CONTRACT DOCUMENTS/SPECIFICATIONS
UPGRADE WASTEWATER PUMPING STATION
NORTH FORK SUBDIVISION
2022 IMMINENT THREAT GRANT
MOSCOW, TENNESSEE

KING ENGINEERING CONSULTANTS, INC.
PROFESSIONAL ENGINEERS
3355 POPLAR AVENUE, SUITE 200
MEMPHIS, TENNESSEE 38111

MARCH, 2022
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ADVERTISEMENT FOR BIDS

Project No. 73503

City of Moscow, Tennessee (Owner)

Separate sealed bids for Upgrade Wastewater Pumping Station, North Fork Subdivision, 2022 Imminent Threat Grant, Moscow Tennessee, will be received by the Board of Mayor and Aldermen at the office of Moscow City Hall until 2:00 o'clock P.M., D.S.T. July 11, 2022, and then at said office publicly opened and read aloud.

The Information for Bidders, Form of Bid, Form of Contract, Plans, Specifications, and Forms of Bid Bond, Performance and Payment Bond, and other contract documents may be examined at the following:

City of Moscow, City Hall, 14075 Highway 57, Moscow, TN 38057

King Engineering Consultants, Inc., 3355 Poplar Avenue, Ste 200, Memphis, TN 38111

Copies may be obtained at the office of King Engineering Consultants, Inc. located at 3355 Poplar Avenue, Suite 200, Memphis, TN 38111 upon payment of $250.00 for each set. Any unsuccessful bidder, upon returning each set promptly and in good condition, will be refunded his payment, and any non-bidder upon so returning such a set will be refunded $125.00.

The owner reserves the right to waive any informalities or to reject any or all bids.

Each bidder must deposit with his bid, security in the amount, form and subject to the conditions provided in the Information for Bidders.

Attention of bidders is particularly called to the requirements as to conditions of employment to be observed.

No bidder may withdraw his bid within 60 days after the actual date of the opening thereof.

Mayor Brenda Mitchell
June 24, 2022
INFORMATION FOR BIDDERS

1. **Receipt and Opening of Bids:**

The City of Moscow (herein called the “Owner”), invites bids on the form attached hereto, all blanks of which must be appropriately filled in. Bids will be received by the Owner at the office of Moscow City Hall, 14075 Highway 57, Moscow, TN 38057 until 2:00 o’clock P.M., D.S.T. July 11, 2022, and then at said office publicly opened and read aloud. The envelopes containing the bids must be sealed,

Addressed to City of Moscow at 14075 Highway 57, Moscow, TN 38057 and designated as bid for Upgrade Wastewater Pumping Station, North Fork Subdivision, 2022 Imminent Threat Grant, Moscow, Tennessee.

The Owner may consider informal any bid not prepared and submitted in accordance with the provisions hereof and may waive any informalities or reject any and all bids. Any bid may be withdrawn prior to the above scheduled time for the opening of bids or authorized postponement thereof. Any bid received after the time and date specified shall not be considered. No bidder may withdraw a bid within 60 days after the actual date of the opening thereof.

2. **Preparation of Bid:** Each bid must be submitted on the prescribed form. All blank spaces for bid prices must be filled in, in ink or typewritten, in both words and figures.

Each bid must be submitted in a sealed envelope bearing on the outside the name of the bidder, his/her address, the name of the project for which the bid is submitted and all other information required by State law. If forwarded by mail, the sealed envelope containing the bid must be enclosed in another envelope addressed as specified in the bid form.

3. **Subcontracts:** The bidder is specifically advised that any person, for, or other party to whom it is proposed to award a subcontract under this contract must be acceptable to the owner after verification by the State of the current eligibility status.

4. **Telegraphic Modification:** Any bidder may modify his/her bid by telegraphic communication at any time prior to the scheduled closing time for receipt of bids provided such telegraphic communication is received by the Owner prior to the closing time, and, provided further, the Owner is satisfied that a written confirmation of the telegraphic modification over the signature of the bidder was mailed prior to the closing time. The telegraphic communication should not reveal the bid price but should provide the addition or subtraction or other modification so that the final pieces or terms will not be known by the Owner until the sealed bid is opened. If written confirmation is not received within two days from the closing time, no consideration will be given to the telegraphic modification.
5. **Method of Bidding**: The Owner invites bids for the following:

Unit Prices

6. **Qualification of Bidder**: The Owner may make such investigations as s/he deems necessary to determine the ability of the bidder to perform the work, and the bidder shall furnish to the Owner all such information and data for this purpose as the Owner may request. The Owner reserves the right to reject any bid if the evidence submitted by, or investigation of, such bidder fails to satisfy the owner that such bidder is properly qualified to carry out the obligations of the contract and to complete the work contemplated therein. Conditional bids will not be accepted.

7. **Bid Security**: Each bid must be accompanied by cash, certified check of the bidder, or a bid bond prepared on the form of bid bond attached thereto, duly executed by the bidder as principal and having as surety thereon a surety company approved by the Owner, in the amount of 5% of the bid. Such cash, checks or bid bonds will be returned to all except the three lowest bidders within three days after the opening of bids, and the remaining cash, checks or bid bonds will be returned promptly after the Owner and the accepted bidder have executed the contract, or, if no award has been made within 60 days after the date of the opening of bids, upon demand of the bidder at any time thereafter, so long as s/he has not been notified of the acceptance of his/her bid.

8. **Liquidated Damages for Failure to Enter into Contract**: The successful bidder, upon his/her failure or refusal to execute and deliver the contract and bonds required within 10 days after s/he has received notice of the acceptance of his/her bid, shall forfeit to the Owner, as liquidated damages for such failure or refusal, the security deposited with his/her bid.

9. **Time of Completion and Liquidated Damages**: Bidder must agree to commence work on or before a date to be specified in a written “Notice to Proceed” of the Owner and to fully complete the project within 200 consecutive calendar days thereafter. Bidder must agree also to pay as liquidated damages, the sum of $275.00 for each consecutive calendar day thereafter as hereinafter provided in the Supplemental General Conditions.

10. **Condition of Work**: Each bidder must inform him/herself fully of the conditions relating to the construction of the project and the employment of labor thereof. Failure to do so will not relieve a successful bidder of his/her obligation to furnish all material and labor necessary to carry out the provisions of his/her contract. Insofar as possible, the contractor, in carrying out the work, must employ such methods as will not cause any interruption of or interference with the work of any other contractor.

11. **Addenda and Interpretations**: No interpretation of the meaning of the plans, specifications or other pre-bid documents will be made to any bidder orally. Every request for such interpretation should be in writing addressed to King
Engineering Consultants, Inc. at kingengineering@bellsouth.net and to be given consideration must be received at least five days prior to the date fixed for the opening of bids. Any and all such interpretations and any supplemental instructions will be in the form of written addenda to the specifications which, if issued, will be mailed by certified mail with return receipt requested to all prospective bidders (at the respective addresses furnished for such purposes), not later than three days prior to the date fixed for the opening of bids. Failure of any bidder to receive any such addendum or interpretation shall not relieve such bidder from any obligation under his/her bid as submitted. All addenda so issued shall become part of the contract documents.

12. **Security for Faithful Performance:** Simultaneously with his/her delivery of the executed contract, the Contractor shall furnish a surety bond or bonds as security for faithful performance of this contract and for the payment of all persons performing labor on the project under this contract and furnishing materials in connection with this contract, as specified in the General Conditions included herein. The surety on such bond or bonds shall be a duly authorized surety company satisfactory to the Owner.

13. **Power of Attorney:** Attorneys-in-fact who sign bid bonds or contract bonds must file with each bond a certified and effectively dated copy of their power of attorney.

14. **Notice of Special Conditions:** Attention is particularly called to those parts of the contract documents and specifications which deal with the following:

   a. Inspection and testing of materials.

   b. Insurance requirements.

   c. Wage rates.

   d. States allowances.

15. **Laws and Regulations:** The bidder’s attention is directed to the fact that all applicable State laws, municipal ordinances, and the rules and regulations of all authorities having jurisdiction over construction of the project shall apply to the contract throughout, and they will be deemed to be included in the contract the same as though herein written out in full.

