill of materials, etc.
 - 5. Packaged equipment system drawings: Provide instrumentation loop drawing, control schematic diagrams, interconnection and wiring diagrams, plan views, panel layouts, bill of materials, etc.
 - 6. System drawings and data sheets: Include drawings and data furnished by the Engineer and the Supplier; provide "as installed" version.
 - 7. Provide electrical and instrumentation schematic record drawings.
- U. Test data and performance curves, when applicable.

- V. Manufacturer's technical reference manuals.
- W. Source (factory) Test results: Provide copies of Source Tests reports as specified in technical sections.
- X. Functional Test results: After Functional Tests are completed, insert Functional Test reports as specified in technical sections.

1.06 ARCHIVAL DOCUMENTATION

- A. Typically does not require updating to remain valid and should be stored in a format that preserves the document and limits one's ability to make changes.
- B. Types of archival documents include the following:
 - 1. Record drawings.
 - 2. Reports.
 - 3. Specifications.
 - 4. Shop drawings.
 - 5. Vendor Equipment O & M Manuals.
 - 6. Photos.
 - 7. Demonstration and training videos.
 - 8. Other.

1.07 LIVING DOCUMENTATION

- A. Requires periodic updates to remain valid and should be stored in formats that are easy to update.
- B. Types of living documents include the following:
 - 1. Facility O&M Manuals.
 - 2. Standard Operating Procedures.
 - 3. Other.

PART 2 PRODUCTS

Not Used.

PART 3 EXECUTION

Not Used.

END OF SECTION

ATTACHMENT A - EQUIPMENT SUMMARY FORM

EQUIPMENT SUMMARY FORM

1. EQUIPMENT ITEM _____
2. MANUFACTURER _____
3. EQUIPMENT IDENTIFICATION NUMBER(S) _____
(maps equipment number)
4. LOCATION OF EQUIPMENT _____
5. WEIGHT OF INDIVIDUAL COMPONENTS (OVER 100 POUNDS) _____

6. NAMEPLATE DATA -
 - Horsepower _____
 - Amperage _____
 - Voltage _____
 - Service Factor (S.F.) _____
 - Speed _____
 - ENC Type _____
 - Capacity _____
 - Other _____

7. MANUFACTURER'S LOCAL REPRESENTATIVE
 - Name _____
 - Address _____
 - Telephone Number _____

8. MAINTENANCE REQUIREMENTS:

Maintenance Operation	Frequency	Lubricant (if applicable)	Comments
(List each operation required. Refer to specific information in Manufacturer's Manual, if applicable)	(List required frequency of each maintenance operation)	(Refer by symbol to lubricant list as required)	

9. LUBRICANT LIST:

Reference Symbol	Conoco Phillips	Exxon/Mobil	BP/Amoco	Other (List)
(Symbols used in Item 7 above)	(List equivalent lubricants, as distributed by each manufacturer for the specific use recommended)			

10. SPARE PARTS (recommendations) _____

11. COMMENTS _____

12. GENERAL INFORMATION:

Date Accepted*: _____

Expected Life*: _____

Project Name & Number: _____

Design Engineer: _____

13. WARRANTY:

Start Date: _____

Expiration Date: _____

Prorated: _____

SECTION 01783

WARRANTIES AND BONDS

PART 1 GENERAL

1.01 SUMMARY

- A. Section includes: Warranty and bonds requirements.

1.02 SUBMITTALS

- A. For each item of material or equipment furnished under the Contract:
 - 1. Submit manufacturer's warranty prior to fabrication and shipment of the item from the manufacturer's facility.
 - 2. Submit manufacturer's special warranty when specified.
- B. Provide consolidated warranties and bonds within 15 calendar days of Substantial Completion.
 - 1. Contents:
 - a. Organize warranty and bond documents:
 - 1) Include Table of Contents organized by specification section number and the name of the product or work item.
 - b. Include each required warranty and bond in proper form, with full information, certified by manufacturer as required, and properly executed by Contractor, or subcontractor, supplier, or manufacturer.
 - c. Provide name, address, phone number, and point of contact of manufacturer, supplier, and installer, as applicable.
 - 2. Electronic copy in PDF format:
 - a. Submit 1 copy.

1.03 OWNER'S RIGHTS

- A. Owner reserves the right to reject warranties.
- B. Owner reserves the right to refuse to accept Work for the project if the required warranties have not been provided.

1.04 RELATIONSHIP TO GENERAL WARRANTY AND CORRECTION PERIOD

- A. Warranties specified for materials and equipment shall be in addition to, and run concurrent with, both Contractor's general warranty and the correction period requirements.
- B. Disclaimers and limitations in specific materials and equipment warranties do not limit Contractor's general warranty, nor does such affect or limit Contractor's performance obligations under the correction period.

1.05 MANUFACTURER'S WARRANTY MINIMUM REQUIREMENTS

- A. Written warranty issued by item's manufacturer.
- B. Project-specific information, properly executed by product manufacturer, and expressly states that its provisions are for the benefit of the Owner.
- C. Covers all costs associated with the correction of the defect, including but not limited to removal of defective parts, new parts, labor, and shipping.
 - 1. When correcting warranted Work that has failed, remove and replace other Work that had been damaged as a result of such failure or that must be removed and replaced to provide access for correction of warranted Work.
- D. Provides a timely response to correct the defect.
 - 1. Manufacturer shall provide, in a timely fashion, temporary equipment as necessary to replace warranted items requiring repair or replacement, when warranted items are in use and are critical to the treatment process, as defined by Owner.
 - 2. In the case that Owner has to provide temporary equipment to replace function of warranted item requiring repair or replacement, manufacturer shall reimburse Owner for such costs associated with the temporary equipment.
- E. Warranty commence running on the date of substantial completion.
 - 1. For items of Work for which acceptance is delayed beyond Date of Substantial Completion, submit warranty within 10 calendar days after acceptance, listing date of acceptance as beginning of warranty period.
- F. Duration of Warranty: 1 year.

1.06 MANUFACTURER'S SPECIAL WARRANTY

- A. Manufacturer's special warranty is a written warranty published by the manufacturer which includes the requirements specified in the section where the item is specified.
 - 1. Includes Project-specific information and requirements, properly executed by product manufacturer, and expressly states that its provisions are for the benefit of the Owner. Technical sections indicate Project-specific requirements that differ from the minimum warranty requirements for that item.
 - a. Examples include extending the duration of manufacturer's warranty or to provide increased rights to Owner.
 - 2. Manufacturer's warranties commence on the date that the associated item is certified by Engineer as substantially complete.

1.07 WARRANTY WORK

- A. Contractor's responsibilities:
 - 1. Manufacturer's disclaimers and limitations on product warranties do not relieve the Contractor of the warranty on the work that incorporates the product, nor does it relieve suppliers, manufacturers, and subcontractors required to countersign special warranties with Contractor.

- B. Replacement cost:
 - 1. Upon determination that work covered by warranty has failed, replace or rebuild the work to an acceptable condition complying with requirement of the Contract Documents.
 - a. Contractor is responsible for the cost of replacing or rebuilding defective work regardless of whether Owner has benefited from the use of the work through a portion of its anticipated useful service life.
- C. Related damages and losses:
 - 1. When correcting warranted work that has failed, remove and replace other work that has been damaged as a result of such failure or that must be removed and replaced to provide access for correction of warranted work.
- D. Owner's recourse:
 - 1. Written warranties are in addition to implied warranties, and shall not limit the duties, obligations, rights, and remedies otherwise available under the law, nor shall warranty periods be interpreted as limitation on time in which Owner can enforce such other duties, obligations, rights, or remedies.
- E. Reinstatement of warranty:
 - 1. When work covered by a warranty has failed and has been corrected by replacement or rebuilding, reinstate the warranty by written endorsement.
 - a. The reinstated warranty shall be equal to the original warranty with an equitable adjustment for depreciation.

1.08 IMPLIED WARRANTIES

- A. Warranty of title and intellectual rights:
 - 1. Except as may be otherwise indicated in the Contract Documents, implied warranty of title required by Laws and Regulations is applicable to the Work and to materials and equipment incorporated therein.
 - 2. Provisions on intellectual rights, including patent fees and royalties, are in the General Conditions, as may be modified by the Supplementary Conditions.
- B. Implied warranties: Duration in accordance with Laws and Regulations.

1.09 BONDS

- A. Equipment bond and other bond requirements as specified in the technical sections.
- B. Bonds commence running on the date of substantial completion.
 - 1. For items of Work for which acceptance is delayed beyond Date of Substantial Completion, submit warranty within 10 calendar days after acceptance, listing date of acceptance as beginning of bond period.

PART 2 PRODUCTS

Not Used.

PART 3 EXECUTION

Not Used.

END OF SECTION

SECTION 02050 – SOILS AND AGGREGATES FOR EARTHWORK

PART 1 GENERAL

1.01 SUMMARY

- A. Section includes: Material requirements for soils and aggregates.

1.02 REFERENCES

- A. ASTM International (ASTM):
 1. C117 - Standard Test Method for Materials Finer than 75- μ m (No. 200) Sieve in Mineral Aggregates by Washing.
 2. C131 - Standard Test Method for Resistance to Degradation of Small-Size Coarse Aggregate by Abrasion and Impact in the Los Angeles Machine.
 3. C136 - Standard Test Method for Sieve Analysis of Fine and Coarse Aggregates.
 4. D422 – Standard Test Method for Particle-Size Analysis of Soils.
 5. D2419 - Standard Test Method for Sand Equivalent Value of Soils and Fine Aggregate.
 6. D2487 – Standard Practice for Classification of Soils for Engineering Purposes (Unified Soil Classification System).
 7. D4318 - Standard Test Method for Liquid Limit, Plastic Limit, and Plasticity Index of Soils.
 8. D4829 - Standard Test Method for Expansion Index of Soils.
- B. Utah Department of Transportation (UDOT):
 1. Standard Specifications for Road and Bridge Construction (Standard Specifications).
- C. American Public Works Association (APWA):
 1. Manual of Standard Specifications.

1.03 SUBMITTALS

- A. Product data:
 1. Material source.
 2. Gradation.
 3. Testing data.
- B. Quality control for aggregate base course:
 1. Test reports: Reports for tests required by Sections of Standard Specifications
 2. Certificates of Compliance: Certificates as required by Sections of Standard Specifications.

1.04 DELIVERY, STORAGE, AND HANDLING

- A. Storage and protection: Protect from segregation and excessive moisture during delivery, storage, and handling.

- B. Comply with Standard Specifications storage requirements, if applicable.

PART 2 PRODUCTS

2.01 MATERIALS - GENERAL

- A. Provide material having maximum particle size not exceeding 4 inches and that is free of trash, lumber, debris, leaves, grass, roots, stumps, and other organic matter.
- B. Materials derived from processing demolished or removed asphalt concrete are not acceptable.
- C. Comply with soil and aggregate material requirements in the Standard Specifications., unless specified otherwise.

2.02 NATIVE MATERIAL

- A. Native soil:
 - 1. Sound, earthen material.
 - 2. Expansion index less than 35 when tested in accordance with ASTM D4829.
 - 3. Conforms to size and grade within the following limits when tested in accordance with ASTM C117 and ASTM C136:

Sieve Sizes (Square Openings)	Percent by Weight Passing Sieve
2-inch	100
Number 200	30 maximum

2.03 AGGREGATE BASE COURSE

- A. Material requirements:
 - 1. Untreated base course.
 - 2. Consists of hard durable particles of fragments of stone or gravel; screened or crushed to required size and grading; and free from organic matter, contamination from chemical or petroleum products, or other deleterious matter.
 - 3. Materials derived from processing demolished or removed asphalt concrete are not acceptable.
 - 4. Aggregate base course for structures:
 - a. Consists of crushed or fragmented particles.
 - 5. When sampled and tested in accordance with specified test methods, material shall comply with following requirements:
 - a. Percentage of wear: Not to exceed 50 percent after 500 revolutions when tested in accordance with AASHTO TP 95.
 - b. Plasticity index: Not be more than 6 when tested in accordance with AASHTO T 90.

- c. Conforms to size and grade within the following limits when tested in accordance with AASHTO T 11 and AASHTO T 27:

Sieve Sizes (Square Openings)	Grade 1-1/2	Grade 1
	Percent by Weight Passing Sieve	
1 1/2 inch	100	-
1 inch	-	100
3/4 inch	70 - 85	-
1/2 inch	-	79 - 91
3/8 inch	55 - 75	-
Number 4	40 - 65	49 - 61
Number 16	25 - 40	27 - 35
Number 200	7 - 11	7 - 11

2.04 GRAVEL

- A. Material requirements:
1. Consists of hard, durable particles or fragments of stone or gravel; screened or crushed to specified sizes and gradations; and free from organic matter, lumps or balls of clay, alkali, adobe, or other deleterious matter.
 2. When sampled and tested in accordance with specified test methods, material shall comply with following requirements:
 - a. Durability: Percentage of wear:
 - 1) Class C: Not greater than 37 when tested in accordance with ASTM C131.
 - 2) Class D: Not greater than 40 when tested in accordance with ASTM C535.
 3. Conforms to sizes and grade within the following limits when tested in accordance with ASTM C117 and C136.

Sieve Size (Square Openings)	Percent by Weight Passing Sieve		
	Class C (Pea Gravel)	Class D (Rock)	1-inch Crushed Stone
3 inch	--	--	--
2 inch	--	100	--
1-1/2 inch	--	90 - 100	100
1 inch	100	20 - 50	95 - 100
3/4 inch	90 - 100	0 - 15	--
1/2 inch	20 - 55	--	25 - 60
3/8 inch	0 - 15	0 - 5	--
Number 4	0 - 5	--	0 - 10

Sieve Size (Square Openings)	Percent by Weight Passing Sieve		
	Class C (Pea Gravel)	Class D (Rock)	1-inch Crushed Stone
Number 200	--	--	0 - 5

2.05 SAND

- A. Clean, coarse, natural sand. Free of loam and organic matter.
- B. Non-plastic when tested in accordance with ASTM D4318.
- C. Conforms to size and grade within the following limits when tested in accordance with ASTM D 2487:

Sieve Size (Square Openings)	Percent by Weight Passing Sieve
3/8 inch	100
Number 4	90 - 100
Number 16	45 - 80
Number 50	10 - 30
Number 200	0 - 5

2.06 ROCK

- A. Rock to be used for landscaping is to be as follows:
 - 1. Angular, fractured rock.
 - 2. Mountain Medley 1.5" provided by Arrow Rock and Stone or equal.
 - 3. Provide a sample to compare to existing landscape rock and to be selected for the closest match by the Owner.
 - 4. Other rock needed will be per gravel as listed above as 1-inch crushed stone.