16. **Method of Award – Lowest Responsible Bidder:** If at the time this contract is to be awarded, the lowest base bid submitted by a responsible bidder does not exceed the amount of funds then estimated by the Owner as available to finance the contract, the contract will be awarded on the base bid only. If such bid exceeds such amount, the Owner may reject all bids or may award the contract on the base bid combined with such deductible alternates applied in numerical order in which they are listed in the Form of Bid, as produces a net amount which is within the available funds.
17. **Obligation of Bidder:** At the time of the opening of bids each bidder will be presumed to have inspected the site and to have read and to be thoroughly familiar with the plans and contract documents (including all addenda). The failure or omission of any bidder to examine any form, instrument or document shall in no way relieve any bidder from any obligation in respect of his/her bid.

18. **Safety Standards and Accident Prevention:** With respect to all work performed under this contract, the contractor shall:

a. Comply with the safety standards provisions of applicable laws, building and construction codes and the “Manual of Accident Prevention in Construction” published by the Associated General Contractors of America, the requirements of the Occupational Safety and Health Act of 1970 (Public Law 91-596), and the requirements of Title 29 of the Code of Federal regulations, Section 1518 as published in the “Federal Register”, Volume 36, No. 75, Saturday, April 17, 1971.

b. Exercise every precaution at all times for the prevention of accidents and the protection of persons (including employees) and property.

c. Maintain at his/her office or other well known place at the job site, all articles necessary for giving first aid to the injured, and shall make standing arrangements for the immediate removal to a hospital or a doctor’s care of persons (including employees), who may be injured on the job site. In no case shall employees be permitted to work at a job site before the employer has made a standing arrangement for removal of injured persons to a hospital or a doctor’s care.

19. **Drug-Free Workplace**

Under the provisions of Tennessee Code Annotate §50-9-113 enacted by the General Assembly effective 2001, a) employers with five (5) or more employees who contract with either the state or a local government to provide construction services are required to submit an affidavit stating that they have a drug free workplace program that complies with Title 50, Chapter 9, in effect at the time of submission of a bid at least to the extent required of governmental entities. The statute imposes other requirements on the contractor, but the grantee’s responsibility is specifically limited in section (b) of the state as follows:

(b) A written affidavit by the principal officer of a covered employer provided to a local government at the time such bid or contract is submitted stating that the employer is in compliance with this section shall absolve the local government of all further responsibility under this section and any liability arising from the employer’s compliance or failure of compliance with the provisions of this section.
BID FOR UNIT PRICE CONTRACTS

Place __________________________

Date __________________________

Project No. ______________________

Proposal of ____________________________________ (hereinafter called “Bidder”) a
(a corporation)     (a partnership)     (an individual doing business as ________________)

STRIKE OUT INAPPLICABLE TERMS

To the City of Moscow

(hereinafter called “OWNER”)

Dear Sir or Madam:

The Bidder, in compliance with your invitation for bids for the construction of a

Upgrade Wastewater Pumping Station, North Fork Subdivision
2022 Imminent Threat Grant, Moscow, Tennessee,

having examined the plans and specifications with related documents and the site of the
proposed work, and being familiar with all of the conditions surrounding the construction
of the proposed project including the availability of materials and labor, hereby proposes
to furnish all labor, materials, and supplies, and to construct the project in accordance
with the contract documents, within the time set forth therein, and at the prices stated
below. These prices are to cover all expenses incurred in performing the work required
under the contract documents, of which this proposal is a part.

Bidder hereby agrees to commence work under this contract on or before a date to be
specified in written “Notice to Proceed” of the Owner and to fully complete the project
within 200 consecutive calendar days thereafter as stipulated in the specifications.
Bidder further agrees to pay as liquidated damages the sum of $275.00 for each
consecutive calendar day thereafter as hereinafter provided in Paragraph 3.c. of the
Supplemental General Conditions.

Bidder acknowledges receipt of the following addendum:

____________________________________________________________________
____________________________________________________________________
____________________________________________________________________

Bidder agrees to perform all the work described in the specifications and shown on the
plans, for the following unit prices: See attached sheet.
BID SCHEDULE

NOTE: Bids shall include sales tax and all other applicable taxes and fees.

UPGRADE WASTEWATER PUMPING STATION
NORTH FORK SUBDIVISION
2022 IMMINENT THREAT GRANT
MOSCOW, TENNESSEE

Bidder agrees to perform all the work as described in the Specifications and as shown on the plans for the following prices:

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<tr>
<th>ITEM NO.</th>
<th>DESCRIPTION</th>
<th>UNIT</th>
<th>QTY</th>
<th>UNIT PRICE</th>
<th>AMOUNT</th>
</tr>
</thead>
<tbody>
<tr>
<td>BASE BID</td>
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<td></td>
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</tr>
<tr>
<td>1.</td>
<td>Demolition</td>
<td>LS</td>
<td>1</td>
<td></td>
<td></td>
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<tr>
<td>2.</td>
<td>Cleaning of Existing Wetwell</td>
<td>LS</td>
<td>1</td>
<td></td>
<td></td>
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<tr>
<td>3.</td>
<td>Finished Grading</td>
<td>LS</td>
<td>1</td>
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<tr>
<td>4.</td>
<td>New Duplex Submersible Pump and Control</td>
<td>LS</td>
<td>1</td>
<td></td>
<td></td>
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<tr>
<td>5.</td>
<td>Discharge Piping and Valves</td>
<td>LS</td>
<td>1</td>
<td></td>
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<tr>
<td>6.</td>
<td>Bypass Pumping:</td>
<td></td>
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<tr>
<td>a) Bypass Pump</td>
<td>LS</td>
<td>1</td>
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<td></td>
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<tr>
<td>b) Discharge Pipe and Connections</td>
<td>LS</td>
<td>1</td>
<td></td>
<td></td>
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<td>7.</td>
<td>Electrical</td>
<td>LS</td>
<td>1</td>
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<td>8.</td>
<td>Allowance for Reconnection to Existing SCADA System</td>
<td>LS</td>
<td>1</td>
<td>4,000.00</td>
<td>4,000.00</td>
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<td>9.</td>
<td>Miscellaneous Items</td>
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<td>10.</td>
<td>Seeding, Mulching, and Watering</td>
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<td>TOTAL BASE BID</td>
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DEDUCTIVE ALTERNATE NO. ONE

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<th>UNIT PRICE</th>
<th>AMOUNT</th>
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<td>Seeding, Mulching, and Watering</td>
<td>LS</td>
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</tr>
<tr>
<td></td>
<td>TOTAL BASE BID LESS DEDUCTIVE ALTERNATE NO. ONE</td>
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DEDUCTIVE ALTERNATE NO. TWO

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<th>QTY</th>
<th>UNIT PRICE</th>
<th>AMOUNT</th>
</tr>
</thead>
<tbody>
<tr>
<td>1.</td>
<td>Pipe Insulation and Heat Tape</td>
<td>LS</td>
<td>1</td>
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<td></td>
</tr>
<tr>
<td></td>
<td>TOTAL BASE BID LESS DEDUCTIVE ALTERNATE NOS. ONE AND TWO</td>
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<td></td>
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</tr>
</tbody>
</table>

BID-2
(Amounts are to be shown in both words and figures. In case of discrepancy, the amount shown in words will govern.)

The above unit prices shall include all labor, materials, bailing, shoring, removal, overhead, profit, insurance, etc., to cover the finished work of the several kinds called for.

Bidder understands that the Owner reserves the right to reject any or all bids and to waive any informalities in the bidding.

The bidder agrees that this bid shall be good and may not be withdrawn for a period of 60 calendar days after the scheduled closing time for receiving bids.

Upon receipt of written notice of the acceptance of this bid, bidder will execute the formal contract attached within 10 days and deliver a Surety Bond or Bonds are required by Article 5 of the General Conditions. The bid security attached in the sum of ______________________________________________________ ($___________)
is to become the property of the Owner in the event the contract and bond are not executed within the time above set forth, as liquidated damages for the delay and additional expense to the Owner caused thereby.