PART 3 EXECUTION

Not Used.

END OF SECTION

SECTION 02300 – EARTHWORK

PART 1 GENERAL

1.01 SUMMARY

- A. Section includes:
 - 1. Loosening, excavating, filling, grading, borrow, hauling, preparing subgrade, compacting in final location, wetting and drying, and operations pertaining to site grading for buildings, basins, reservoirs, boxes, roads, and other facilities.
 - 2. Backfilling and compacting under and around structures.

1.02 REFERENCES

- A. American Association of State Highway and Transportation Officials (AASHTO):
 - 1. Standard Specifications for Highway Bridges.
- B. ASTM International (ASTM):
 - 1. D6938 - Standard Test Method for In-Place Density and Water Content of Soil and Soil-Aggregate by Nuclear Methods (Shallow Depth).

1.03 DEFINITIONS

- A. Backfill adjacent to structure: Backfill within volume bounded by the exterior surfaces of structure, the surface of undisturbed soil in the excavation around structure, and finish grade around structure.
- B. Embankments: Dikes, levees, berms, and similar facilities.
- C. Excavation: Consists of loosening, removing, loading, transporting, depositing, and compacting in final location, wet and dry materials, necessary to be removed for purposes of construction of structures, ditches, grading, roads, and such other purposes as are indicated on the Drawings.

1.04 SUBMITTALS

- A. Copy of Property Owner's Agreement allowing placement of surplus soil material on their property.

1.05 QUALITY ASSURANCE

- A. Initial compaction demonstration:
 - 1. Adequacy of compaction equipment and procedures: Demonstrate adequacy of compaction equipment and procedures before exceeding any of following amounts of earthwork quantities:
 - a. 50 cubic yards of fill.
 - 2. Compaction sequence requirements: Until specified degree of compaction on previously specified amounts of earthwork is achieved, do not perform additional earthwork of the same kind.

3. After satisfactory conclusion of initial compaction demonstration and at any time during construction, provide confirmation tests as specified under "FIELD QUALITY CONTROL."
- B. Contractor shall perform work related to this Section in accordance with the approved Stormwater Pollution Prevention Plan (SWPPP).

1.06 SEQUENCING AND SCHEDULING

- A. Schedule earthwork operations to meet requirements specified in this Section for excavation and uses of excavated material.
- B. If necessary, stockpile excavated material in order to use it at specified locations.
- C. Excavation, backfilling, and filling: Perform excavation, backfilling, and filling during construction in manner and sequence that provides drainage at all times.

PART 2 PRODUCTS

2.01 DESIGN AND PERFORMANCE CRITERIA

- A. Performance requirements:
 1. Where mud or other soft or unstable material is encountered, remove such material and refill space with stabilization material. Wrap stabilization material with stabilization fabric.
 2. Obtain acceptable import material from other sources if surplus obtained within Project site does not conform to specified requirements or are not sufficient in quantity.
 3. No extra compensation will be made for hauling of fill materials nor for water required for compaction.

2.02 MATERIALS

- A. Water for compacting: Use water from source acceptable to Engineer.
- B. Soil and rock materials:
 1. General:
 - a. Provide aggregate base course, rock, gravel, native material, sand, where specified or indicated on the Drawings.
 - b. If suitable surplus materials are available, obtain native material and select material from cut sections or excavations or imported materials.
 2. Aggregate base course materials: As specified in Section 02050 - Soils and Aggregates for Earthwork.
 3. Drain rock: As specified in Section 02050 - Soils and Aggregates for Earthwork.
 4. Gravel: As specified in Section 02050 - Soils and Aggregates for Earthwork.
 5. Native material: As specified in Section 02050 - Soils and Aggregates for Earthwork.
 6. Sand: As specified in Section 02050 - Soils and Aggregates for Earthwork.
 7. Stabilization material: As specified in Section 02050 - Soils and Aggregates for Earthwork.

- C. Controlled low-strength material: Provide a Controlled Low Strength Material (CLSM) mix design from a local supplier, to be reviewed and found acceptable by Engineer if needed for the project.
- D. Geotextile fabrics:
 - 1. Filter fabric: As specified in Section 02620 - Filter Fabric.

PART 3 EXECUTION

3.01 EXAMINATION

- A. Verification of conditions:
 - 1. Character and quantity of material:
 - a. Verify character and quantity of rock, gravel, sand, silt, water, and other inorganic or organic materials to be encountered in work to be performed.
 - b. Determine gradation, shrinkage, and swelling of soil, and suitability of material for use intended in work to be performed.
 - c. Determine quantity of material, and cost thereof, required for construction of backfills, cuts, embankments, excavations, fills, and roadway fills, whether from onsite excavations or imported materials. Include in cost of work to be performed.
 - d. Include wasting of excess material, if required, in cost of work to be performed.

3.02 PREPARATION

- A. Backfills:
 - 1. After clearing and excavation are completed, scarify entire areas that underlie backfills or structures to a depth of 6 inches and until surface is free of ruts, hummocks, and other features that would prevent uniform compaction by equipment to be used.
 - 2. Recompact scarified areas to density specified before placing backfill material or concrete.
 - 3. Do not place backfill against walls until:
 - a. Walls have been cast full height of structure and concrete has reached the specified strength.
 - b. Connecting slabs and beams have been cast, and concrete has reached the specified strength.
 - 4. Prior to backfilling:
 - a. Remove forms.
 - b. Clean trash and debris from the excavation site.
 - 5. After inspection of foundation, walls, and pipes, place backfill symmetrically around structures to prevent eccentric loading of structures.
- B. Embankments:
 - 1. After clearing is completed, scarify entire areas that underlie embankments to a depth of 6 inches and until surface is free of ruts, hummocks, and other features that would prevent uniform compaction by equipment to be used.
 - 2. Recompact scarified areas to density specified for embankments before placing of embankment material.

- C. Fills:
 - 1. After clearing is completed, scarify entire areas that underlie fill sections or structures to a depth of 6 inches and until surface is free of ruts, hummocks, and other features that would prevent uniform compaction by equipment to be used.
 - 2. Recompact scarified areas to density specified for compacted fills before placing of fill material or concrete.

- D. Roadway fills:
 - 1. After clearing is completed, scarify entire areas that underlie roadway fills to a depth of 6 inches and until surface is free of ruts, hummocks, and other features that would prevent uniform compaction by equipment to be used.
 - 2. Recompact scarified areas to density specified for roadway fills before placing of roadway fill material.

- E. Sloped surfaces for fill or foundations:
 - 1. Foundations for fill having slopes in excess of 1 vertical to 4 horizontal:
 - a. Bench or terrace to adequately key existing ground and fill built thereon.
 - 2. Slopes of original hillsides and old fills: Bench minimum of 10 feet horizontally as fill is placed.
 - 3. Provision of new benches:
 - a. Start new bench wherever vertical cut of next lower bench intersects existing grade.
 - b. Recompact material thus cut out along with new embankment material at no additional cost to the Owner.

3.03 INSTALLATION

- A. General:
 - 1. Dispose of excavated materials that are not required or are unsuitable for fill and backfill in lawful manner.
 - 2. Dispose of surplus material on private property only when written permission agreement is furnished by owner of property. Submit copies of such agreements.
 - 3. Rocks, broken concrete, or other solid materials larger than 4 inches in greatest dimension: Remove from project site at no additional cost to the Owner.
 - 4. Stabilization of subgrade: Provide materials used, or perform work required, to stabilize subgrade so it can withstand loads that may be placed upon it by Contractor's equipment.

- B. Compaction:
 - 1. Provide specified compaction for backfills, cuts, embankments, fills, roadway fills, and other earthwork.
 - 2. Perform confirmation tests to verify and confirm that work has complied, and is complying at all times, with compaction requirements specified in this Section for initial compaction demonstration and field quality control testing.
 - 3. In-place density of compacted backfills, cuts, embankments, fills, and roadway fills determined in accordance with ASTM D1556, or with ASTM D6938.
 - 4. Maximum density, laboratory compaction: Soil maximum density and optimum water content when tested in accordance with ASTM D6938.

5. To prevent damage to structures due to backfilling operations, place backfill with equipment that does not exceed AASHTO Standard Specifications for Highway Bridges, H-20 vehicle loading, within a distance from the face of the structure of not less than 1/2 the depth of backfill. The depth of backfill is the distance between the level being compacted and the bottom of the excavation. Outside this distance, heavier compaction equipment may be used.
 6. Compact to percentage of maximum density as follows:
 - a. Fills and trenches: 85 percent.
 - b. In Roadways: 95 percent.
- C. Excavation:
1. Excavations for trenching:
 - a. As required for installation of irrigation piping and appurtenances per Specification Section 02810 – Landscape Irrigation.
 2. Excavation of ditches and gutters:
 - a. Cut ditches and gutters accurately to cross sections and grades indicated on the Drawings.
 - b. Take care not to excavate ditches and gutters below grades indicated on the Drawings.
 - c. Backfill excessive ditch and gutter excavations to grade with suitable material acceptable to the Engineer.
 - d. Do not deposit any material within 3 feet of edge of ditch unless otherwise indicated on the Drawings.
 3. Necessary over excavation:
 - a. Where it becomes necessary to excavate beyond normal lines of excavation in order to remove boulders or other interfering objects, backfill voids remaining after removal as specified in backfilling of voids below, or as acceptable to the Engineer.
 - b. Backfill voids with material acceptable to the Engineer:
 - 1) With acceptance of the Engineer, backfill with one of the following:
 - a) Aggregate base course.
 - b) Controlled low-strength material.
- D. Materials for backfills, embankments, fills, and roadway fills:
1. General:
 - a. Obtain import material from other sources if surplus materials from cuts and excavations obtained from within Project site do not conform to specified requirements or are not sufficient in quantity for construction of Project.
 2. Backfills:
 - a. Backfill adjacent to structures, slabs, or walls: Native material or imported material meeting the requirements of native material, unless otherwise specified or indicated on the Drawings.
 - b. Backfill material under concrete structures: Aggregate base course material, except in areas where controlled low-strength material or concrete encasement are indicated on the Drawings.
 - c. Extend backfill in any area under concrete structures from undisturbed soil or rock to the bottom aggregate base course material layer.
 3. Fills:
 - a. Native material or imported material meeting the requirements of native material, unless otherwise specified or indicated on the Drawings.

- b. Extend fill in any area under concrete structures from undisturbed soil or rock to the bottom aggregate base course material layer.
- E. Placement:
- 1. General:
 - a. Lines and grades:
 - 1) Construct backfills, embankments, fills, and road fills, at locations and to lines and grades indicated on the Drawings.
 - 2) Overbuild permanent fill slopes by at least 1 foot and then cut to final grade to provide adequate compaction of the remaining fill.
 - 2. Backfills:
 - a. Place loose material in successive layers that do not exceed 8 inches in depth after compaction.
 - b. Bring each layer to a moisture content between optimum moisture content and 3 percent above optimum moisture content before compacting.
 - c. Defective compacted backfills: Remove and recompact.
 - 3. Fills:
 - a. Place loose material in successive layers that do not exceed 8 inches in depth after compaction.
 - b. Bring each layer to a moisture content between optimum moisture content and 3 percent above optimum moisture content before compacting.
 - c. Defective compacted fills: Remove and recompact.
 - 4. Embankments:
 - a. Place loose material in successive layers that do not exceed 8 inches in depth after compaction.
 - b. Bring each layer to a moisture content between optimum moisture content and 3 percent above optimum moisture content before compacting.
 - c. Defective compacted embankments: Remove and recompact.
 - d. Defective compacted roadway fills: Remove and recompact.

3.04 FIELD QUALITY CONTROL

- A. Confirmation tests:
- 1. Contractor's responsibilities:
 - a. Adequacy of compaction equipment and procedures:
 - 1) Demonstrate adequacy of compaction equipment and procedures.
 - 2) At each test location include tests for each type or class of backfill from bedding to finish grade.
 - b. Compaction sequence requirements:
 - 1) Do not perform additional earthwork of the same kind until specified degree of compaction has been demonstrated.
 - c. Cost of confirmation tests: Paid for by the Contractor.
 - d. Qualifications of Contractor's testing laboratory: Acceptable to Engineer.
 - e. Copies of confirmation test reports: Submit promptly to the Engineer.
 - f. Cost of confirmation tests:
 - 1) Paid for by the Contractor.
 - g. Qualifications of Contractor's testing laboratory:
 - 1) Perform confirmation testing by soils testing laboratory acceptable to the Engineer. Copies of confirmation test reports: Submit promptly to the Engineer.

- B. Tolerances:
 - 1. Finish grading of backfills, cuts, embankments, fills, and roadway fills:
 - a. Perform fine grading under concrete structures such that finish surfaces are never above the grade or cross section indicated on the Drawings and are never more than 0.10 feet below.
 - b. Provide finish surface for areas outside of structures that are within 0.10 feet of grade or cross section indicated on the Drawings.
 - 2. Areas which are not under structures, concrete, asphalt, roads, pavements, sidewalks, dikes, and similar facilities:
 - a. Provide finish graded surfaces of either undisturbed soil, or cohesive material not less than 6 inches deep.
 - b. Intent of proceeding is to avoid sandy or gravelly areas.
 - 3. Finish grading of surfaces:
 - a. Reasonably smooth, compacted, and free from irregular surface changes.
 - b. Provide degree of finish that is ordinarily obtainable from blade grader operations, except as otherwise specified.
 - c. Uniformly grade areas that are not under concrete.
 - d. Finish ditches and gutters so that they drain readily.
- C. Compliance tests:
 - 1. Frequency of testing: Periodic compliance tests will be made by the Engineer to verify that compaction is meeting requirements previously specified.

3.05 ADJUSTING

- A. Finish grades of excavations, backfills, and fills:
 - 1. Repair and reestablish grades to required elevations and slopes due to any settlement or erosion that may occur from action of the elements or any other cause prior to final acceptance.

3.06 PROTECTION

- A. Finish grades of backfills, cuts, excavations, and fills:
 - 1. Protect newly graded areas from erosion and deterioration by action of the elements.
- B. Ditches and gutters:
 - 1. Maintain ditches and gutters free from detrimental quantities of debris that might inhibit drainage until final acceptance.

END OF SECTION

SECTION 02620 – FILTER FABRIC

PART 1 GENERAL

1.01 SUMMARY

- A. Section includes: Nonwoven filter fabric and weed barrier fabric

1.02 REFERENCES

- A. ASTM International (ASTM):
 1. D4355 - Standard Test Method for Deterioration of Geotextiles by Exposure to Light, Moisture and Heat in a Xenon Arc Type Apparatus.
 2. D4491 - Standard Test Methods for Water Permeability of Geotextiles by Permittivity.
 3. D4533 - Standard Test Method for Trapezoid Tearing Strength of Geotextiles.
 4. D4632 - Standard Test Method for Grab Breaking Load and Elongation of Geotextiles.
 5. D4751 - Standard Test Method for Determining Apparent Opening Size of a Geotextile.
 6. D5261 - Standard Test Method for Measuring Mass per Unit Area of Geotextiles.
 7. D6241 - Standard Test Method for the Static Puncture Strength of Geotextiles and Geotextile-Related Products Using a 50-mm Probe.

1.03 DEFINITIONS

- A. Filter fabric: Nonwoven geotextile fabric manufactured from polypropylene fibers.

1.04 SUBMITTALS

- A. Product data.
- B. Samples.
- C. Quality control submittals:
 1. Certificates of Compliance.
 2. Manufacturer's Instructions.

1.05 DELIVERY, STORAGE, AND HANDLING

- A. Storage and protection:
 1. Furnish filter fabric in protective covers capable of protecting the fabric from ultraviolet rays, abrasion, and water.

1.06 PROJECT CONDITIONS

- A. Take field measurements to determine the lengths and dimensions of the surfaces to receive the fabric.

PART 2 PRODUCTS

2.01 GEOTEXTILE

- A. Manufacturers
 - 1. One of the following or equal:
 - a. Propex, Geotex 401.
 - b. Ten Cate Geosynthetics, Mirafi 140N.
- B. Material requirements
 - 1. Physical properties: Meet the following minimum requirements:

Property ⁽¹⁾	Test Method	Unit	Requirements ⁽¹⁾
Minimum Weight	ASTM D5261	oz	4.0
Grab Tensile Strength	ASTM D4632	lbs	100
Grab Elongation	ASTM D4632	%	50
Trapezoid Tear Strength	ASTM D4533	lbs	50
CBR Puncture Resistance	ASTM D6241	lbs	300
UV Resistance (strength retained at 500 hrs)	ASTM D4355	%	70
Apparent Opening Size (AOS)	ASTM D4751	US sieve	70
Permittivity	ASTM D4491	sec ⁻¹	1.7
Flow Rate	ASTM D4491	gpm/ft ²	130

(1) Minimum average roll values.

2.02 WEED BARRIER FABRIC

- A. Material Requirements
 - 1. 3.2 oz or greater, Non woven weed barrier.
- B. Manufacturers
 - 1. Agfabric.
 - 2. DeWitt.

PART 3 EXECUTION

3.01 EXAMINATION

- A. Verification of conditions: Verify that conditions are satisfactory for the installation of filter fabric.

3.02 PREPARATION

- A. Surface preparation:
 - 1. During grading operations, take care not to disturb the subgrade.

2. This may require use of lightweight dozers for low strength soils such as saturated, cohesionless, or low cohesion soils.
- B. Prior to placement of fabric: Prepare surface to smooth condition free of debris, depressions, or obstructions that may damage the fabric.

3.03 INSTALLATION

- A. Follow manufacturer's installation instructions and as complimented in this Section.
- B. Place the filter fabric smoothly without folds or wrinkles.
- C. Use special care when placing the filter in contact with the soil so that no void spaces occur between the filter and the prepared surface.
- D. Overlap the parallel rolls and ends of rolls a minimum of 24 inches and not less than manufacturer's instructions.
- E. Do not drag filter fabric across subgrade.
- F. Make overlaps at ends of rolls in the direction of the aggregate placement with the previous roll on top.
- G. Use lightweight dozers if necessary. Do not allow equipment directly on filter fabric.

3.04 FIELD QUALITY CONTROL

- A. Inspection:
1. Before covering, the condition of the fabric will be observed by the Engineer to determine that no holes or rips exist in the fabric.
 2. Repair all holes and rips by placing a new layer of fabric extending beyond the defect in all directions a distance equal to the minimum overlap required for adjacent rolls.

END OF SECTION

SECTION 02810 - LANDSCAPE IRRIGATION

PART 1 -- GENERAL

1.1 THE REQUIREMENT

- A. The CONTRACTOR shall construct an automatic irrigation system, complete and operable, all in accordance with the requirements of the Contract Documents.
- B. Said irrigation system shall include but not be limited to all pipes, fittings, sprinklers, valves, automatic control valves, controllers, valve boxes, drain valves, hose bib valves, operating wrenches, riser assemblies, direct burial wires, electrical connections, wiring and other appurtenances, piping, connections, testing, cleaning-up, maintenance and adjustments necessary for a complete operating system, ready for immediate use upon completion. Contractor to provide minor items necessary for proper construction and functional operation of this irrigation system, not specifically described in the Contract Documents, shall be included as a part of the work of this Section.
- C. The Section cross references the following sections:
 - 1. Submittal Procedures 01330
 - 2. Closeout Procedures 01770
 - 3. Landscaping Planting 02900

1.2 REFERENCE SPECIFICATIONS, CODES, AND STANDARDS

- A. Codes: All codes, as referenced herein, are as specified in Reference Standards.
- B. Commercial Standards.

ASTM B 3	Specification for Soft or Annealed Copper Wire
ASTM D2564	Specification for Solvent Cements for Poly (Vinyl Chloride) (PVC) Plastic Pipe and Fittings
AWWA C 500	Gate Valves for Water and Sewerage Systems

1.3 CONTRACTOR SUBMITTALS

- A. Manufacturer's literature, samples (where requested by the LANDSCAPE ARCHITECT, HERE IN REFEREED TO AS L.A.), and installation instructions shall be submitted in accordance with "Contractor Submittals."
- B. Record drawings, showing locations of all valves, pipes (lines), heads, dimensions, controllers, control lines, and electrical wires shall be submitted prior to final inspection.
- C. Controller literature, specifications, installation wiring diagram, and circuit breaker information shall be submitted to the L.A. for review prior to ordering.
- D. Equipment for Operation: The CONTRACTOR shall provide the following equipment, in

addition to what is shown.

1. Two keys for locking automatic controller door.
 2. One stop and waste valve key. (Gate valve Key)
- E. A reduced copy of the irrigation plan shall be laminated and mounted on the wall in the room where the controller is located and or with each controller.

1.4 QUALITY ASSURANCE

- A. In addition to other inspection, as provided by the L.A. and or OWNER, the CONTRACTOR shall give at least 72 hours notice to the L.A. for scheduling the following special inspections:
1. Layout of the system
 2. Inspection of trenches, backfilling, and equipment.
 3. Pressure tests
 4. Coverage adjustment
 5. Automatic operation
- B. The CONTRACTOR shall notify the L.A. at least 72 hours prior to performing the tests. All tests shall be performed in the presence of the L.A. Test requirements shall be as follows:
1. After assembly and installation, all water pipes, fittings, automatic equipment, and appurtenances shall be tested at a hydrostatic pressure of 150 psi at the lowest point of the system for not less than 60 minutes.
 2. The first test shall be made in such a manner that all valves in the new water pipe sprinkler lines will be tested for watertight closure. Valves may be tested in groups or singly while subjected to 150 psi water pressure for a period of not less than 60 minutes.
 3. The second test shall be made by forcing all air from the pipes with water and capping or plugging pipe risers. After the pipe risers have been plugged or capped, all line valves shall be fully opened and the pipe lines subjected to the full static water pressure for a period of not less than 120 minutes. Pressure pipelines 150 psi).
 4. The third test required that lateral lines be tested at 100 psi for 120 minutes.
 5. The fourth test requires that all pressure lines be tested at 120 psi for 24 hours.
 6. Water lines and valves which show evidence of leakage or fail to be watertight shall be repaired or replaced. After all repairs or replacements have been made, the above-required tests shall be performed again.
 7. When the sprinkler system is completed, the CONTRACTOR, in the presence of the L.A., shall perform test coverage of water afforded the lawn and planting areas. The CONTRACTOR shall furnish all material and

perform all work required to correct any inadequacies of coverage disclosed. The CONTRACTOR shall inform the L.A. of any deviation from the Drawings required due to wind, planting, soil, or site conditions that bear on proper coverage.

8. Upon completion of each phase of the work, the CONTRACTOR shall check and adjust each sprinkler head to meet the site requirements and the requirements of the Contract Documents.

(Testing as noted in 1 through 5 is at the owner's option, and generally will not be required unless verification of the contractor's workmanship and quality is required.)

1.5 INSTRUCTION

- A. The CONTRACTOR shall, upon completion of the maintenance period of the irrigation instruct the OWNER and the OWNER'S personnel as to the proper operation and maintenance of the system.

1.6 EXISTING UTILITIES AND CONDITIONS

- A. Prior to cutting into the soil, the CONTRACTOR shall locate all cables, conduits, sewers, septic tanks, and other such underground utilities, and shall take proper precautions not to damage or disturb such improvements. If a conflict exists between such obstacles and the proposed work, the CONTRACTOR shall promptly notify the L.A.
- B. The CONTRACTOR shall be responsible for coordinating its work with the operation of existing utilities and new utilities on the Project. The CONTRACTOR shall notify the L.A. or its representative when utilities which are in operation require shut-off.
- C. Due to the scale of Drawings, it is not possible to indicate all offset, fittings, etc., which may be required. The CONTRACTOR shall carefully investigate the structural and finished conditions affecting all its work, and plan its work accordingly, furnishing such fittings, etc., as may be required to meet such conditions. The Contract Documents are generally diagrammatic and indicative of the work to be installed. The work shall be installed in the most direct and workmanlike manner, so that conflicts between sprinkler systems, planting, structures, piping, and etc. will be avoided.
- D. The CONTRACTOR shall verify the water pressure available at the site before installation of the system to make sure there is adequate pressure (design pressure 80 psi) to properly operate sprinkler heads and valves, and shall also provide pressure reducing valves if required before commencement of any work. Minor additions and adjustments of heads, piping, and circuits shall be made at no additional cost to OWNER where it is necessary to make the irrigation system operate properly.

1.7 STORAGE OF MATERIALS

- A. The CONTRACTOR shall be responsible for storage of materials and for damage to the WORK covered by these Contract Documents before final acceptance of its work. The CONTRACTOR shall securely cover openings into the system, and shall cover all apparatus, equipment, and appliances both before and after being set in place to prevent obstruction in the pipes and the breakage, misuse, or disfigurement of said apparatus, equipment or appliances.

1.8 SCHEDULING AND COORDINATION

- A. The CONTRACTOR shall be responsible for making arrangements for the coordination of its construction operations with those of all others on the job. The CONTRACTOR shall permit others engaged in work to accomplish their portion of the WORK without undue interference or delay.
- B. The CONTRACTOR shall be responsible for the scheduling and coordination of the electrical and water connections and the installation of the piping and equipment in a manner that will effect the earliest completion of the WORK in conformance with the construction progress schedules.

1.9 INSPECTION SCHEDULE

- A. Weekly construction inspections will be conducted by the Landscape Architect during the Landscape and Irrigation work and installation with the Landscape Contractor.

PART 2 -- PRODUCTS

2.1 GENERAL

- A. Brand names specified for materials are supplied for the purpose of describing the type, size, quality, and performance of materials. The CONTRACTOR may propose, as substitutions, other manufacturers' materials of equal quality and performance to the L.A. for review in accordance with Section, "Contractor Submittals."
- B. The CONTRACTOR shall furnish, at no additional charge, all samples necessary for testing as outlined in the Specifications or, when requested, certified evidence of off-site testing.
- C. Equipment compatibility: automatic controller and automatic (remote) control valves shall be products of the same manufacturing company.

2.2 PLASTIC PIPE AND FITTINGS

- A. Pipe shall be continuously and permanently marked with the following information: manufacturer's name, nominal pipe size, PVC type, pressure rating, and extrusion date.
- B. All plastic pipes for lateral lines shall be PVC (polyvinyl chloride) SDR 21, Schedule

40, NSF approved.

- C. Materials for pressure main lines shall be PVC (polyvinyl chloride) SDR 21, Schedule 40, NSF approved, or galvanized steel pipe.
- D. Rubber gasket PVC pipe, couplings, and fitting: Conform to ASTM D-1784 Type I, Grade I, 2,000 PSI design stress. Standard dimensional ratio for the pipe shall be SDR 21 class 200. All pipe shall conform to commercial standard CS-256-64 (pressure rated pipe), and National Sanitation Foundation ASTM 1869. Coupling and fittings shall be furnished by the pipe manufacture.
- E. All fittings shall be PVC (polyvinyl chloride) Schedule 40, Type II, NSF, and Schedule 80 mainline fitting up to valve on mainline as called for in the Contract Documents.
- F. Ductile iron fitting shall be grade 65-45-12 in accordance with ASTM A-536. Fitting shall be deep bell push-on joints with gaskets meeting ASTM F-477. Fittings shall be HARCO DEEP BELL as manufactured by Harrington Corporation of Lynanburg, VA. Transition gaskets are not allowed.
- G. Swing joint ells and nipples shall be Schedule 80 PVC or galvanized as noted on plan.

2.3 VALVES

- A. Isolation valves shall be resilient seated wedge valves.
- B. Isolation valves for valve manifolds shall be brass ball valves as manufactured by Apollo, or approved equal.
- C. Remote Control Valves: Remote control valves for the irrigation system shall conform to the following requirements:
 - 1. Control valves shall be plastic, for 24-volt electrically controlled solenoids for operation. They shall be of heavy duty plastic construction with cross or slotted type wheel for operation with key and bleed fitting.
 - 2. Control valves shall be by the same manufacturer as the controller.
 - 3. Remote control valves shall be Rain Bird as noted on the plan or approved equal.
- D. Quick-coupling valves shall be Rain Bird Model per plan or approved equal.

2.4 AUTOMATIC CONTROLLER

- A. The automatic controllers shall be electrically-timed devices for automatically opening and closing remote control valves. All controllers and remote control valves supplied under this contract shall be of the same manufacturer and have similar operational and adjustment

- B. The controller shall be enclosed in a weatherproof metal housing having locking cover or covers to protect all adjustment and breakable equipment from vandalism. Exterior controllers shall be provided with locking covers. Keys for covers shall be interchangeable keys. The controllers shall be wall and pedestal mounted.
- C. Control as noted on the plan or approved equal.

2.5 SPRINKLER HEADS

- A. Sprinkler heads shall be the model and type indicated on the Drawings.
- B. Rotor pop-up sprinkler heads as manufactured by Rain Bird Model 6504 and 7005 series or approved equal.
- C. Lawn pop-up and Shrubbery adapter spray heads shall be Rain Bird 1800 MPR-PRS-U-Series, or approved equal.
- D. Drip irrigation products to be Rain Bird and Netafim products and drip line tubing with pressure compensating emitters or approved equal.