Respectfully submitted:

By ______________________________

(Signature)

(SEAL – if bid is by a corporation) ______________________________

(Title)
BID BOND

KNOW ALL MEN BY THESE PRESENTS, that we, the undersigned, ________________________________________________ as Principal, and ________________________________________________ as Surety, are hereby held and firmly bound unto City of Moscow, 14075 Highway 57, Moscow, TN 38057 as Owner in the penal sum of _____________________________ for the payment of which, well and truly to be made, we hereby jointly and severally bind ourselves, our heirs, executors, administrators, successors and assigns.

Signed, this ____________ day of ____________________________, 20__________.

The condition of the above obligation is such that whereas the Principal has submitted to _____________________________ a certain Bid, attached hereto and hereby made a part hereof to enter into a contract in writing for the

_____________________________________________________________________

NOW, THEREFORE,

(a) If said Bid shall be rejected, or in the alternate.

(b) If said bid shall be accepted and the Principal shall execute and deliver a contract in the Form of Contract attached hereto (properly completed in accordance with said Bid) and shall furnish a bond for his faithful performance of said contract, and for the payment of all persons performing labor or furnishing materials in connection therewith, and shall in all other respects perform the agreement created by the acceptance of said Bid, then this obligation shall be void, otherwise the same shall remain in force and effect, it being expressly understood and agreed that the liability of the Surety for any and all claims hereunder shall, in no event, exceed the penal amount of this obligation as herein stated.
The surety for value received, hereby stipulates the agrees that the obligations of said Surety and its bond shall be in no way impaired or affected by any extension of the time within which the Owner may accept such Bid; and said Surety does hereby waive notice of any such extension.

IN WITNESS WHEREOF, the Principal and the Surety have hereunto set their hands and seals, and such of them as are corporations have caused their corporate seals to be hereto affixed and these presents to be signed by their proper officers, the day and year first set forth above

__________________________(L.S.)
(Principal)

__________________________
(Surety)

SEAL
By: ________________________________
Assurance of Compliance under Title VI of the Civil Rights Act of 1964

Name of Applicant (hereby referred to as “The Applicant”)

Hereby agrees that it will comply with Title VI of the Civil Rights Act of 1964 (P.L. 88-352) and all requirements imposed by the Regulations of the U.S. Department of Justice (28 CFR Parts 42 & 50) and the City of Moscow, and any directives or regulations issued pursuant to that Act and the Regulations, to the effect that, no person in the United States shall, on the ground of race, color, or national origin, be excluded from participation in, be denied the benefits of, or be otherwise subject to discrimination under any program or activity for which the Applicant received Federal financial assistance from the City and HEREBY GIVES ASSURANCE THAT it will immediately take any measures necessary to effectuate this agreement.

THIS ASSURANCE is given in consideration of and for the purpose of obtaining any and all Federal financial assistance, grants and loans of Federal funds, reimbursable expenditures, grant or donation of Federal property and interest in property, the detail of Federal personnel, the sale and lease of, and the permission to use, Federal property or interest in such property or the furnishing of services without consideration or at a nominal consideration, or at a consideration which is reduced for the purpose of assisting the recipient, or in recognition of the public interest to be served by such sale, lease, or furnishing of services to the recipient, or any improvements made with Federal financial assistance extended to the Applicant by the City.

BY ACCEPTING THIS ASSURANCE, the applicant agrees to compile data, maintain records, and submit reports as required to permit effective enforcement of Title VI, and permit authorized City personnel during normal working hours to review such records, books, and accounts as needed to ascertain compliance with Title VI. If there are any violations of this assurance, the City shall have the right to seek administrative and/or judicial enforcement of this assurance.

This assurance is binding on the applicant, its successors, transferees, and assignees as long as it receives assistance from the City. In the case of real property, this assurance is binding for as long as the property is used for a purpose for which this assistance was intended or for the provision of services or benefits similar to those originally intended. In the case of personal property, this assurance applies for as long as the recipient retains ownership or possession of the property. The person or persons whose signatures appear below are authorized to sign this assurance on the behalf of the applicant.

(Applicant)

By ________________________________ Dated ________________________________

>Title of Authorized Official

Address ________________________________

____________________________________

____________________________________
STATEMENT OF COMPLIANCE CERTIFICATE
ILLEGAL IMMIGRANTS

EACH CONTRACTOR BIDDING SHALL FILL IN AND SIGN THE FOLLOWING

This is to certify that __________________________________________
have fully complied with all the requirements of Chapter No. 878 (House Bill No. 111
and Senate Bill No. 411) which serves to amend Tennessee Code Annotated Title 12,
Chapter 4, Part I, attached herein for reference.

• All Bidders for construction services on this project shall be required to submit an
  affidavit (by executing this compliance document) as part of their bid, that attests
  that such Bidder shall comply with requirements of Chapter no. 878.

  Signed: ________________________________

State of _______________) ss
County of ______________)

Personally appeared before me, _______________________, the undersigned Notary
Public, ________________________________, the within named bargainor, with whom
I am personally acquainted, and known to me to be the President / Owner / Partner (as
applicable) of the ___________________________________________, Corporation,
Partnership, Sole Proprietorship (as applicable) and acknowledged to me that he
executed the foregoing document for the purposes recited therein.

Witness my hand, at office, this __________ day of _________________, 202__.

_________________________________
Notary Public

My commission expires ________________
IRAN DIVESTMENT ACT

In compliance with the Iran Divestment Act (State of Tennessee 2016, Public Chapter No. 817), which became effective on July 1, 2016, certification is required of all bidders on contracts over $1,000.

By submission of this bid, each bidder and each person signing on behalf of any bidder certifies, and in the case of a joint bid each party hereto certifies as to its own organization, under penalty of perjury, that to the best of its knowledge and belief that each bidder is not on the list created pursuant to T.C.A. § 12-12-106.

I affirm, under the penalties of perjury, this statement to be true and correct.

______________________________  ________________________________
Date                          Signature of
                            Bidder

______________________________
Company

A bid shall not be considered for award nor shall award be made where the foregoing certification has been complied with; provided, however, that if in any case the bidder cannot make the foregoing certification, the bidder shall so state and shall furnish with the bid a signed statement which sets forth in detail the reasons therefor. The City of Moscow, Tennessee may award a bid to a bidder who cannot make the certification, on case-by-case basis, if:

1. The investment activities in Iran were made before July 1, 2016, the investment activities in Iran have not been expanded or reviewed on or after July 1, 2016, and the person has adopted, publicized, and is implementing a formal plan to cease the investment activities in Iran and to refrain from engaging in any new investments in Iran; or

2. The City of Moscow, Tennessee makes a determination that the goods or services are necessary for the City of Moscow, Tennessee to perform its functions and that, absent such an exemption, the political subdivision will be unable to obtain the goods or services for which the contract is offered. Such determination shall be made in writing and shall be a public document.
July 15, 2016

NOTICE

Tenn. Code Ann. § 12-12-106 requires the chief procurement officer to publish, using credible information freely available to the public, a list of persons it determines engage in investment activities in Iran, as described in § 12-12-105.

For these purposes, the State intends to use the attached list of “Entities Ineligible to Contract with the State of South Carolina or any Political Subdivision of the State per the Iran Divestment Act of 2014, S.C. Code Ann. §§ 11-57-10, et. seq.”

While inclusion on this list would make a person ineligible to contract with the state of Tennessee, if a person ceases its engagement in investment activities in Iran, it may be removed from the list.