2.6 CONTROL WIRING

- A. Control wire shall be Standard #14 PE Direct Burial Copper Wire, Type UF Bearing; UL approved for direct underground burial in National Electrical Code Class II circuits, AWG sizes.
- B. Conductor of electrical conductivity shall be grade copper meeting requirement of ASTM B 3
- C. All splices shall be made with wire connectors, such as manufactured by Rainbird, Pen Tit, Scotch Lock, or equal.

2.7 PVC SOLVENT CEMENT AND PRIMERS

- A. Solvent Cement shall be NSF approved and shall meet requirements of ASTM D 2564.
- B. Primer shall be NSF approved and shall be Weld-On, P-70 Industrial Polychemical Service, or approved equal.

2.8 VALVE AND CONTROLLER VAULTS

- A. Boxes for valves shall be heavy duty plastic Rain Bird, Carson or Brooks complete With locking lids or approved equal.
- B. Boxes for valves shall be sized per equipment, depth of installation and operation and maintenance space as required.
- C. When valve boxes are placed in gravel mulch areas, the valve box body and lid to match the surrounding gravel color.

2.9 REDUCED PRESSURE BACK FLOW PREVENTION

- A. Backflow prevention as noted on the plan or approved equal.

3.0 OTHER MATERIALS

- A. Other materials required or necessary shall be as shown and/or as required for best quality work.

PART 3 -- EXECUTION

3.1 GENERAL

- A. Installation of the irrigation system shall be performed after the finish grading, but prior to landscaping.
- B. All valves, fittings, heads, and piping shall be installed as shown and all connections made to permit the irrigation system to function properly through its entire length.
- C. All materials and equipment shall be installed in strict accordance with manufacturer's written instructions and recommendations and all local and state codes, laws, ordinances, and regulations.
- D. Before proceeding with the installation of any section or unit of the irrigation system, the CONTRACTOR shall check and verify the correlation between ground measurements and Drawings and shall advise the L.A. of any discrepancies.
- E. The total number of sprinkler heads and circuits and size of pipes shall be not less than shown unless otherwise approved. The stated maximum spacing for each type of sprinkler head shall not be exceeded.

3.2 EXCAVATION

- A. Trenches shall be dug as wide and as deep as necessary to properly install the irrigation pipe.
- B. Pipe trenches shall be straight, or "snaked" slightly allowing for expansion and contraction of PVC pipe.
- C. Subsoil shall be kept separate from topsoil, where possible.
- D. Minimum cover depth shall be as follows:
 - 1. Supply pressure lines from water source to control valves: 18 inches unless otherwise shown.
 - 2. Lateral lines from control valves to sprinkler heads; 12 and 16 inches unless otherwise shown. Lateral lines under paving, roadways, and driveways shall have 18 inches of cover and located in Schedule 40 PVC

sleeves. All poly feeder lines to have 6 inches of soil cover.

3. Trenches for control wire only shall be 18 inches deep unless otherwise shown. Control wires under concrete walks and slabs, paving, roadways, and driveways shall be installed in Schedule 40 PVC sleeves
- E. A trench of sufficient width shall be provided to allow for proper tamping around pipe.

3.3 PIPING-GENERAL

- A. Piping shall be laid out and installed in accordance with manufacturer's printed recommendations and industry standards. Substantial support shall be provided at all points, and pipes shall be snaked slightly allowing for expansion and contraction.
- B. Minimum 1-inch vertical clearance shall be between lines crossing at angles greater than 45 degrees.
- C. Minimum 3 inches horizontal and vertical clearances shall be between all other lines.
- D. All swing or swivel joints shall provide a leak-resistant joint with freedom of movement.
- E. Teflon thread sealant 3/4-inch wide (tape or liquid), Rectorseal No. 5, or equal shall be used at all threaded joints.
- F. Galvanized steel and copper pipes shall have clean standard threads of standard lengths. Joints shall be made up with pipe compound applied to male threads only and not more than 2 threads shall show at the joints when connected.
- G. Pipe sleeves shall be provided under all paving and where necessary for passage under finish surface material, future replacement, and for protection of PVC piping and control wire

3.4 PLASTIC PIPE

- A. The pipe shall be guaranteed by the manufacturer to be suitable for operation under the conditions of this installation and shall be guaranteed free from defects in workmanship and quality.
- B. The pipe shall be connected by O-ring type or by solvent-weld joints as outlined below. Joints shall be made in strict accordance with the manufacturer's printed recommendation.
- C. The plastic pipe sections shall be placed accurately to line and grade in the prepared trenches. The inside of all pipe shall be clean and free from foreign matter and shall be end-reamed to remove burrs and provide full inside diameter of the pipe end.

- D. Pipe assembly shall have a firm, uniform bearing for the entire length of each pipeline to prevent uneven settlement. All adjustments to grade shall be made by scraping away or filling in with clean earth backfill material, well compacted under the body of the pipe. Wedging of pipe will not be permitted. The inside of all pipes shall be clean and free from foreign materials before joints are assembled.
- E. Sealant tape shall be used on all threaded joints.
- F. All pipeline open ends upon which the WORK has been stopped shall be closed at the end of each day's construction work with a suitable temporary plug to prevent entrance of any foreign materials into the assembled pipeline.
- G. Pressure pipe shall be defined as all piping lying "upstream" from remote control valves and quick-coupling lines.
- H. O-ring type flexible coupling pipe shall be used on pressure pipes 3-inch diameter and larger.
- I. Two and one half inch and smaller mainlines and fittings of pressure piping shall be solvent-weld type.
- J. Pressure piping 3-inch and larger shall be provided with Portland cement concrete thrust blocks. Thrust blocks shall be constructed at the following places:
 - 1. Where pipe changes direction at fittings.
 - 2. Where pipe changes size.
 - 3. Where line terminates.
- K. Thrust blocks shall be constructed of 4000 psi concrete with a 10 mill barrier between concrete and pipe or fitting, as noted on plans and details.
- L. The areas noted on the details table shall be measured in a place perpendicular to the longitudinal axis of the pipe or to the longitudinal axis of the thrust developed. The thrust block bearing area shall be against undisturbed ground.
- M. Compression fitting (compression by compression slip joint PVC) shall be provided on mainline at 250 on center for expansion and contraction of mainline on straight runs on solvent welded pipe.

3.5 VALVES

- A. Piping systems shall be supplied with valves at all points as shown or specified herein so arranged to give complete regulating control throughout. The automatic control valves and gate valves shall be detailed in the Contract Documents or as otherwise directed by the L.A.
- B. Valves shall be the full size of the line in which they are installed, unless otherwise shown.
- C. Remote control valves shall be adjusted so the most remote sprinkler heads operate at the pressure recommended by the head manufacturer. Remote control

valves shall be adjusted so a uniform distribution of water is applied by the sprinkler heads to the planting areas for each individual valve system. A union fitting shall be provided on the discharge side of the control valve. They shall be wired to operate in the order as shown. They shall be capable of being operated manually entirely independent of the controller.

- D. Quick couplers shall be installed as shown.
- E. Gate valves shall be pipe line size, shall be installed where shown, in a valve box.
- F. Quick-coupling valves shall be provided, located, and installed as shown.

3.6 REDUCED PRESSURE BACKFLOW PREVENTION

- A. Provide back flow assembly at point of water connection per code along all necessary, equipment, piping, fittings, etc.

3.7 VALVE BOXES

- A. Valve boxes shall be set ½-inch above the designated finish grade in lawn areas and 2 inches above finish grade in ground cover areas. Install only one valve per valve box.
- B. All remote control sprinkler valves shall be encased in a valve box as shown.

3.8 SPRINKLER HEADS & DRIP IRRIGATION

- A. All nozzles on sprinklers shall be tightened after installation. All sprinklers having an adjustment stem shall be adjusted on a lateral line for the proper radius diameter and/or flow
- B. All sprinkler heads shall be set perpendicular to finished grades and at finish ground level.
- C. All sprinkler heads shall be installed as detailed on the Drawings.
- D. The sprinkler system shall be thoroughly flushed as so to remove all possible foreign prior to installation of the sprinkler heads.
- E. The CONTRACTOR shall protect against re-entry of contaminated water into risers or piping. After flushing, the CONTRACTOR shall immediately install sprinkler heads or cap risers until sprinkler heads are installed.
- F. Provide drip irrigation to all plants per plans and details.

3.9 CONTROLLER

- A. The CONTRACTOR shall install controller as shown complete with required waterproof circuit breaker type disconnect switch, per manufacturer's printed recommendations.

- B. Controller location is essentially diagrammatic, and the actual installation shall be as specifically located by the L.A.
- C. All local and applicable codes shall be followed in furnishing and/or connecting a 110-volt electrical service to the controller.
- D. The controller shall be wall and pedestal mounted as shown, in such a manner that all normal adjustments can be conveniently reached by the operator while in a standing position.
- E. Adjustment of the controller shall be such that each control valve in the circuit will remain open for a readily adjustable period of 5 or less minutes to 60 minutes. Readily made field adjustments shall include a provision whereby any number of days in a week can be skipped and whereby one or more positions on the controller may be skipped. When any or all of the above adjustments have been made, the controller shall continue to operate automatically as set until further adjustments are made. Provision shall be made for conveniently resetting the start of the irrigation cycle at any time and also for advancing from one position to any other position at will.
- F. The CONTRACTOR shall properly ground the control boxes to copper ground rods driven into the ground.
- G. Timing, sequence and period will be supplied to the CONTRACTOR by the L.A. At this time, the CONTRACTOR shall adjust the controller for normal operation.
- H. The controller shall be single-phase; 110-volt (approx.) ac operated and shall contain an "On-Off" switch and fuse assembly. The controllers shall be equipped with a transformer to reduce voltage to a 24-volt system. Controller station shall be provided where shown.

3.10 WIRING AND ELECTRICAL WORK

- A. All electrical equipment and wiring shall comply with local and state codes and shall be installed by those skilled and licensed in the trade. Unless the governing codes specify otherwise, low voltage control wire may be installed by the CONTRACTOR when code allows.
- B. All 110-volt wire shall be installed in conduit and taken from appropriate sources as shown. CONTRACTOR shall coordinate manufacturer and installer.
- C. The CONTRACTOR shall provide low voltage, 24-volt direct burial wires. Wire size shall be as shown but shall be not less than No. 14. Where sizes are not shown, they shall be sized per wire manufacturer's sizing charts and specifications.
- D. The CONTRACTOR shall provide all wiring, conduits, sleeves, and connection for the low voltage electrical system between controller and valves, and where else shown and necessary for a complete and operable irrigation system.
- E. Wires shall be color coded as follows:

1. Common wire white.
 2. Valve wire red.
 3. Spare wire orange.
 4. Tracer wire yellow.
 5. Master valve wire blue.
- F. All splices shall be moisture proof using specified electrical connectors.
- G. Wires shall be bundled together and wrapped with electrical tape similar to PVC at 20-ft intervals. Install wire at the bottom side of the irrigation main line pipe.
- H. An expansion curl should be provided within 3 ft of each wire connection and at pull box locations.
- I. All conduits and sleeves necessary for running wires under concrete, walks, and paving shall be furnished and installed before said concrete, walks, and paving work is installed.
- J. Wire shall be continuous without splices except at control valves, and shall be routed in main line trench whenever possible.
- K. All wire under paving shall be encased in PVC pipe; changes in direction under paving shall be made with sweep ells.
- L. Run one extra valve wire for every five valves installed to the furthest valve group through all valve boxes in all directions to each irrigation controller along with the specified extra wires for future irrigation system expansion.

3.11 PIPE TRENCH BACKFILL

- A. After pipe and wires have been installed, the trenches shall be backfilled. The backfill operation must provide a firm continuous support for the pipe.
- B. Backfill material shall be free of rocks and other materials that may damage the piping.
- C. Bottom of trenches shall be smooth and free of sharp rocks and other object that may damage pipe.
- D. The initial backfill shall be accomplished by carefully tamping selected material (from material excavated from the trench) under the pipe and between the pipe and the trench.
- E. The pipes shall be filled with water and pressurized during backfilling operations if necessary, to prevent drainage to piping.
- F. The backfill shall be carefully installed around and over the pipe to approximately 10 inches of the ground surface, then water shall be allowed to flow in the trench. After this puddling operation has been completed and allowed to stand for 24 hours, the balance of the materials shall be placed in the trench to the sub-grade line (leaving room for topsoil) Rocks and other materials found in the backfill shall

be removed. The backfill shall be compacted carefully and thoroughly.

- G. Couplings and fittings shall be left exposed until leakage tests have been completed.
- H. Topsoil shall be installed prior to planting.

3.12 TESTING AND ADJUSTMENTS

- A. The L.A. shall be notified by the CONTRACTOR prior to performing hydrostatic tests on the irrigation system in place. This test shall be done by the CONTRACTOR in the presence of the L.A. The test results will be acceptable to the L.A. when no leakage or loss of pressure is evident during the test period. Defects shall be detected and repaired prior to retesting.
- B. The sprinkler heads shall be adjusted and balanced for optimum and uniform coverage without excessive fogging and overthrow on walks, paving, and structures. The height and elevations of risers and sprinkler heads shall be adjusted.
- C. Following adjusting and balancing of the sprinkler heads, an operating test of the entire system shall be performed by the CONTRACTOR in the presence of the L.A. at normal operating pressures. The test will be considered as acceptable if the system operates in a satisfactory manner providing uniform coverage of irrigated areas for a one week period of automatic operation with no leaks.

-END OF SECTION-

SECTION 02900 – LANDSCAPE PLANTING

PART 1 -- GENERAL

1.1 THE REQUIREMENT

- A. The CONTRACTOR shall perform all the landscaping and all appurtenant work, complete, in accordance with the requirements of the Contract Documents.
- B. Scope of Work: Landscaping as referred to herein shall include, but not be limited to the following work: soil preparation, installation of headers, weed control, finish grading, furnishing and installing plant materials, tree staking and tying, cleanup, maintenance and guarantee.
- C. The Section cross references the following sections:
 - 1. Submittal Procedures 01330
 - 2. Closeout Procedures 01770
 - 3. Landscaping Irrigation 02810
 - 4. Sodding 02910

1.2 REFERENCE SPECIFICATIONS, CODES, AND STANDARDS

- A. Codes: All codes, as referenced herein, are specified in Section "Reference Standards".
- B. Federal Specifications:
 - FS O-F-241 D Fertilizer, Mixed, Commercial
- C. Commercial Standards
 - ANSI/ASTM D 422 Method for Particle-Size Analysis of Soils
 - ANSI Z601 Nursery Stock
 - American Association of Rules and Grading Provisions Nurserymen, Inc.

1.3 CONTRACTOR SUBMITTALS

- A. General: The CONTRACTOR shall furnish a certificate with each delivery or bulk material delivery, stating source, quantity, and type of material. All materials shall conform to specification requirements. All certificates shall be delivered to the LANDSCAPE ARCHITECT (here in referred to as L.A.) at time of each delivery. All bulk delivered materials shall be delivered with level load volume plainly marked on the truck bed.
- B. Topsoil Report: Topsoil report as well as literature on fertilizers, mulch "Silva-fiber" and seed mixes, shall be submitted as specified in Section "Contractor Submittals".

1.4 QUALITY ASSURANCE

- A. General: All plants furnished by the CONTRACTOR shall be true to type or name as shown in the Contract Documents and shall be tagged in accordance with the standard practice recommended by the Agricultural Code of the State of Utah; however, determination of plant species or variety will be made by the L.A.
- B. All plants shall comply with Federal and State laws requiring inspection for plant diseases and infestations. Inspection certificates required by law shall accompany each shipment of plants, and certificates shall be delivered to the L.A.
- C. All inspections herein specified will be made by the L.A. or its representative. The CONTRACTOR shall request inspection at least 24 hours in advance of the time inspection is required. Inspection will be required on the following stages of the WORK:
 - 1. During preliminary grading, soil preparation, and initial weeding.
 - 2. When trees are spotted for planting, but before planting holes have been excavated.
 - 3. When finish grading has been completed.
 - 4. When all specified work, except the maintenance period has been completed.
 - 5. Final inspection at the completion of the maintenance period.
- D. Plants shall be subject to inspection and approval or rejection by the L.A. at place of growth and upon delivery to the site at any time before or during progress of the WORK and according to:
 - 1. Quantity, quality, size, and variety;
 - 2. Ball and root condition; and
 - 3. Latent defects and injuries resulting from handling, disease, and insects.
- E. Plants approved at pre-planting inspection shall still be subject to rejection during planting if found to be below Specifications.
- F. Rejected plants shall be identified in an obvious manner, removed from the site and replaced with acceptable equals.
- G. Plants shall have been grown in nurseries which have been inspected by the governing authorities. Inspection of plant materials required by City, County, State, or Federal authorities shall be the responsibility of the CONTRACTOR, who shall have secured permits or certificates prior to delivery of plants to site.

1.5 CLEANUP

- A. Upon completion of all planting operations, the portion of the project site used for

a work or storage area by the CONTRACTOR shall be cleaned of all debris, superfluous materials, and equipment. All such materials and equipment shall be entirely removed from the project site as specified in Section "Project Closeout".

- B. All walks or pavement shall be swept or washed clean upon completion of the WORK of this Section.
- C. During the entire Contract period, plant containers that have been cut or removed from plant materials shall be removed from the project site daily, in accordance with the provisions for maintenance and guarantee as specified in Section "Project Closeout".

1.6 MAINTENANCE OF LANDSCAPE PLANTING PRIOR TO ACCEPTANCE OF PROJECT

- A. General: The CONTRACTOR shall be responsible for protecting, watering, and maintaining all planting and irrigation systems until final acceptance of all work under the contract.
- B. Watering: Trees and shrubs shall be thoroughly soaked after planting and provided with additional water at intervals as necessary to provide for good health and growth of the planting.
- C. The new planting shall be kept watered by the sprinkling system existing on the site during dry weather or whenever necessary for proper establishment of the lawn. Care shall be taken to avoid excessive washing or puddling on the surface and any such damage caused thereby shall be repaired by the CONTRACTOR at its own expense.
- D. Protection: The CONTRACTOR shall provide adequate protection to all newly planted areas including the installation of approved temporary fences to prevent trespassing and damage, as well as erosion control, until acceptance.
- E. The CONTRACTOR shall replace any materials or equipment it has damaged or which has been damaged by its employees or subcontractors.
- F. Partial utilization of the project shall not relieve the CONTRACTOR of any of the requirements contained in the Contract Documents.
- G. Plants shall be maintained in a vigorous, thriving condition by watering, cultivating, weeding, pruning, spraying, and other operations necessary. No trees or shrubs will be accepted unless they are healthy and show satisfactory foliage conditions.
- H. All planted areas shall be cultivated at least every 2 weeks and raked smooth, to present a neat appearance and additional mulch shall be added where necessary.
- I. Maintenance shall include, in addition to the foregoing, cleaning, edging, repairs to stakes, wire, and wrappings, the repair of erosion, and all other necessary work of maintenance. Sidewalks and other paved areas shall be kept clean while planting and maintenance are in progress.

- J. Any and all sprinkler lines broken or disrupted during this construction shall be replaced to proper working order prior to contract work and be acceptable to the OWNER.

1.7 INSPECTION SCHEDULE

- A. Weekly construction inspections will be conducted by the Landscape Architect during the Landscape and Irrigation work and installation with the Landscape Contractor.

PART 2 -- PRODUCTS

2.1 GENERAL

- A. All landscaping materials for soil conditioning, weed abatement, or planting shall be first grade, commercial quality and shall have certificates indicating the source of material analysis, quantity, or weight attached to each sack or container or provided with each delivery. Delivery certificates shall be given to the L.A. as each shipment of material is delivered. A list of the materials used, together with typical certificates of each material, shall be submitted to the L.A. prior to the final acceptance of the job.

2.2 TERMINOLOGY AND QUALIFICATIONS

- A. Plants or plant material having characteristics not conforming to terms as defined will not be accepted. The terms "plant material" or "plants" refer to all vegetation, whether trees, shrubs, ground cover, or herbaceous vegetation.
- B. Quality refers to structure and form, as evidenced by density and number of canes and branches, compactness, symmetry, and general development without consideration of size or condition. Standard quality indicates the least acceptable quality. Plants shall be typical of the species and variety of good average uniform growth, shall be well formed and uniformly branched, and shall have the minimum number of canes specified, free from irregularities, or shall conform to minimum quality index. Where the number of canes is not specifically stated in describing this grade, the standards of the "Horticultural Standards" as adopted by the American Association of Nurserymen, shall apply. In this case, the number of canes and other factors for the appropriate classification under "quality definition" in the Horticultural Standards shall be the Quality index. Plant material below this standard will be considered "culls" and are not acceptable. Plants shall be nursery grown.
- C. Specimen means an exceptionally heavy, symmetrical, tightly-knit plant, so trained or favored in its development and appearance as to be outstanding, superior in form, number of branches, compactness, and symmetry.
- D. Size is the factor controlled by dimensions representing height or spread, or both, without consideration of quality or conditions. For standard quality, a dimension is given for height or container size, or a dimension is given for height as well as container size.

- E. Height is usually indicated with a tolerance. The smaller dimension is the minimum acceptable. The larger dimension represents the maximum permissible. The average dimension of all plants must equal the average of the tolerance figures shown on each item
- F. Condition is the factor controlled by vitality and ability to survive and thrive and be comparable with normal plants of the same species and variety in the vicinity, at the same season of the year. In addition, plants shall be free from physical damage or adverse conditions that would prevent thriving. Conditions also sometimes refer to state of growth, i.e., whether "dormant condition" or "growing condition" and this state shall be comparable to plants of similar species in the vicinity or leaves, formation of buds, and the like.
- G. Cane means a primary stem which starts from the ground, or close to the ground, at a point not higher than 1/4 the height of the plant.
- H. Caliber shall be taken 12 inches above the finish grade or ground, as a guide, or where a dimension in trunk appears to form the head of the tree.
- I. Foliage line is maximum dimension in case of specimen plants. It measures from ground to lowest part of body of plant.
- J. Collected plants shall not be used. Native local plants may need to be collected if local nurseries cannot supply the native plant material.

2.3 TOPSOIL

- A. Existing on site topsoil may be stripped and stockpiled on site for landscape use.
 - B. Imported topsoil shall be obtained from naturally drained areas and shall be fertile, friable loam suitable for plant growth. Topsoil shall be subject to inspection and approval at the source of supply and upon delivery.
 - C. The topsoil shall be of uniform quality, free from subsoil stiff or lumpy clay, hard clods, hardpan, rocks, disintegrated debris, plants, roots, seeds, and any other materials that would be toxic or harmful to plant growth. Topsoil shall contain no noxious weeds or noxious weed seeds.
 - D. Imported topsoil shall contain at least 3 percent organic matter as determined by loss of weight after ignition of dried (moisture-free) samples in accordance with current methods of the Association of Official Agricultural Chemists.
 - E. Imported acidity range of the topsoil shall be (pH 5.5 to pH 7.5). The salinity level shall be less than 3 millimhos/cm.
 - F. Imported topsoil clay, as determined by the Bouyoucous hydrometer or by the Recantation method, shall not exceed 60 percent of the topsoil material.
 - G. Mechanical analysis shall be performed and shall conform to ANSI/ASTM D 422.
- QUALITY ASSURANCE

2.4 FERTILIZER AND ADDITIVES

- A. Fertilizer shall be furnished in bags or other standard containers with name, weight, and guaranteed analysis of contents clearly marked thereon.
- B. Chemical fertilizers shall be a mixed commercial fertilizer "Gro-Power" conforming to FS O-F-241 D, Type I, with percentages of nitrogen, phosphoric acid, and potash at 5-3-1. The combined N-P-K content shall be following percentages of total weight: 5 percent nitrogen 3 percent phosphoric acid and 1 percent potash. Fertilizers shall be uniform in composition, dry, and free flowing.
- C. Tablets shall be 21 grams each 20-10-5 "Agriform," "Lesslie", or equal

2.5 MULCH & COMPOST

- A. "Silva-fiber" mulch material shall be "Silva-fiber" as manufactured by the Weyerhaeuser Company, Silva Products Department, Tacoma, Washington, or equal.
- B. Bark mulch in planting beds shall be clean, pine bark free of sticks and pieces over 2 inches in size produced by "chipping and shredding" tree branches or similar means.
- C. Organic Compost material as outlined in "Compost Quality Guidelines for Landscaping" by Isaman, Koenig, Cerny, USU Extension, 3 March 2003 or as noted on the plan.

2.6 PLANT MATERIALS

- A. Plants shall meet requirements of the Contract Documents and shall be in accordance with the botanical names and applicable standards of quality, size, condition, and type. They shall be true to name, genera, species, and variety in accordance with reference publications.
- B. Plant names are defined in "Standardized Plant Names" and "Bailey's Encyclopedia of Horticulture." When a name is not found in either reference, the accepted name used in the nursery trade shall apply.
- C. Plants shall be marked for identification. Each bundle of plants and at least 25 percent of each species and variety of separate plants in any one shipment shall have legible labels securely attached before delivery to the site.
- D. All trees and shrubs shall be measured while their branches are in their normal position. Height and spread dimensions specified refer to the main body of the plant and not from branch or root tip to tip. No trees will be accepted with their leaders cut, or so damaged that cutting is necessary.
- E. All plants shall be symmetrical and shall conform to the size, age, and condition as specified on the plant list shown in the Contract Documents. Exceptions are as follows:
 - 1. Plants larger than specified in the plant list may be used if approved by

the L.A., but use of such plants shall not increase the contract price. If the use of larger plants is approved, the spread of roots or ball earth shall be increased in proportion to the size of the plant. Bare root plants furnished in size greater than specified shall be balled and burlaped when required by the L.A.

2. Where caliper or other dimensions of any plant materials are omitted from the Plant List, it shall be understood that such plant materials shall be normal stock for type.
- F. Plants shall be of sound health, vigorous, and free from plant disease and shall be well-branched, shall have full foliage when in leaf, and shall have a healthy well-developed normal root system. Cold storage plants will not be accepted. Plants that are sensitive to shock from elevation change shall be grown at elevations close enough to site to alleviate any plant damage due to such change for at least 2 years.
 - G. Bare rooted (BR) plants shall have well-developed branch systems and vigorous root systems. They shall be dug to sufficient depth to insure full recovery and development of the plants. Roots of these plants shall be covered with a uniformly thick coating of mud being puddled immediately after they are dug.
 - H. Balled and burlaped (BB) plants shall have firm, natural balls of earth, or diameter not less than that specified and of sufficient depth to include all the fibrous and feeding roots. No plant moved with a ball will be accepted if the ball is cracked or broken before or during plant operations, except on special approval of the L.A.
 - I. Roots or balls of all plants shall be adequately protected at all times from sun and drying winds.
 - J. Plants (indicated to be in marked cans, pots, or other containers on the plant list) shall have been grown in the containers for a minimum of 6 months and a maximum of 2 years. Roots shall fill the containers but show no evidence of being or having been root bound.
 - K. Trees shall have straight trunks and all old abrasions and cuts shall be completely callused over. In no case shall trees be topped before delivery.
 - L. Plants shall have been transplanted or root-pruned at least once in the 2 years. Plants shall not be pruned prior to delivery except as authorized by the L.A.
- 2.7 LAWN SOD
- A. Provide sod for lawn replacement. See specification section 02910 – Sodding.
- 2.8 STAKING MATERIALS
- A. Stakes for supporting trees to be 6' metal "T" fence posts or 3" dia. x 8' wood poles.
 - B. Guying kits for trees will be "Cable Guy" (Alpine Nursery 1-800-356-6633) #CG-

4000 and CG-6800-T. Add extra hose where guy cable comes in contact with tree.

- C. Hose for covering wire shall be new or used black or green 2-ply fiber-bearing garden hose, not less than ½-inch inside diameter.
- D. Wire for tree bracing and guying shall be double strand pliable No. 10-gage galvanized steel wire or vinyl-coated steel wire.

PART 3 -- EXECUTION

3.1 GENERAL

- A. The landscape work shall not be performed at any time when it may be subject to damage by climatic conditions.
- B. The CONTRACTOR shall carefully scale or otherwise verify all dimensions in the Contract Documents. Dimensions and plant locations shown shall be coordinated with L.A. and final location shall be site-oriented by the planter and L.A. Any discrepancies or inconsistencies discovered shall be brought to the attention of the L.A.
- C. In case of conflict between the plant list totals and total plant count of the Contract Documents, the CONTRACTOR shall provide the higher number of plants.
- D. Delivery of materials may begin only after samples and tests have been approved by the L.A. All materials furnished for the work shall be not less than the approved sample.
- E. Substitutions for the indicated plant materials may be permitted pursuant to the Contract Documents.
- F. The CONTRACTOR shall provide temporary fencing, barricades, covering, or other protections to preserve existing landscaping items indicated to remain and to protect the adjacent properties and other structures when they may be damaged by the landscape work.
- G. Waste materials shall be removed and disposed of off the Owner's property, unless otherwise indicated.
- H. It shall be the responsibility of the CONTRACTOR to avail itself of any information regarding utilities which are in the area of work and to prevent damage to the same. The CONTRACTOR shall provide protection to the utilities as necessary.
- I. Burning of combustible materials on the site shall not be permitted.
- J. The CONTRACTOR shall provide protection to structures, sidewalks, pavements, and other facilities in areas of work which are subject to damage during landscape work. Open excavations shall be provide with barricades and

warning lights which conform to the requirements of governing authorities and the State's OSHA safety requirements from dusk to dawn each day and when needed for safety.