If you feel as though you have been erroneously included on this list please contact the Central Procurement Office at CPO.Website@tn.gov.
List Date: July 7, 2017

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3. Anton Oilfield Services Group
4. Arak Petrochemical
5. Arvandan Oil & Gas
7. Bharat Petroleum Corporation Ltd.
8. China International United Petroleum & Chemical So., Ltd. (Unipec)
9. China National Offshore Oil Corp
10. China National Petroleum Corp (CNPC)
11. China National United Oil Corp.
13. Cosmo Energy Holdings Co. Limited
14. Daelim Industrial
15. Daewoo Engineering & Construction
16. Enel Spa
17. Eni Spa
18. Esfahan Oil Refining Co.
19. Essar Oil Ltd.
20. Fanavaran Petrochemical Co.
22. Formosa Petrochemical Corp.
23. Gazprom OAO
24. Gubre Fabrikalari T.A.S.
25. Hellenic Petroleum S.A.
26. Hindustan Petroleum Corp Ltd.
27. Hyundai Heavy Industries.
28. Idemitsu Kosan Co. Ltd.
29. Indian Oil Corporation Ltd.
30. Inpex Corporation
31. Japan Drilling Co., Ltd.
32. Japan Petroleum Exploration Co., Ltd.
33. JXTG Holdings, Inc.
34. Khark Petrochemical.
35. Koc Holding A.S.
36. Korea Gas Corp.
37. Linde AG.
38. Maire Tecnimont S.p.A.
40. Marubeni Corporation
41. Mitsubishi Materials Corp.
42. Mitsui & Co. Ltd.
43. Naftiran Intratrade Company
44. National Iranian Oil Co.
45. National Iranian South Oil Co.

46. National Iranian Tanker Co.
47. National Shipping Co. of Saudi Arabia
48. North Drilling
49. Oil & Natural Gas Corporation Ltd.
50. Oil India Ltd.
51. Oil Industry Investment Co.
52. ONGC Videsh Ltd. (OVL)
53. Pardis Petrochemical Co.
54. Pars Oil Co.
55. Parsian Oil and Gas Development Co.
56. Petrochemical Industries Investment Co.
57. Petrochemical Transport Co.
58. PetroChina Co. Ltd.
59. PJSC Lukoil
60. Polskie Gornictwo Naftowe i Gazownictwo SA
61. Royal Dutch Shell Plc.
62. Sadid Pipe & Equipments Co.
63. Saras Raffinerie Sarde SPA
64. Sepehr Energy
65. Shiraz Petrochemical Co.
66. Showa Shell Sekiyu K K
67. Sinopec Group.
68. SK Holdings Co. Ltd.
69. SK Innovation
70. Tabriz Oil Refining Company
71. Total S.A.
72. Toyo Engineering Corporation
73. Turkiye Petrol Rafinerileri AS
74. Zhuh
75. Ai Zhenrong Company
DRUG-FREE WORKPLACE AFFIDAVIT

STATE OF _______________________
COUNTY OF _____________________

The undersigned, principal officer of
____________________________________________, an employer of five (5) or more
employees contracting with City of Moscow, Tennesse government to provide
construction services, hereby states under oath as follows:

1. The undersigned is a principal officer of
   ______________________________________ (hereinafter referred to as the “Company”), and is duly authorized to execute
   this Affidavit on behalf of the Company.

2. The Company submits this Affidavit pursuant to T.C.A. § 50-9-113, which
   requires each employer with no less than five (5) employees receiving pay
   who contracts with the state or any local government to provide construction
   services to submit an affidavit stating that such employer has a drug-free
   workplace program that complies with Title 50, Chapter 9, of the Tennessee
   Code Annotated.

   Further affiant saith not.

__________________________________________
Principal Officer

STATE OF _______________________
COUNTY OF _____________________

Before me personally appeared ______________________________, with whom I am
personally acquainted (or proved to me on the basis of satisfactory evidence), and who
acknowledged that such person executed the foregoing affidavit for the purposes
therein contained.
Witness my hand and seal at office this _________ day of _________________, 20__.

________________________________
Notary Public

My commission expires: ______________
NOTICE OF AWARD

Date of Issuance: _______________________, 20___

Owner: City of Moscow  Owner’s Contract No.: 

Engineer: King Engineering Consultants, Inc.  Engineer’s Project No.: N/A

Project: Upgrade Wastewater Pumping Station  Contract Name: Same as Project
North Fork Subdivision
2022 Imminent Threat Grant

Bidder: 

Bidder’s Address: 

TO BIDDER:

You are notified that Owner has accepted your Bid dated [____________________] for the above Contract, and that you are the Successful Bidder and are awarded a Contract for:

Upgrade Wastewater Pumping Station, North Fork Subdivision, 2022 Imminent Threat Grant

The Contract Price of the awarded Contract is: $____________________

Three (3) unexecuted counterparts of the Agreement accompany this Notice of Award, and one copy of the Contract Documents accompanies this Notice of Award, or has been transmitted or made available to Bidder electronically.

☐ a set of the Drawings will be delivered separately from the other Contract Documents.

You must comply with the following conditions precedent within 15 days of the date of this Notice of Award:

1. Deliver to Owner three (3) counterparts of the Agreement, fully executed by Bidder.

2. Deliver with the executed Agreement(s) the Contract security [e.g., performance and payment bonds] 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.

Owner: City of Moscow

__________________________________

Authorized Signature

By: Brenda Mitchell

Title: Mayor

Copy: Engineer
AGREEMENT (Contract)

THIS AGREEMENT, made this _______ day of __________________, 202___, by and between City of Moscow, herein called “Owner”, acting herein through its ______________________________________________________________,

and ______________________________________________________________, (a corporation) (a partnership) (an individual doing business as ________________)

of __________________________________, County of ________________________, and State of _______________________, hereinafter called “Contractor”.

WITNESSETH: That for and in consideration of the payments and agreements hereinafter mentioned, to be made and performed by the OWNER, the CONTRACTOR hereby agrees with the OWNER to commence and complete the construction described as follows:

Upgrade Wastewater Pumping Station
North Fork Subdivision
2022 Imminent Threat Grant
Moscow, Tennessee

hereinafter called the project, for the sum of ________________

$____________________ Dollars ($____________________)

and all extra work in connection therewith, under the terms as stated in the general and Special Conditions of the Contract; and at this (its or their) own property cost and expense to furnish all the materials, supplies, machinery, equipment, tools, superintendence, labor, insurance, and other accessories and services necessary to complete the said project in accordance with the conditions and prices stated in the Proposal, the General Conditions, Supplemental General Conditions and Special Conditions of the Contract, the plans, which include all maps, plats, blue prints, and other drawings and printed or written explanatory matter thereof, the specifications and contract documents therefore as prepared by King Engineering Consultants, Inc., herein entitled the Architect/Engineer, and as enumerated in Paragraph 1 of the Supplemental General Conditions, all of which are made a part hereof and collectively evidence and constitute the contract.
The Contractor hereby agrees to commence work under this contract on or before a date to be specified in a written “Notice to Proceed” of the Owner and to fully complete the project within 200 consecutive calendar days thereafter.

The OWNER agrees to pay the CONTRACTOR in current funds for the performance of the contract, subject to additions and deductions, as provided in the General Conditions of the Contract, and to make payments on account thereof as provided in Paragraph 3, “Payments to Contractor”, of the Supplemental General Conditions.

IN WITNESS WHEREOF, the parties to these presents have executed this contract in six (6) counterparts, each of which shall be deemed an original, in the year and day first above mentioned.

(Seal)

ATTEST:

__________________________________  By: ________________________________
(Witness)                        (Title)

__________________________________  By: ________________________________
(Mayor)                           (Title)

__________________________________
(Secretary)                        (Owner)

City of Moscow, TN

__________________________________
(Secretary)                        (Owner)

__________________________________
(Witness)                         (Title)

__________________________________
(Address and Zip Code)

NOTE: Secretary of the Owner should attest. If Contractor is a corporation, Secretary should attest.
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GENERAL CONDITIONS

ARTICLE 1—DEFINITIONS

Wherever used in these General Conditions or in the other Contract Documents the following terms have the meanings indicated which are applicable to both the singular and plural thereof:

Addenda – Written or graphic instruments issued prior to the opening of Bids which clarify, correct or change the bidding documents or the Contract Documents.

Agreement – The written agreement between OWNER and CONTRACTOR covering the Work to be performed; other Contract Documents are attached to the Agreement and made a part thereof as provided therein.

Application for Payment – The form accepted by ENGINEER which is to be used by CONTRACTOR in requesting progress or final payments and which is to include such supporting documentation as is required by the Contract Documents.