- K. Planting areas include all areas to be landscaped unless, specified or shown, otherwise.

3.2 SOIL PREPARATION

- A. The landscape work shall not begin until all other trades have repaired all areas of settlement, erosion, rutting, etc., and the soils have been re-established, recompacted, and refinished to finish grades. The L.A. shall be notified of all areas which prevent the landscape work from being executed.
- B. Areas requiring grading by the landscaper including adjacent transition areas shall be uniformly level or sloping between finish elevations to within 0.10-ft above or below required finish elevations.
- C. The landscape work shall not proceed until after walks, curbs, paving, edging, and irrigation systems are in place. The contract operations shall be completed to a point where the landscape areas will not be disturbed. The sub grade shall be cleaned free of waste materials of all kinds.
- D. During grading waste materials in the planting areas such as weeds, rocks (1 inches and larger) building materials, rubble, wires, cans, glass, lumber, sticks, etc., shall be removed from the site. Weeds shall be dug out by the roots.
- E. Fertilizers, additives, seed, peat, etc. subject to moisture damage shall be kept in a weatherproof storage place in such a manner that they will be kept dry.
- F. After removal of waste materials the planting areas sub grade shall be scarified and pulverized to a depth of not less than 6 inches and all surface irregularities below the cover of topsoil removed.
- G. Finish sub grade and topsoil placement and grading shall consist of:
 - 1. Prepare sub grade by rough grading and removing all irregularities and debris, then till and scarify subsoil to a depth of 6 inches before placing topsoil. Dig sub grade down as required in shrub beds for the placement of topsoil. Provide laser leveling on large flat areas to create a uniform level sub grade.
 - 2. Place 4 inches or 6 inches of topsoil over all lawn and non-irrigated grass seeding areas as and where noted on the plan. Place 12 inches of topsoil in shrub beds unless shown or specified otherwise on plans. Sub grade soil shall be in a loosened and rough surface finish before topsoil is placed over sub grade. (Sub-grade surface shall not be smooth, but a rough surface shall exist for a transition zone of topsoil to subsoil.) If areas of sub grade become compacted before topsoil is placed, sub grade shall be tilled again before topsoil placement.
 - 3. Placing all soil additives and fertilizers for the areas as noted on the plan.

4. Tilling planting area sub soils and top soils that are compacted.
 5. After tilling, bring areas to uniform grades by floating and/or hand raking. In large open level areas; perform laser leveling to create uniform level areas.
 6. Make minor adjustment of finish grades as directed by the landscape architect or owner.
 7. Remove waste materials over 1" in size such as stones, roots, or other undesirable foreign materials and finish raking, dishing, dragging, and smoothing soil ready for planting.
 8. No grading or soil placement shall be undertaken when soils are wet or frozen.
 9. Provide dust control measures at all times by wetting down the soil surface as required to prevent blowing dust.
- H. Any unusual subsoil condition that will require special treatment shall be reported to the L.A.
- I. Topsoil shall be uniformly distributed over all areas where required. Sub grade and topsoil shall be damp and free from frost.
- J. Surface drainage shall be provided as shown by molding the surfaces to facilitate the natural run-off of water. Low spots and pockets shall be filled with topsoil and graded to drain properly.
- K. Finish grade of all planting areas shall be 2-3 inches below finish grades of adjacent pavement of any kind for sod areas.

3.3 DELIVERY, STORAGE, AND HANDLING OF PLANT MATERIALS

- A. No plants other than the required samples shall be dug or delivered to the site until the required inspections have been made and the plant samples are approved
- B. Plants shall not be pruned prior to delivery except upon approval by the L.A.
- C. Plant material shall be planted on the day of delivery if possible. The CONTRACTOR shall protect the stock in a temporary nursery at the project site where it shall be protected from sun and drying winds and shall be shaded, kept moist, and protected with damp soil, moss, or other acceptable material. Plants shall be planted within 2 days after delivery.
- D. All balled and burlapped plants which cannot be planted immediately in delivery shall be set on the ground and shall be well protected with soil, wet moss, or other acceptable material. Bare rooted plants, which cannot be planted immediately, shall be planted on heeled-in trenches immediately upon delivery. No material heeled-in more than one week may be used. Bundles of plants shall

be opened and the plants separated before the roots are covered. Care shall be taken to prevent air pockets among the roots.

- E. During planting operations, bare roots shall be covered with canvas, wet straw, or other suitable materials. No plants shall be bound with wire or rope at any time so as to damage the bark or break branches.
- F. Plants shall not be picked up or moved by stem or branches, but shall be lifted the ball or container.
- G. Plants shall be lifted and handled from the bottom of the ball or container. Plants with balls cracked or broken before or during planting operations will not be accepted and shall be immediately removed from the site.

3.4 TREE AND PLANT LOCATIONS

- A. The CONTRACTOR shall locate and stake all tree and shrub locations and have the locations approved by the L.A. before starting excavation for same. The plant locations shall be observed, and their locations shall be adjusted as directed by L.A. before final approval.
- B. No trees shall be located closer than 72 inches to structures unless otherwise shown. Ground covers and shrubs may be planted up to structures or curbs.

3.5 PLANT PITS

- A. Plant pits, centered on location stakes, shall be excavated circular pits with vertical sides and flat or saucer shape bottom in accordance with the following sizes unless shown.
 - 1. Tree pits shall be at least 3 feet greater in diameter than the specific diameter of ball or spread of roots, and at depth of ball or roots.
 - 2. Shrubs shall be planted in pits or holes of soil the depth of ball below finished grade, or as much deeper as necessary to properly set the plant at finished grade. Shrubs with balls shall be planted in pits that are at least 3 times greater in diameter than the bottom of ball.

3.6 PREPARED BACKFILL

- A. Tree and shrub pit backfilling soil shall consist of ½ existing soil from plant pit and ½ topsoil mixed and as noted on the plan.
- B. Tree and shrub pits shall be provided with fertilizer tablets as follows:
 - 1 per one-gallon can plant
 - 2 per 5-gallon can plant
 - 3 per 1.5" cal. tree

3.7 ROCKS OR UNDERGROUND OBSTRUCTIONS

- A. In the event that rock or underground obstructions are encountered in the excavation of plant pits, alternative locations shall be selected by the L.A. moving

of trees to alternative locations shall not entail additional costs to the OWNER.

3.8 SETTING PLANT MATERIALS

- A. The soil shall not be worked when the moisture content is so great that excessive compaction will not occur, nor when it is so dry that a dust will form in the air or those clods will not break readily. Water shall be applied if necessary to provide ideal moisture for filling and for planting as herein specified.
- B. Plants shall be set in center of pits as shown in the Contract Documents. They shall be set plumb and straight, and at such a level that after settlement that the crown of the plant will be 2 inches above the finished grade.
- C. Balled and burlapped trees shall have planting soil placed and compacted around base of ball to fill all voids. All burlap ropes or wires shall be removed from the sides and tops of balls.
- D. All ground cover plants shall be evenly spaced, staggered in rows, and set at intervals specified, so as to produce a uniform effect. Plants shall be watered immediately after planting operations have been completed.
- E. All shrubs and vines shall be pruned to remove damaged branches. All bare root shrubs shall be pruned and shaped to compensate for transplant root loss.
- F. Planting soil around roots or balls shall be thoroughly compacted and watered. After planting, the soil in the shrub beds shall be cultivated between shrubs, raked smooth, and neatly outlined. Muddy soil shall not be used for backfilling. All broken or frayed roots shall be properly cut off.
- G. Trees and shrubs on slopes steeper than 6 to 1 shall be provided with watering dams or berms at least 6 inches high and 8 inches wider than planting pit (hole) unless specified or shown otherwise.
- H. All trees shall be thoroughly watered immediately after planting.
- I. Remove all tags and labels when directed by L.A.

3.9 STAKING AND TREE WRAPPING

- A. Staking of trees shall be done immediately after they are planted. Plants shall stand plumb after staking. Staking shall be as specified unless shown or indicated otherwise.
- B. Trees 2-inch caliper and less shall be supported by 2 stakes placed diametrically opposite at perimeter line of ball and to sufficient depth to hold tree rigid. Stakes shall be driven vertically and not twisted or pulled. Trees shall be wired to each stake as indicated on staking details. Trees shall be protected with rubber hose over wires at points of contact.
- C. Trees (deciduous) 3-inch caliper and evergreen trees over 6 feet tall to be guyed at points of branching with 3 wire guys spaced equally around and outside the perimeter of the ball with "Cable Guy" product model #CG-4000. Trees over 3-

inches caliper to be guyed with "Cable Guy" product CG-6800-T. Each guy shall be positioned below crotches. Provide extra hose cushion where cable comes in contact with tree.

- D. Tree wrap all trees that may/are susceptible to winter sun damage as follows:
1. Starting as low as possible, wrap Treesaver in a smooth spiral to assure overlapping each previous wrap by 1/4 inch.
 2. Continue wrapping up the trunk to just below the second scaffold branches.
 3. Tie of Treesaver with a half hitch knot.
 4. Cover the base of tree and the first wrap of Treesaver with soil.

3.10 PRUNING AND MULCHING

- A. Each tree and shrub shall be pruned in accordance with standard horticultural practice to preserve the natural character of the plant in the manner fitting its use in the landscape design, as approved by the L.A.
- B. All dead wood or suckers and all broken or badly bruised branches shall be removed by thinning out and shortening branches. Deciduous bare-rooted plants shall have not less than 1/3 of their respective leaf surfaces removed. All cuts shall be made just above a healthy bud. Pruning shall be done with clean, sharp tools.
- C. Plants shall be mulched after planting and cultivating have been completed. A layer of mulch materials, as hereinbefore specified, shall be spread on finished landscaping grade within all planting areas to the minimum depth noted on the plan. All shrub and ground cover beds shall be completely covered with the mulch as noted on the plan.

3.11 MISCELLANEOUS ITEMS

- A. Concrete curbing shall be placed so that the top finish of curbing matches adjoining concrete curbs and walks. Curbing shall be straight and uniform both horizontal and vertically.
- B. Gravel mulch shall be placed in the landscape areas as noted on plans, spread carefully and evenly to a minimum depth over Dewitt Pro 5 weed barrier fabric as noted on plans.
- C. Cobble rock shall be placed in the landscape areas as noted on plans, spread carefully and evenly to a minimum depth noted on the plan over Dewitt Pro 5 weed barrier fabric as noted on plans.
- D. Place landscape boulders with a mix of sizes as indicated on the plan. The contractor shall place the landscape boulders to look natural.
- E. Bark mulch shall be placed in the planting areas as shown, spread carefully and evenly to the minimum depth noted on the plan over Dewitt Pro 5 weed barrier fabric.

- F. Provide lawn sod replacement for all areas noted on plan and disturbed during construction.

-END OF SECTION-

SECTION 02910 – SODDING

PART 1 GENERAL

1.01 SUMMARY

- A. Section includes: Sodding.

1.02 REFERENCES

- A. American Sod Producers Association (ASPA).

1.03 QUALITY ASSURANCE

- A. Sodding work shall be performed by a firm specializing in sodding.
 - 1. Do not make substitutions.
 - a. If specified sod is not obtainable, submit proof of non-availability to Engineer, together with proposal for use of equivalent material.
- B. Analysis and standards:
 - 1. Package standard products with manufacturer have certified analysis.
 - 2. For other materials, provide analysis by recognized laboratory made in accordance with methods established by the Association of Official Agriculture Chemists, wherever applicable.

1.04 SUBMITTALS

- A. Plant and material certifications:
 - 1. Certificate of inspection as required by governmental authorities.
 - 2. Manufacturer's or vendor's certified analysis for soil amendments or fertilizer materials.

1.05 DELIVERY, STORAGE AND HANDLING

- A. Packaged materials:
 - 1. Deliver packaged materials in containers showing weight, analysis, and name of manufacturer.
 - 2. Protect materials from deterioration during delivery, and while stored at site.
- B. Sod:
 - 1. Time delivery so that sod will be placed within 24 hours after stripping.
 - 2. Protect sod against drying.
- C. Transporting:
 - 1. Sod transported to the project in open vehicles shall be covered with tarpaulin or other suitable covers securely fastened to the body of the vehicle to prevent injury to the sod material.
 - 2. Closed vehicles shall be adequately ventilated to prevent overheating of the sod.

3. Evidence of inadequate protection against drying out in transit shall be cause for rejection.
4. Sod shall be kept moist, fresh and protected at all times.
 - a. Such protection shall encompass the entire period during which the sod is in transit, being handled, or in temporary storage.
5. Upon arrival at the temporary storage location or the site of work, sod shall be inspected for proper shipping procedures.
 - a. Should the roots be dried out, the Engineer will reject the sod.
 - b. Remove rejected sod at once from the area of the work and replace it.
6. Unless otherwise authorized by the Engineer, the Contractor shall notify the Engineer at least 48 hours in advance of the anticipated delivery date of sod material.
7. Submit to Engineer a legible copy of the invoice, showing species and variety of sod included for each shipment.
8. Certificate of Inspection must accompany each sod shipment.

1.06 JOB CONDITIONS

- A. Begin installation of sod after preceding related work is accepted.
- B. Environmental Requirements:
 1. Install sod during months acceptable to the Engineer.
 2. Do not install sod on saturated soil.
- C. Protection: Erect signs and barriers to control vehicular traffic.
- D. Utilities:
 1. Determine location of underground utilities and perform work in a manner which will avoid possible damage.
 2. Hand excavate, as required.
 3. Maintain grade stakes set by others until parties concerned mutually agree upon removal.

1.07 SEQUENCING AND SCHEDULING

- A. Correlate planting with specified maintenance periods to provide maintenance from date of substantial completion.
- B. Coordination with sodding:
 1. Plant trees, palms and shrubs after final grades are established and prior to planting of sod, unless otherwise acceptable to Engineer.
 2. If planting of trees, palms and shrubs occurs after sod work, protect sod areas and promptly repair damage to lawns resulting from planting operations.

PART 2 PRODUCTS

2.01 PLANTING SOIL

- A. Provide new planting soil that is fertile, friable, natural loam, surface soil, reasonably free of subsoil, clay lumps, brush, weeds and other litter, and free of roots, stumps,

stones larger than 1 inch in any dimension, and other extraneous or toxic matter harmful to plant growth.

- B. Obtain planting soil from local sources or from areas having similar soil characteristics to that found at project site.