Bid – The offer or proposal of the bidder submitted on the prescribed form setting forth the prices for the Work to be performed.

Bonds – Bid, performance and payment bonds and other instruments of security.

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

Contract Documents – The Agreement, Addenda (which pertain to the Contract Documents), CONTRACTOR’s Bid (including documentation accompanying the Bid and any post-Bid documentation submitted prior to the Notice of Award) when attached as an exhibit to the Agreement, the Bonds, these General Conditions, the Supplementary Conditions, the Specifications and the Drawings as the same are more specifically identified in the Agreement, together with all amendments, modifications and supplements issued pursuant to paragraphs 3.4 and 3.5 on or after the Effective Date of the Agreement.

Contract Price – The moneys payable by OWNER to CONTRACTOR under the Contract Documents as stated in the Agreement (subject to the provisions of paragraph 11.9.1 in the case of Unit Price Work).

Contract Time – The number of days (computed as provided in paragraph 17.2) or the date stated in the Agreement for the completion of the Work.

CONTRACTOR – The person, firm or corporation with whom OWNER has entered into the Agreement.

Defective – An adjective which when modifying the word Work refers to Work that is unsatisfactory, faulty or deficient, or does not conform to the Contract Documents, or does not meet the requirements of any inspection, reference standard, test or approval referred to in the Contract Documents, or has been damaged prior to ENGINEER’s recommendation of final payment (unless responsibility for the protection thereof has been assumed by OWNER at Substantial Completion in accordance with paragraph 14.8 or 14.10).

Drawings – The drawings which show the character and scope of the Work to be performed and which have been prepared or approved by ENGINEER and are referred to in the Contract Documents.

Effective Date of the Agreement – The date indicated in the Agreement on which it becomes effective, but if no such date is indicated it means the date on which the Agreement is signed and delivered by the last of the two parties to sign and deliver.

ENGINEER – The person, firm or corporation named as such in the Agreement.

Field Order – A written order issued by ENGINEER which orders minor changes in the Work in accordance with paragraph 9.5 but which does not involve a change in the Contract Price or the Contract Time.

General Requirements – Sections of Division 1 of the Specifications.

Laws and Regulations; Laws or Regulations – Laws, rules, regulations, ordinances, codes and/or orders.

Notice of Award – The written notice by OWNER to the apparent successful bidder stating that upon compliance by the apparent successful bidder with the conditions precedent enumerated therein, within the time specified, OWNER will sign and deliver the Agreement.

Notice to Proceed – A written notice given by OWNER to CONTRACTOR (with a copy to ENGINEER) fixing the date on which the Contract Time will commence to run and on which CONTRACTOR shall start to perform CONTRACTOR’s obligations under the Contract Documents.

OWNER – The public body or authority, corporation, association, firm or person with whom CONTRACTOR has entered into the Agreement and for whom the Work is to be provided.

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 for all the Work.

Project – The total construction of which the Work to be provided under the Contract Documents may be the whole, or a part as indicated elsewhere in the Contract Documents.

Resident Project Representative – The authorized representative of ENGINEER who is assigned to the site or any part thereof.

Shop Drawings – All drawings, diagrams, illustrations, schedules and other data which are specifically prepared by or for CONTRACTOR to illustrate some portion of the Work and all illustrations, brochures, standard schedules, performance charts, instructions, diagrams and other information prepared by a Supplier and submitted by CONTRACTOR to illustrate material or equipment for some portion of the Work.

Specifications – Those portions of the Contract Documents consisting of written technical descriptions of materials,
equipment, construction systems, standards and workmanship as applied to the Work and certain administrative details applicable thereto.

Subcontractor – An individual, firm or corporation having a direct contract with CONTRACTOR or with any other Subcontractor for the performance of a part of the Work at the site.

Substantial Completion – The Work (or a specified part thereof) has progressed to the point where, in the opinion of ENGINEER as evidenced by ENGINEER’s definitive certificate of Substantial Completion, it is sufficiently complete, in accordance with the Contract Documents so that the Work (or specified part) can be utilized for the purpose for which it is intended; or if there be no such certificate issued, when final payment is due in accordance with paragraph 14.13. The terms “substantially complete” and “substantially completed” as applied to any Work refer to Substantial Completion thereof.

Supplementary Conditions – The part of the Contract Documents which amends or supplements these General Conditions.

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

Underground Facilities – 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: electricity, gases, steam, liquid petroleum products, telephone or other communications, cable television, sewage and drainage removal, traffic or other control systems or water.

Unit Price Work – Work to be paid for on the basis of unit prices.

Work – The entire completed construction or the various separately identifiable parts thereof required to be furnished under the Contract Documents. Work is the result of performing services, furnishing labor and furnishing and incorporating materials and equipment into the construction, all as required by the Contract Documents.

Work Directive Change – A written directive to CONTRACTOR, issued on or after the Effective Date of the Agreement and signed by OWNER and recommended by ENGINEER, ordering an addition, deletion or revision in the Work, or responding to differing or unforeseen physical conditions under which the Work is to be performed as provided in paragraph 4.2 or 4.3 or to emergencies under paragraph 6.22. A Work Directive Change may not change the Contract Price or the Contract Time, but is evidence that the parties expect that the change directed or documented by a Work Directive Change will be incorporated in a subsequently issued Change Order following negotiations by the parties as to its effect, if any, on the Contract Price or Contract Time as provided in paragraph 10.2.

Written Amendment – A written amendment of the Contract Documents, signed by OWNER and CONTRACTOR on or after the Effective Date of the Agreement and normally dealing with the nonengineering or nontechnical rather than strictly Work-related aspects of the Contract Documents.

ARTICLE 2 – PRELIMINARY MATTERS

Delivery of Bonds:

2.1. When CONTRACTOR delivers the executed Agreements to OWNER, CONTRACTOR shall also deliver to OWNER such Bonds as CONTRACTOR may be required to furnish in accordance with paragraph 5.1.

Copies of Documents:

2.2. OWNER shall furnish to CONTRACTOR up to ten copies (unless otherwise specified in the Supplementary Conditions) of the Contract Documents as are reasonably necessary for the execution of the Work. Additional copies will be furnished, upon request, at the cost of reproduction.

Commencement of Contract Time; Notice to Proceed:

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

Starting the Project:

2.4 CONTRACTOR shall start to perform the Work on the date when the Contract Time commences to run, but no Work shall be done at the site prior to the date on which the Contract Time commences to run.

Before Starting Construction:

2.5. Before undertaking each part of the Work, CONTRACTOR shall carefully study and compare the Contract Documents and check and verify pertinent figures shown thereon and all applicable field measurements. CONTRACTOR shall promptly report in writing to ENGINEER any conflict, error or discrepancy which CONTRACTOR may discover and shall obtain a written interpretation or clarification from ENGINEER before proceeding with any Work affected thereby; however, CONTRACTOR shall not be liable to OWNER or ENGINEER for failure to report any conflict, error or discrepancy in the Contract Documents, unless CONTRACTOR had actual knowledge thereof or should reasonably have known thereof.

2.6. Within ten days after the Effective Date of the Agreement (unless otherwise specified in the General Requirements), CONTRACTOR shall submit to ENGINEER for review:

2.6.1. an estimated progress schedule indicating the starting and completion dates of the various stages of the Work;

2.6.2. a preliminary schedule of Shop Drawing submissions; and

2.6.3. a preliminary schedule of values for all of the Work which will include quantities and prices of items aggregating the Contract Price and will subdivide the Work into component parts in sufficient detail to serve as the basis for progress payments during construction. Such prices will include an appropriate amount of overhead and profit
applicable to each item of Work which will be confirmed in
writing by CONTRACTOR at the time of submission.

2.7 Before any Work at the site is started, CONTRACTOR
shall deliver to OWNER, with a copy to ENGINEER, certificates
(and other evidence of insurance requested by OWNER) which
CONTRACTOR is required to purchase and maintain in
accordance with paragraphs 5.3 and 5.4, and OWNER shall
deliver to CONTRACTOR certificates (and other evidence of
insurance requested by CONTRACTOR) which OWNER is
required to purchase and maintain in accordance with
paragraphs 5.6 and 5.7.

Preconstruction Conference:

2.8. Within twenty days after the Effective Date of the
Agreement, but before CONTRACTOR starts the Work at the
site, a conference attended by CONTRACTOR, ENGINEER and
others as appropriate will be held to discuss the schedules
referred to in paragraph 2.6, to discuss procedures for handling
Shop Drawings and other submittals and for processing
Applications for Payment, and to establish a working
understanding among the parties as to the Work.

Finalizing Schedules:

2.9. At least ten days before submission of the first
Application for Payment a conference attended by
CONTRACTOR, ENGINEER and others as appropriate will be
held to finalize the schedules submitted in accordance with
paragraph 2.6. The finalized progress schedule will be
acceptable to ENGINEER as providing an orderly progression of
the Work to completion within the Contract Time, but such
acceptance will neither impose on ENGINEER responsibility for
the progress or scheduling of the Work nor relieve
CONTRACTOR from full responsibility thereof. The finalized
schedule of Shop Drawing submissions will be acceptable to
ENGINEER as providing a workable arrangement for processing
the submissions. The finalized schedule of values will be
acceptable to ENGINEER as to form and substance.

ARTICLE 3—CONTRACT DOCUMENTS: INTENT, AMENDING, REUSE

Intent:

3.1. The Contract Documents comprise the entire agree-
ment 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.

3.2. It is the intent of the Contract Documents to describe a
functionally complete Project (or part thereof) to be constructed
in accordance with the Contract Documents. Any Work,
materials or equipment that may reasonably be inferred from the
Contract Documents as being required to produce the intended
result will 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 word shall be interpreted in accordance with that meaning.
Reference to standard specifications, manuals or codes of 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 (or, on the Effective Date of
the Agreement if there were no 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 OWNER, CONTRACTOR or ENGINEER, or
any of their consultants, agents or employees from those set
forth in the Contract Documents, nor shall it be effective to
assign to ENGINEER, or any of ENGINEER's consultants,
agents or employees, any duty or authority to supervise or direct
the furnishing or performance of the Work or any duty or
authority to undertake responsibility contrary to the provision of
paragraph 9.15 or 9.16. Clarifications and interpretations of the
Contract Documents shall be issued by ENGINEER as provided
in paragraph 9.4.

3.3. If, during the performance of the Work,
CONTRACTOR finds a conflict, error or discrepancy in the
Contract Documents, CONTRACTOR shall so report to
ENGINEER in writing at once and before proceeding with the
Work affected thereby shall obtain a written interpretation or
clarification from ENGINEER; however, CONTRACTOR shall not
be liable to OWNER or ENGINEER for failure to report any
conflict, error or discrepancy in the Contract Documents unless
CONTRACTOR had actual knowledge thereof or should
reasonably have known thereof.

Amending and Supplementing Contract Documents:

3.4. The Contract Documents may be amended to provide for
additions, deletions and revisions in the Work or to modify the
terms and conditions thereof in one or more of the following
ways:

3.4.1. a formal Written Amendment,
3.4.2. a Change Order (pursuant to paragraph
10.4), or
3.4.3. a Work Directive Change (pursuant to
paragraph 10.1).

As indicated in paragraphs 11.2 and 12.1, Contract Price and
Contract Time may only be changed by a Change Order or a
Written Amendment.

3.5. In addition, the requirements of the Contract
Documents may be supplemented, and minor variations and
deviations in the Work may be authorized, in one or more of the
following ways:

3.5.1. a Field Order (pursuant to paragraph 9.5),
3.5.2. ENGINEER's approval of a Shop Drawing or
sample (pursuant to paragraphs 6.26 and 6.27), or
3.5.3. ENGINEER's written interpretation or
clarification (pursuant to paragraph 9.4).

Reuse of Documents:
3.6. Neither CONTRACTOR nor any Subcontractor or Supplier or other person or organization performing or furnishing any of the Work under a direct or indirect contract with OWNER shall have or acquire any title to or ownership rights in any of the Drawings, Specifications or other documents (or copies of any thereof) prepared by or bearing the seal of ENGINEER; and they shall not reuse any of them on extensions of the Project or any other project without written consent of OWNER and ENGINEER and specific written verification or adaptation by ENGINEER.

ARTICLE 4—AVAILABILITY OF LANDS; PHYSICAL CONDITIONS; REFERENCE POINTS

Availability of Lands:

4.1. OWNER shall furnish, as indicated in the Contract Documents, the lands upon which the Work is to be performed, rights-of-way and easements for access thereto, and such other lands which are designated for the use of CONTRACTOR. Easements for permanent structures or permanent changes in existing facilities will be obtained and paid for by OWNER, unless otherwise provided in the Contract Documents. If CONTRACTOR believes that any delay in OWNER’s furnishing these lands, rights-of-way or easements entitles CONTRACTOR to an extension of the Contract Time, CONTRACTOR may make a claim therefor as provided in Article 12. CONTRACTOR shall provide for all additional lands and access thereto that may be required for temporary construction facilities or storage of materials and equipment.

Physical Conditions:

4.2.1. Explorations and Reports: Reference is made to the Supplementary Conditions for identification of those reports of explorations and tests of subsurface conditions at the site that have been utilized by ENGINEER in preparation of the Contract Documents. CONTRACTOR may rely upon the accuracy of the technical data contained in such reports, but not upon non-technical data, interpretations or opinions contained therein or for the completeness thereof for CONTRACTOR’s purposes. Except as indicated in the immediately preceding sentence and in paragraph 4.2.6, CONTRACTOR shall have full responsibility with respect to subsurface conditions at the site.

4.2.2. Existing Structures: Reference is made to the Supplementary Conditions for identification of those drawings of physical conditions in or relating to existing surface and subsurface structures (except Underground Facilities referred to in paragraph 4.3) which are at or contiguous to the site that have been utilized by ENGINEER in preparation of the Contract Documents. CONTRACTOR may rely upon the accuracy of the technical data contained in such drawings, but not for the completeness thereof for CONTRACTOR’s purposes. Except as indicated in the immediately preceding sentence and in paragraph 4.2.6, CONTRACTOR shall have full responsibility with respect to physical conditions in or relating to such structures.

4.2.3. Report of Differing Conditions: If CONTRACTOR believes that:

4.2.3.1. any technical data on which CONTRACTOR is entitled to rely as provided in paragraphs 4.2.1 and 4.2.2 is inaccurate, or

4.2.3.2. any physical condition uncovered or revealed at the site differs materially from that indicated, reflected or referred to in the Contract Documents,

CONTRACTOR shall, promptly after becoming aware thereof and before performing any Work in connection therewith (except in an emergency as permitted by paragraph 6.22), notify OWNER and ENGINEER in writing about the inaccuracy or difference.

4.2.4. ENGINEER’s Review: ENGINEER will promptly review the pertinent conditions, determine the necessity of obtaining additional explorations or tests with respect thereto and advise OWNER in writing (with a copy to CONTRACTOR) of ENGINEER’s findings and conclusions.

4.2.5. Possible Document Change: If ENGINEER concludes that there is a material error in the Contract Documents or that because of newly discovered conditions a change in the Contract Documents is required, a Work Directive Change or a Change Order will be issued as provided in Article 10 to reflect and document the consequences of the inaccuracy or difference.

4.2.6. Possible Price and Time Adjustments: 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 any such inaccuracy or difference. If OWNER and CONTRACTOR are unable to agree as to the amount or length thereof, a claim may be made therefor as provided in Articles 11 and 12.

Physical Conditions – Underground Facilities:

4.3.1. Shown of Indicated: The information and data shown or indicated in the Contract Documents with respect to existing Underground Facilities at or contiguous to the site is based on information and data furnished to OWNER or ENGINEER by the owners of such Underground Facilities or by others. Unless it is otherwise expressly provided in the Supplementary Conditions:

4.3.1.1. OWNER and ENGINEER shall not be responsible for the accuracy or completeness of any such information or data; and,

4.3.1.2. CONTRACTOR shall have full responsibility for reviewing and checking all such information and data, for locating all Underground Facilities shown or indicated in the Contract Documents, for coordination of the Work with the owners of such Underground Facilities during construction, for the safety and protection thereof as provided in paragraph 6.20 and repairing any damage thereto resulting from the Work, the cost of all of which will be considered as having been included in the Contract Price.