2.02 SOD

- A. Provide strongly rooted sod, not less than 2 years old, free of weeds and undesirable native grasses, and machine cut to pad thickness of 1-1/2 inch (plus or minus 1/4 inch), excluding top growth and thatch.
- B. Provide only sod capable of vigorous growth and development when planted (viable, not dormant).
- C. Provide sod uniform pad sizes with maximum 5 percent deviation in either length or width.
 - 1. Broken pads with uneven ends will not be acceptable.
 - 2. Sod pads incapable of supporting their own weight when suspended vertically with a firm grasp on upper 10 percent of pad will be rejected.
- D. Provide sod composed of the following:
 - 1. The sod should be a Kentucky Bluegrass / Tall Fescue mix: Specialized blend of 70% Tall Fescue, 30% Kentucky Bluegrass. Developed by Utah State University. Sold by Biograss Sod Farms and SLC Public Utilities.
- E. Sod shall be nursery grown on cultivated mineral agricultural soils.
 - 1. Sod shall have been mowed regularly and carefully maintained from planting to harvest.
- F. ASPA Grade: Nursery Grown or Approved.
 - 1. Field grown sod is not acceptable.
- G. Furnished in pads:
 - 1. Size:
 - a. Length: 24 inches within 5 percent.
 - b. Width: 18 inches within 5 percent.
 - c. Thickness: 1-1/2 inches excluding top growth and thatch.
 - 2. Not stretched, broken or torn.
- H. Uniformly mowed height when harvested: 2 inches.
- I. Thatch: Maximum 1/2 inch uncompressed.
- J. Inspected and found free of disease, nematodes, pests, and pest larvae, by entomologist of State Department of Agriculture.
- K. Weeds:
 - 1. Free of Bermuda grass, nut grass, or other objectionable weeds.
- L. Uniform in color, leaf texture, and density.

2.03 WATER

- A. Plant utility water will be provided by the Owner for sod

2.04 FERTILIZER

- A. Federal Specification Type O-F-241c (1), Grade A or B.
- B. The chemical designation shall be 1-8-8, with at least 50 percent of the nitrogen from a non-water-soluble organic source.

2.05 HERBICIDES

- A. As recommended by the State Department of Agriculture.

2.06 STAKES

- A. Softwood, 3/4-inch diameter, 8-inch length.

PART 3 EXECUTION

3.01 SHIPPING

- A. Ship sod with certificates of inspection as required by governing authorities.

3.02 PREPARATION OF GROUND SURFACE

- A. Before mixing, clean planting soil of roots, plants, sods, stones, clay lumps, and other extraneous material harmful or toxic to plant growth.
- B. Mix specified fertilizers with planting soil as necessary at rates specified.
 - 1. Delay mixing fertilizer if planting will not allow placing of planting soil within a few days.
- C. For sod, mix planting soil either prior to planting or apply on surface of topsoil and mix thoroughly before planting.

3.03 PREPARATION OF PLANTING BEDS

- A. Loosen subgrade of lawn areas to a minimum depth of 4 inches.
 - 1. Remove stones measuring over 1 1/2 inches in any dimension.
 - 2. Remove sticks, stones, rubbish, and other extraneous matter.
 - 3. Limit preparation to areas, which will be planted promptly after preparation.
- B. Spread planting soil to minimum depth of 2 inches or as required meeting lines, grades, and elevations shown, after light rolling and natural settlement.
- C. Add specified fertilizer and mix thoroughly into upper 4 inches of topsoil.
- D. Place approximately 1/2 of total amount of topsoil required.

1. Work into top of loosened subgrade to create a transition layer and then place remainder of planting soil.
 2. Add specified soil amendments and mix thoroughly into upper 4 inches.
- E. Where sod is to be planted in areas that have not been altered or disturbed by excavating, grading, or stripping operations, prepare soil for lawn planting as follows:
1. Till to a depth of not less than 6 inches.
 2. Apply fertilizers as specified. Remove high areas and fill in depressions.
 3. Till soil to a homogenous mixture of fine texture, free of lumps, clods, stones, roots and other extraneous matter.
- F. Prior to preparation of unchanged areas, remove existing grass, vegetation and turf. Dispose of such material outside of Owner's property.
1. Do not turn existing vegetation over into soil being prepared for lawns.
- G. Allow for sod thickness in areas to be sodded.
- H. Apply specified commercial fertilizer at rates specified and thoroughly mix into upper 2 inches of topsoil.
1. Delay application of fertilizer if lawn planting will not follow within a few days.
- I. Fine grade sod areas to smooth, even surface with loose, uniformly fine texture.
1. Roll, rake, and drag lawn areas, remove ridges and fill depressions, as required to meet finish grades.
 2. Limit fine grading to areas, which can be planted immediately after grading.
- J. Moisten prepared sod areas before planting if soil is dry.
1. Water thoroughly and allow surface to dry before planting lawns.
 2. Do not create a muddy soil condition.
- K. Restore sod areas to specified condition, if eroded or otherwise disturbed, after fine grading and prior to planting.

3.04 SODDING NEW LAWNS

- A. Lay sod within 24 hours from time of stripping.
- B. Lay sod to form solid mass with tightly fitted joints.
1. Butt ends and sides of sod strips; do not overlap.
 2. Stagger strips to offset joints in adjacent courses.
 3. Work from boards to avoid damage to subgrade or sod.
 4. Tamp or roll lightly to ensure contact with subgrade.
 5. Work sifted soil into minor cracks between pieces of sod; remove excess to avoid smothering of adjacent grass.
- C. Anchor sod on slopes with wood pegs to prevent slippage.
- D. Water sod thoroughly with a fine spray immediately after planting.

3.05 MAINTENANCE

- A. Begin maintenance immediately after planting.
- B. Maintain lawns for not less than 30 days after substantial completion, and longer as required to establish an acceptable lawn.
- C. Maintain sod by watering, fertilizing, weeding, mowing, trimming, and other operations such as rolling, regrading and replanting as required to establish a smooth, acceptable lawn, free of eroded or bare areas.
- D. Mowing:
 - 1. Whenever grass reaches a height of 3 inches it shall be cut back to 2 inches with all clippings removed.
 - 2. After 2 mowings, Contractor shall top-dress the sod with an application of fertilizer at the rate of 1 pound of actual nitrogen per 1,000 square feet.

3.06 CLEANUP AND PROTECTION

- A. During sodding work, keep pavements clean and work area in an orderly condition.
- B. Protect sodding work and materials from damage due to landscape operations, operations by other Contractors and trades, and trespassers.
 - 1. Maintain protection during installation and maintenance periods.
 - 2. Treat, repair, or replace damaged sod work as directed.

3.07 INSPECTION AND ACCEPTANCE

- A. Sod areas will be accepted when in compliance with all the following conditions:
 - 1. The roots are thoroughly attached to the soil.
 - 2. Absence of visible joints.
 - 3. All areas show a uniform stand of specified grass in healthy condition.
 - 4. At least 60 days have elapsed since the completion of the work in this Section.
- B. When inspected sod work does not comply with requirements, replace rejected work and continue specified maintenance until reinspected by Engineer and found to be acceptable.
 - 1. Remove rejected plants and materials promptly from project site.

END OF SECTION

SECTION 15301
GALVANIC CATHODIC PROTECTION

PART 1 GENERAL

1.01 WORK INCLUDED

- A. This section covers the work necessary to furnish and install galvanic cathodic protection, test stations, and corrosion monitoring stations as shown on the Drawings and specified herein, complete.
- B. The quantity and location of the specified galvanic anodes are provided on the Drawings. Anode material has been selected based on the soil conditions of the installation location.
- C. Galvanic anode installations include anodes connected to the specified piping through Type A test stations.

1.02 QUALITY CONTROL

- A. All Cathodic Protection Contractor specified testing shall be performed under the direction of an experienced corrosion technician who holds a minimum current AMPP/NACE accreditation as a Cathodic Protection Technician (CP2).

1.03 DEFINITIONS

- A. Ferrous Metal Pipe: Pipe made of steel or iron, or pipe containing steel or iron as a principal structural material, except reinforced concrete pipe.
- B. Foreign-Owned: Buried pipe or cable not specifically owned or operated by the OWNER.
- C. Lead, Lead Wire, Joint Bonds, Pipe Connecting Wires, Cable: Insulated copper conductor; the same as wire.
- D. Electrically Continuous Pipeline: A pipeline which has a linear electrical resistance equal to or less than the sum of the resistance of the pipe plus the maximum allowable bond resistance for each joint as specified in this section.
- E. Test Station: Facility installed to monitor electrical characteristics of buried structure (pipeline or other) for the purpose of corrosion monitoring and/or cathodic protection levels.
- F. Pipeline Contractor: Contractor responsible for installation of the pipeline and providing excavations necessary to install the cathodic protection equipment.
- G. Cathodic Protection Contractor: Contractor responsible for supplying and installing cathodic protection equipment.

1.04 REFERENCES

- A. American Water Works Association (AWWA)
- B. The Association for Materials Protection and Performance (AMPP) formerly National Association of Corrosion Engineers (NACE) International.

1.05 STANDARDS:

- A. The following standards are included by reference:
 - 1. AMPP/NACE International
 - 2. NACE SP-0169
 - 3. NACE SP-0177

1.06 SUBMITTALS

- A. Shop Drawings: Catalog cuts, laboratory report, and other information for products proposed for use.
- B. Quality Assurance Submittals:
 - 1. Manufacturers' Certificates of Compliance.
 - 2. Field Test Reports.

PART 2 PRODUCTS

2.01 GENERAL

- A. Like items of materials provided hereunder shall be the product of one manufacturer to achieve standardization for appearance, maintenance, and replacement.
- B. The use of a manufacturer's name and model or catalog number is for establishing the standard of quality and general configuration desired only. Products of other manufacturers will be considered in accordance with the General Conditions.
- C. Materials and workmanship as specified in this section shall be installed concurrently with pipe installation. Coordinate all work specified herein with related sections.

2.02 SUPPLIERS

- A. Alternate suppliers will be considered, subject to approval of the ENGINEER. Location provided is that of the general office; contact these offices for information regarding the location of their representative nearest the project site.
 - 1. Corrpro, Houston, TX www.corrpro.com
 - 2. Farwest Corrosion Control, Gardena, CA www.farwestcorrosion.com
 - 3. Mesa Products, Tulsa, OK www.mesaproducts.com
 - 4. Equal.

2.03 GALVANIC ANODES

A. **High-Potential** Magnesium Alloy (Prepackaged-Backfill Supplied):

1. Composition:
 - a. Aluminum: 0.01 percent maximum.
 - b. Manganese: 0.5 to 1.3 percent.
 - c. Zinc: 0.
 - d. Silicon: 0.
 - e. Copper: 0.02 percent maximum.
 - f. Nickel: 0.001 percent maximum.
 - g. Iron: 0.03 percent maximum.
 - h. Total Others: 0.05 percent each or 0.3 percent maximum, total.
 - i. Magnesium: Remainder.
2. Dimensions:
 - a. Bare Weight: 60 pounds or As shown on the Drawings.
 - b. Packaged Size (minimum): 7" W by 64" L
3. Manufacturers and Products:
 - a. Dow; Galvomag.
 - b. Amax; Maxmag.
 - c. Approved equal..

B. Backfill:

1. Composition:
 - a. Ground Hydrated Gypsum: 75 percent.
 - b. Powdered Wyoming Bentonite: 20 percent.
 - c. Anhydrous Sodium Sulfate: 5 percent.
2. Grain Size: 100 percent passing through a 20-mesh screen and 50 percent retained by a 100-mesh screen.
3. Mixture: Thoroughly mixed and firmly packaged around the galvanic anode within the cloth bag or cardboard tube by means of adequate vibration.
4. The quantity of backfill shall be sufficient to cover surfaces of the anode to a depth of 1 inch.

2.04 CATHODIC PROTECTION TEST STATIONS:

A. Flush Mounted:

1. Test Box: Concrete body cast with a cast iron ring, with a minimum weight of 55 pounds and minimum dimensions of 8 inch inside diameter and 12 inches long. Furnish extensions as required to penetrate concrete surfaces by 4 inches minimum. Furnish with a 12 pound cast iron lid with the letters "TS" or words "Test Station" cast into the lid.
2. Manufacturer and Products: Brooks; Models 1RT or equal.
3. Flush Mount Test Station Terminal Board:
 - a. Test boards for terminating pipeline test leads and other test leads inside test boxes: Plastic or glass reinforced 6-inch by 10-inch by 1/4 inch thick laminate.
 - b. Furnish terminal block with five stainless steel studs, washers, and lock washers.
 - c. Shop fabricated as shown on the Drawings with engrave labels on terminal board.

B. Post Mounted (hot-dipped Galvanized Steel Post):

1. Test Station Head: Type A, T, I, and F: Testox series 700 or 1000 series test head.
2. Terminal Block: Plastic with minimum seven terminals. Terminal heads shall have special heads to keep them from turning or shall be easily accessible from both sides of the terminal block without requiring its removal. Terminal studs, washers, and nuts shall be stainless steel.
3. Mounting Post: 3 inch diameter by 6 foot long hot-dipped galvanized steel post.
4. Mounting Hardware: Conduit, straps, and hardware for mounting test station to the post as specified under CONDUIT, LOCKNUTS, AND STRAPS.
5. Manufacturers and Products: Testox 700 and 1000 series test station as manufactured by Gerome Manufacturing, Uniontown, PA.