4.3.2. Not Shown or Indicated: If an Underground Facility is uncovered or revealed at or contiguous to the site which was not shown or indicated in the Contract Documents and which CONTRACTOR could not reasonably have been expected to be aware of, CONTRACTOR shall, promptly after becoming aware thereof and before performing any Work affected thereby (except in an emergency as permitted by paragraph 6.22), identify the owner of such Underground Facility and give written notice thereof to that owner and to OWNER and ENGINEER. ENGINEER will promptly review the Underground Facility to determine the extent to which the Contract Documents should be modified to reflect and document the consequences of the existence of the Underground Facility, and the Contract
Documents will be amended or supplemented to the extent necessary. During such time, CONTRACTOR shall be responsible for the safety and protection of such Underground Facility as provided in paragraph 6.20. CONTRACTOR shall be allowed an increase in the Contract Price or an extension of the Contract Time, or both, to the extent that they are attributable to the existence of any Underground Facility that was not shown or indicated in the Contract Documents and which CONTRACTOR could not reasonably have been expected to be aware of. If the parties are unable to agree as to the amount or length thereof, CONTRACTOR may make a claim therefor as provided in Articles 11 and 12.

Reference Points:

4.4. OWNER shall provide engineering surveys to establish reference points for construction which in ENGINEER's judgment are necessary to enable CONTRACTOR to proceed with the Work. CONTRACTOR shall be responsible for laying out the Work (unless otherwise specified in the General Requirements), shall protect and preserve the established reference points and shall make no changes or relocations without the prior written approval of OWNER. CONTRACTOR shall report to ENGINEER whenever any reference point is lost or destroyed or requires relocation because of necessary changes in grades or locations, and shall be responsible for the accurate replacement or relocation of such reference points by professionally qualified personnel.

ARTICLE 5—BONDS AND INSURANCE

Performance and Other Bonds:

5.1. CONTRACTOR shall furnish performance and payment Bonds, each in an amount at least equal to the Contract Price as security for the faithful performance and payment of all CONTRACTOR's obligations under the Contract Documents. These Bonds shall remain in effect at least until one year after the date when final payment becomes due, except as otherwise provided by Law or Regulation or by the Contract Documents. CONTRACTOR shall also furnish such other Bonds as are required by the Supplementary Conditions. All Bonds shall be in the forms prescribed by Law or Regulation or by the Contract Documents and be executed by such sureties as are named in the current list of "Companies Holding Certificates of Authority as Acceptable Sureties on Federal Bonds and as Acceptable Reinsuring Companies" as published in Circular 570 (amended) by the Audit Staff Bureau of Accounts, U.S. Treasury Department. All Bonds signed by an agent must be accompanied by a certified copy of the authority to act.

5.2. If the surety on any Bond furnished by CONTRACTOR is declared a bankrupt or becomes insolvent or its right to do business is terminated in any state where any part of the Project is located or it ceases to meet the requirements of paragraph 5.1, CONTRACTOR shall within five days thereafter substitute another Bond and Surety, both of which must be acceptable to OWNER.

Contractor's Liability Insurance:

5.3. CONTRACTOR shall purchase and maintain such comprehensive general liability and other insurance as is appropriate for the Work being performed and furnished and as will provide protection from claims set forth below which may arise out of or result from CONTRACTOR's performance and furnishing of the Work and CONTRACTOR's other obligations under the Contract Documents, whether it is to be performed or furnished by CONTRACTOR, by any Subcontractor, by anyone directly or indirectly employed by any of them to perform or furnish any of the Work, or by anyone for those acts any of them may be liable:

5.3.1. Claims under workers' or workmen's compensation, disability benefits and other similar employee benefit acts;

5.3.2. Claims for damages because of bodily injury, occupational sickness or disease, or death of CONTRACTOR's employees;

5.3.3. Claims for damages because of bodily injury, sickness or disease, or death of any person other than CONTRACTOR's employees;

5.3.4. Claims for damages insured by personal injury liability coverage which are sustained (a) by any person as a result of an offense directly or indirectly related to the employment of such person by CONTRACTOR, or (b) by any other person for any other reason;

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

5.3.6. Claims arising out of operation of Laws or Regulations for damages because of bodily injury or death of any person or for damage to property; and

5.3.7. Claims for damages because of bodily injury or death of any person or property damage arising out of the ownership, maintenance or use of any motor vehicle.

The insurance required by this paragraph 5.3 shall include the specific coverages and be written for not less than the limits of liability and coverages provided in the Supplementary Conditions, or required by law, whichever is greater. The comprehensive general liability insurance shall include completed operations insurance. All of the policies of insurance so required to be purchased and maintained (or the certificates or other evidence thereof) shall contain a provision or endorsement that the coverage afforded will not be cancelled, materially changed or renewal refused until at least thirty days' prior written notice has been given to OWNER and ENGINEER by certified mail. All such insurance shall remain in effect until final payment and at all times thereafter when CONTRACTOR may be correcting, removing or replacing defective Work in accordance with paragraph 13.12. In addition, CONTRACTOR shall maintain such completed operations insurance for at least two years after final payment and furnish OWNER with evidence of continuation of such insurance at final payment and one year thereafter.

Constructual Liability Insurance:

5.4. The comprehensive general liability insurance required by paragraph 5.3 will include contractual liability insurance applicable to CONTRACTOR's obligations under paragraphs 6.30 and 6.31.

Owner's Liability Insurance:
5.5. OWNER shall be responsible for purchasing and maintaining OWNER’s own liability insurance and, at OWNER’s option, may purchase and maintain such insurance as will protect OWNER against claims which may arise from operations under the Contract Documents.

Property Insurance:

5.6. Unless otherwise provided in the Supplementary Conditions, OWNER shall purchase and maintain property insurance upon the Work at the site to the full insurable value thereof (subject to such deductible amounts as may be provided in the Supplementary Conditions or required by Laws and Regulations). This insurance shall include the interests of OWNER, CONTRACTOR, Subcontractors, ENGINEER and ENGINEER’s consultants in the Work, all of whom shall be listed as insureds or additional insured parties, shall insure against the perils of fire and extended coverage and shall include “all risk” insurance for physical loss and damage including theft, vandalism and malicious mischief, collapse and water damage, and such other perils as may be provided in the Supplementary Conditions, and shall include damages, losses and expenses arising out of or resulting from any insured loss or incurred in the repair or replacement of any insured property (including but not limited to fees and charges of engineers, architects, attorneys and other professionals). If not covered under the “all risk” insurance or otherwise provided in the Supplementary Conditions, CONTRACTOR shall purchase and maintain similar property insurance on portions of the Work stored on and off the site or in transit when such portions of the Work are to be included in an Application for Payment.

5.7. OWNER shall purchase and maintain such boiler and machinery insurance or additional property insurance as may be required by the Supplementary Conditions or Laws and Regulations which will include the interests of OWNER, CONTRACTOR, Subcontractors, ENGINEER and ENGINEER’s consultants in the Work, all of whom shall be listed as insured or additional insured parties.

5.8. All the policies of insurance (or the certificates or other evidence thereof) required to be purchased and maintained by OWNER in accordance with paragraphs 5.6 and 5.7 will contain a provision or endorsement that the coverage afforded will not be cancelled or materially changed or renewal refused until at least thirty days’ prior written notice has been given to CONTRACTOR by certified mail and will contain waiver provisions in accordance with paragraph 5.11.2.

5.9. OWNER shall not be responsible for purchasing and maintaining any property insurance to protect the interests of CONTRACTOR, Subcontractors or others in the Work to the extent of any deductible amounts that are provided in the Supplementary Conditions. The risk of loss within the deductible amount, will be borne by CONTRACTOR, Subcontractor or others suffering any such loss and if any of them wishes property insurance coverage within the limits of such amounts, each may purchase and maintain it at the purchaser’s own expense.