C. Test Station Wires:

1. General: Conform to applicable requirements of NEMA WC 3-80, WC 5-73, and WC 7-88.
2. Single-conductor, No. 10 AWG stranded copper with 600-volt TW, THWN, or THHN insulation.
3. Galvanic Anode Header Wire: Single-conductor, No. 8 AWG, stranded copper with 600-volt HMWPE insulation.
4. Insulation Color/Identification: Wire insulation color shall indicate the function of each wire and shall be as follows:
 - a. Anodes/Header Cable: Black
 - b. Pipelines: White
 - c. Stationary Reference Cell: Yellow
 - d. Foreign Pipeline: Red (gas), Blue (water)
 - e. Insulated Joints: Green (insulated side), White (protected side)

D. Stationary Reference Electrodes:

1. Prepackaged Copper-Copper Sulfate Reference Electrodes:
2. Material: High impact ABS, ceramic with Moisture Retention Membrane.
3. Dimensions: 1.5" by 10.5" or 1" by 8".
4. Wire: Minimum 14 AWG stranded copper wire with yellow, 600-volt TW, THWN, or THHN insulation. The wire shall be attached to the electrode and insulated with the manufacturer's standard connection. Connection shall be stronger than the wire.
5. Packaging: Furnish electrode packaged in a plastic or heavy paper bag of sufficient thickness to protect the electrode, backfill, and cloth bag during normal shipping and handling.
6. Manufacturers:
 - a. Borin Manufacturing, Stelth 2 Series
 - b. MC Miller, IonX Permanent Reference Electrode

2.05 CORROSION MONITORING TEST STATIONS - METRICORR

A. Corrosion Monitoring Test Stations – Slimline ICL Post Mounted:

1. Big Fink Test Post:
 - a. Big Fink, Lexan plastic box and cover, yellow, as manufactured by Cott Manufacturing.
2. Power Supply – Solar and Lead crystal battery
 - a. Solar top hat for Big Fink

- b. Solar Panel Output: 3W
- c. Battery Voltage: 12 volts
- d. Battery Capacity: 1.2 Amp-hours
- e. Standby Current: 0.07 mA
- 3. Stationary Reference Electrodes
 - a. Prepackaged Copper-Copper Sulfate Reference Electrodes:
 - b. Material: High impact ABS, ceramic with Moisture Retention Membrane.
 - c. Dimensions: 1.5" by 10.5" or 1" by 8".
 - d. Wire: Minimum 14 AWG stranded copper wire with yellow, 600-volt TW, THWN, or THHN insulation. The wire shall be attached to the electrode and insulated with the manufacturer's standard connection. Connection shall be stronger than the wire.
 - e. Packaging: Furnish electrode packaged in a plastic or heavy paper bag of sufficient thickness to protect the electrode, backfill, and cloth bag during normal shipping and handling.
 - f. Manufacturers:
 - g. Borin Manufacturing, Stelth 2 Series
- 4. Data Logger
 - a. Capable of monitoring two (2) ER probes
 - b. Functions as a data logger and remote monitor.
 - c. Communication: LTE Cat. 1 4G/5G
- 5. Electrical Resistance (ER) Probes:
 - a. MetriCorr Erv2 Corrosion Rate Probe
 - b. Element Material: Steel
 - c. Element Area: 10 cm²
 - d. Cable Length: 20 feet
 - e. Measuring Capabilities:
 - (1) Corrosion Rate
 - (2) ON potential
 - (3) Native potential
 - (4) Instant-off potential
 - (5) IR compensated potential
 - (6) DC current density
 - (7) AC Voltage
 - (8) AC current density
 - (9) Spread resistance
- 6. Data Management: MetriCorr CP Manage Web internet based platform
 - a. Provide one year service for OWNER.

2.06 THERMITE WELD MATERIALS

A. General:

- 1. Thermite weld materials consist of wire sleeves, welders, and weld cartridges according to the weld manufacturer's recommendations for each wire size and pipe or fitting size and material.
- 2. Welding materials and equipment shall be the product of a single manufacturer. Interchanging materials of different manufacturers is not acceptable.

B. Molds: Graphite.

C. Adapter Sleeves:

1. For No. 12 AWG and No. 2 AWG wires.
2. Prefabricated factory sleeve joint bonds or bond wires with formed sleeves made in the field are acceptable. Attach field-formed joint bonds sleeves with the appropriate size and type of hammer die furnished by the thermite weld manufacturer.
3. Extend wire conductor 1/8 inch beyond the end of the adapter sleeve.

D. Cartridges:

1. Steel: 32 grams, maximum.
2. Cast and Ductile Iron: 32 grams, **maximum**, XF-19 Alloy, specifically for use on cast iron and ductile iron.

E. Welders and Cartridges: For attaching copper wire to pipe material:

Pipe Material	Weld Type	Cartridge Size, Max.
No. 4 AWG Wire & Smaller		
Steel	HA, VS, HC	25 gm
Ductile or Cast Iron	HB, VH, HE	32 gm
No. 2 AWG Wire Joint Bonds		
Steel	FS	32 gm
Ductile or Cast Iron	FC	45 gm

F. Welding Materials Manufacturers:

1. nVent/Erico Products Inc. (Cadweld), Cleveland, OH.
2. Continental Industries, Inc. (Thermo-Weld), Tulsa, OK.

2.07 COATING REPAIR MATERIAL FOR PIPE AND FITTINGS

A. General:

1. Complete coating repairs in accordance with recommendations of the pipe or fitting manufacturer.
2. Coat steel pipe with epoxy coating repair as specified.
3. Coat thermite weld connections to ductile or cast iron pipe with fast cure epoxy OR petrolatum wax tape, as specified under Wax Tape Coating System.

B. Epoxy Coating:

1. 100 percent solids, fast curing epoxy suitable for submerged or buried conditions.
2. Acceptable products and manufacturers or equal:
 - a. Protal 7125, 7200, or 7300 Denso North American, Houston, TX.
 - b. TC 7010, Tapecoat, Evanston, IL.
 - c. 3M; ScotchKote 323.
 - d. Aquata-poxy, American Chemical Corp., East Lake, OH.

e. "Or-equal."

2.08 COATING MATERIAL FOR METALLIC PIPE AND FITTINGS

A. General:

1. All metallic fittings, valves, and metallic hardware (nuts, bolts, etc.) associated with non-metallic pipe construction shall be dielectrically coated with a bonded coating.
2. Prepare surface of items to be coated in accordance with coating manufacturer's requirements and as specified herein.

B. Epoxy Coating System

1. 100 percent solids, fast curing epoxy suitable for submerged or buried conditions.
2. Acceptable products and manufacturers or equal:
 - a. Protal 7125, 7200, or 7300 Denso North American, Houston, TX.
 - b. TC 7010, Tapecoat, Evanston, IL.
 - c. 3M; ScotchKote 323.
 - d. Aquata-poxy, American Chemical Corp., East Lake, OH.
 - e. "Or-equal."

2.10 ANCILLARY MATERIALS

A. Wire Connectors: One-piece, tin-plated crimp-on ring tongue connector as manufactured by Burndy Co. or Thomas and Betts.

B. Compression Connectors:

1. For in-line, tap, and multi-splice, furnish "C" taps made of conductive wrought copper, sized to fit the wires being spliced.
2. Provide crimp tool and dies as recommended by the manufacturer for the wire and connector size.
3. Manufacturer and Product: Burndy; Type YC, or equal.

C. Electrical Tape:

1. Linerless rubber high-voltage splicing tape and vinyl electrical tape suitable for moist and wet environments.
2. Use Scotch 130 C and Scotch 88 as manufactured by 3M Products.

PART 3 EXECUTION

3.01 GENERAL

A. The CONTRACTOR shall examine all Drawings and coordinate work to avoid conflicts, errors, delays, and unnecessary interference with the construction of the facilities and to avoid duplication of the work such as excavation, filling, etc. In the event of any conflicts in the Specifications, the ENGINEER shall be consulted.

- B. CONTRACTOR to confirm pipe location before installing galvanic anodes and test stations, utilizing minimally invasive methods to expose the pipe and adjacent utilities, such as vacuum excavation.
- C. Install galvanic anodes for cathodic protection of ancillary metallic pipe and appurtenances
Install galvanic anodes for cathodic protection of metallic pipe and appurtenances where shown on the Drawings.
- D. All materials and equipment associated with joint bonding, cathodic protection, and coatings, as shown and specified herein, shall be furnished and installed by the Contractor. Any changes in design or method of installation of an item as specified shall be reviewed by the Engineer.
- E. Whenever the requirements of the Specifications or Drawings exceed those of the codes or manufacturer's instructions, the requirements of the Specifications or Drawings shall prevail. Where a larger size or better grade of material or a higher standard of workmanship is required, the most stringent requirement shall apply.
- F. Contractor responsible for restoring site to prework conditions including topsoil and sod replacement. See Section 01110 Summary of Work.

3.02 STORAGE AND HANDLING

- A. Store all packaged anodes, anode backfill, and associated materials off the ground and kept dry at all times.
- B. Protect materials against weather, condensation, and mechanical damage. Immediately remove from site all damaged anodes.
- C. Anode backfill material that has become wet will not be acceptable.

3.03 GALVANIC ANODE INSTALLATION

- A. General: Install galvanic anodes as shown on the Drawings.
- B. Remove anode packaging materials prior to installing anode.
- C. Provide a minimum anode spacing of 2 feet from the protected structure, other unprotected pipelines, thrust blocks, or adjacent structures, unless approved otherwise by the Engineer. Anode depth shall be at or below the pipe depth, or as specified on the Drawings.
- D. Connect individual anode lead wires to anode header cable and route anode header cable to test station as shown on the Drawings.
- E. After installation, saturate each anode with a minimum of 5 gallons of water.
- F. Anodes shall be installed in native soil. Backfill around the anode shall consist of well-graded native material screened to remove rocks and debris larger than 1 Inch (25 mm).
- G. Thoroughly compact backfill around each anode to a point 1 foot above the anode.

3.04 TEST STATION INSTALLATION:

- A. Location, type, and style of test stations shall be as shown on the Schedules on Drawings. Final field location shall be determined based on actual site conditions and as approved by the ENGINEER.
- B. Locate test stations where shown on the Schedules on Drawings.
 - 1. Install test stations as appropriate at 1,000-foot intervals or less.
 - 2. Install Type F test stations where any ferrous metal pipe crosses a foreign owned pipeline under cathodic protection
- C. Attach all test wires to the pipe by the thermite weld method unless approved otherwise.
- D. The wires from the test stations shall be buried a minimum of 36 inches below finished grade. Provide 12-inch loop in wires at pipe and beneath test station to prevent them from being stressed or broken during backfilling operations.
- E. Test wires within paved roadways and with less than 36 inches of ground cover shall be installed in rigid PVC-coated steel conduit, except when located under concrete floor slabs.
- F. Make wire connections to test station terminals with crimp-on ring tongue terminals, except where solid wire is specified.
- G. Wire Labels:
 - 1. Install labels on all conductors in test stations.

3.05 REFERENCE ELECTRODE INSTALLATION

- A. Remove plastic or paper wrapper and place reference electrode within the pipeline trench excavation 6 inches below the centerline of the pipe in a vertical position or as required by manufacturer.
- B. Install reference cell as required by manufacturer at the locations indicated on the Drawings.
 - 1. Do not use lead wire in lowering reference cell.
 - 2. Backfill hole with select native material in 6-inch layers and hand tamp each layer around anode.
 - 3. Use only native soil for backfill; do not use sand.
 - 4. Exercise care not to strike reference cell or lead wire with tamper.
- C. Terminate reference electrode wire in test station.

3.06 WIRE CONNECTIONS

- A. Thermite Weld:
 - 1. Use thermite weld method for electrical connection of copper wire to steel, ductile, and cast iron surfaces. Observe proper safety precautions, welding procedures, thermite weld material selection, and surface preparation recommended by the welder manufacturer. Assure that the pipe or fitting wall thickness is of sufficient thickness that the thermite weld process will not damage the integrity of the pipe or fitting wall or protective lining.

2. After the weld connection has cooled, remove slag, visually inspect, and physically test wire connection by tapping with a hammer; remove and replace any defective connections.
3. On pipe and fittings with dielectric linings, make the weld connection on the shop tab provided or on a thick metal section to minimize damage to the lining and coating. After the weld is made, coat the weld with coating repair material.
4. Coat each completed wire connection as specified, this section.

3.07 WIRE INSULATION REPAIR

- A. Splicing of wire will not be permitted except where specifically shown on the drawings and approved by the Engineer.
- B. Splices or damage to the wire insulation shall be required by spirally wrapping with two coats of high-voltage rubber splicing tap and two layers of vinyl electrical tape.
- C. Make wire splices with suitable sized compression connectors or mechanically secure and solder with rosin cored 50/50 solder.

3.08 CORROSION MONITORING TEST STATIONS – METRICORR SLIMLINE ICL INSTALLATION

A. Installation:

1. Follow manufacturer's installation procedures.
2. Document probe and datalogger serial numbers prior to installation.
3. Prior to installing probes, wipe sensing element with alcohol wipe.
4. Mark the probe with tape or marker to identify the side with the sensing element.
5. Encapsulate probe sensing element with soil from the same depth as probe installation location, by moistening soil and pressing into the depression of the sensing element.
6. Continue adding soil to form a dense 3-inch diameter "mud pack" around the probe and sensing element. **It is critical that the sensing element maintains good contact with the soil.**
7. For mortar coated steel pipe, corrosion sensing element shall be cast in Portland cement, covering sensing element with 0.5" to 0.75" of cement.
8. Install probes at pipe depth, referencing the indication tape or mark and lay probe horizontally so that the sensing element is facing down.
9. The probe shall be installed parallel to the pipe with a minimum offset of 12 inches.
10. Any damage to probe cables will require a complete replacement of the probe at no additional cost to the Owner.

B. Testing Verification:

1. Temporarily place a calibrated copper-copper sulfate reference cell on the soil approximately 1 foot above the stationary Reference electrode.
2. Record the following DC potential measurements:
 - a. Portable copper-copper sulfate reference cell to stationary reference cell. Result should be less than 5 millivolts.
 - b. Portable copper-copper sulfate reference cell to MetriCorr Probe #1.
 - c. Portable copper-copper sulfate reference cell to MetriCorr Probe #2.
 - d. Portable copper-copper sulfate reference cell to pipe test leads #1 and #2.
 - e. Pipe test lead #1 to pipe test lead #2. Result should be less than 0.2 millivolts.
3. Review test results with Engineer prior to backfilling.

3.09 TESTS AND INSPECTION

A. Cathodic Protection System Energizing and Testing:

1. Initial Survey: Engineer shall conduct an initial potential survey at all test stations and measure the baseline (native) pipe-to-soil potential before connecting the anodes. Record GPS coordinates for each test station.
2. Functional Testing:
 - a. Perform functional testing in presence of Engineer.
 - b. When construction of each cathodic protection station(s) is completed, notify Engineer that anodes are ready to be connected.
 - c. System deficiencies shall be repaired by Cathodic Protection Contractor.
3. Energizing and Testing:
 - a. Performed by Engineer
 - b. General:
 - (1) Upon successful completion of functional testing, Engineer shall connect the galvanic anodes to the pipe through the shunt inside the test stations. Complete additional testing and adjustment to provide cathodic protection at all test points in accordance with NACE SP0169.
 - (2) Record baseline potentials at all test stations.
 - (3) Record ON and OFF potentials at all test stations by temporarily disconnecting the galvanic anodes from the pipe at the test station being evaluated.
 - (4) Measure and record galvanic anode current at each test station.
4. Final Testing, Adjustment, and Report:
 - a. Performed by Engineer.
 - b. All test data shall be submitted in electronic file compatible with Microsoft Excel for Office, most recent version. The data shall be organized in tabular form with location descriptions and GPS coordinates.

B. Activation of MetriCorr Slimline ICL Datalogger and ER Probes:

1. CONTRACTOR shall assure MetriCorr unit is fully functional and set up with Owner's existing MetriCorr account.

END OF SECTION