5.10. If CONTRACTOR requests in writing that other special insurance be included in the property insurance policy, OWNER shall, if possible, include such insurance, and the cost thereof will be charged to CONTRACTOR by appropriate Change Order or Written Amendment. Prior to commencement of the Work at the site, OWNER shall in writing advise CONTRACTOR whether or not such other insurance has been procured by OWNER.

Waiver of Rights:

5.11.1. OWNER and CONTRACTOR waive all rights against each other for all losses and damages caused by any of the perils covered by the policies of insurance provided in response to paragraphs 5.6 and 5.7 and any other property insurance applicable to the Work, and also waive all such rights against the Subcontractors, ENGINEER, ENGINEER’s consultants and all other parties named as insureds in such policies for losses and damages so caused. As required in paragraph 6.11, each subcontract between CONTRACTOR and a Subcontractor will contain similar waiver provisions by the Subcontractor in favor of OWNER, CONTRACTOR, ENGINEER, ENGINEER’s consultants and all other parties named as insureds. None of the above waivers shall extend to the rights that any of the insured parties may have to the proceeds of insurance held by OWNER as trustee or otherwise payable under any policy so issued.

5.11.2. OWNER and CONTRACTOR intend that any policies provided in response to paragraphs 5.6 and 5.7 shall protect all of the parties insured and provide primary coverage for all losses and damages caused by the perils covered thereby. Accordingly, all such policies shall contain provisions to the effect that in the event of payment of any loss or damage the insurer will have no rights of recovery against any of the parties named as insureds or additional insureds, and if the insurers require separate waiver forms to be signed by ENGINEER or ENGINEER’s consultant OWNER will obtain the same, and if such waiver forms are required of any Subcontractor, CONTRACTOR will obtain the same.

Receipt and Application of Proceeds:

5.12. Any insured loss under the policies of insurance required by paragraphs 5.6 and 5.7 will be adjusted with OWNER and made payable to OWNER as trustee for the insureds, as their interests may appear, subject to the requirements of any applicable mortgage clause and of paragraph 5.13. OWNER shall deposit in a separate account any money so received, and shall distribute it in accordance with such agreement as the parties in interest may reach. If no other special agreement is reached the damaged Work shall be repaired or replaced, the moneys so received applied on account thereof and the Work and the cost thereof covered by an appropriate Change Order or Written Amendment.

5.13. OWNER as trustee shall have power to adjust and settle any loss with the insurers unless one of the parties in interest shall object in writing within fifteen days after the occurrence of loss to OWNER’s exercise of this power. If such objection is made, OWNER as trustee shall make settlement with the insurers in accordance with such agreement as the parties in interest may reach. If required in writing by any party in interest, OWNER as trustee shall, upon the occurrence of an insured loss, give bond for the proper performance of such duties.

Acceptance of Insurance:

5.14. If OWNER has any objection to the coverage afforded by or other provisions of the insurance required to be purchased and maintained by CONTRACTOR in accordance with paragraphs 5.3 and 5.4 on the basis of its not complying with the Contract Documents, OWNER shall notify CONTRACTOR in writing thereof within ten days of the date of delivery of such certificates to OWNER in accordance with paragraph 2.7. If CONTRACTOR has any objection to the coverage afforded by or other provisions of the policies of insurance required to be
purchased and maintained by OWNER in accordance with paragraphs 5.6 and 5.7 on the basis of their not complying with the Contract Documents, CONTRACTOR shall notify OWNER in writing thereof within ten days of the date of delivery of such certificates to CONTRACTOR in accordance with paragraph 2.7. OWNER and CONTRACTOR shall each provide to the other such additional information in respect of insurance provided by each as the other may reasonably request. Failure by OWNER or CONTRACTOR to give any such notice of objection within the time provided shall constitute acceptance of such insurance purchased by the other as complying with the Contract Documents.

Partial Utilization – Property Insurance:

5.15. If OWNER finds it necessary to occupy or use a portion or portions of the Work prior to Substantial Completion of all the Work, such use or occupancy may be accomplished in accordance with paragraph 14.10; provided that no such use or occupancy shall commence before the insurers providing the property insurance have acknowledged notice thereof and in writing effected the changes in coverage necessitated thereby. The insurers providing the property insurance shall consent by endorsement on the policy or policies, but the property insurance shall not be cancelled or lapse on account of any such partial use or occupancy.

ARTICLE 6 – CONTRACTOR’S RESPONSIBILITIES

Supervision and Superintendence:

6.1. CONTRACTOR shall supervise and direct the Work competently and efficiently, devoting such attention thereto and applying such skills and expertise as may be necessary to perform the Work in accordance with the Contract Documents. CONTRACTOR shall be solely responsible for the means, methods, techniques, sequences and procedures of construction, but CONTRACTOR shall not be responsible for the negligence of others in the design or selection of a specific means, method, technique, sequence or procedure of construction which is indicated in and required by the Contract Documents. CONTRACTOR shall be responsible to see that the finished Work complies accurately with the Contract Documents.

6.2. CONTRACTOR shall keep on the Work at all times during its progress a competent resident superintendent, who shall not be replaced without written notice to OWNER and ENGINEER except under extraordinary circumstances. The superintendent will be CONTRACTOR’s representative at the site and shall have authority to act on behalf of CONTRACTOR. All communications given to the superintendent shall be as binding as if given to CONTRACTOR.

Labor, Materials and Equipment:

6.3. CONTRACTOR shall provide competent, suitably qualified personnel to survey and lay out the Work and perform construction as required by the Contract Documents. CONTRACTOR shall at all times maintain good discipline and order at the site. Except in connection with the safety or protection of persons or the Work or property at the site or adjacent thereto, and except as otherwise indicated in the Contract Documents, all work at the site shall be performed during regular working hours, and CONTRACTOR will not permit overtime work or the performance of Work on Saturday, Sunday or any legal holiday without OWNER’s written consent given after prior written notice to ENGINEER.

6.4. Unless otherwise specified in the General Requirements, CONTRACTOR shall furnish and assume full responsibility for all materials, equipment, labor, transportation, construction equipment and machinery, tools, appliances, fuel, power, light, heat, telephone, water, sanitary facilities, temporary facilities and all other facilities and incidentals necessary for the furnishing, performance, testing, start-up and completion of the Work.

6.5. All materials and equipment shall be of good quality and new, except as otherwise provided in the Contract Documents. If required by ENGINEER, CONTRACTOR shall furnish satisfactory evidence (including reports of required tests) as to the kind and quality of materials and equipment. All materials and equipment shall be applied, installed, connected, erected, used, cleaned and conditioned in accordance with the instruction of the applicable Supplier except as otherwise provided in the Contract Documents; but no provision of any such instructions will be effective as assign to ENGINEER, or any of ENGINEER’s consultants, agents or employees, any duty or authority to supervise or direct the furnishing or performance of the Work or any duty or authority to undertake responsibility contrary to the provisions of paragraph 9.15 or 9.16.

Adjusting Progress Schedule:

6.6. CONTRACTOR shall submit to ENGINEER for acceptance (to the extent indicated in paragraph 2.9) adjustments in the progress schedule to reflect the impact thereon of new developments; these will conform generally to the progress schedule then in effect and additionally will comply with any provisions of the General Requirements applicable thereto.

Substitutes or “Or-Equal” Items:

6.7.1. Whenever materials or equipment are specified or described in the Contract Documents by using the name of a proprietary item or the name of a particular Supplier the naming of the item is intended to establish the type, function and quality required. Unless the name is followed by words indicating that no substitution is permitted, materials or equipment of other Suppliers may be accepted by ENGINEER if sufficient information is submitted by CONTRACTOR to allow ENGINEER to determine that the material or equipment proposed is equivalent or equal to that named. The procedure for review by ENGINEER will include the following as supplemented in the General Requirements. Requests for review of substitute items of material and equipment will not be accepted by ENGINEER from anyone other than CONTRACTOR. If CONTRACTOR wishes to furnish or use a substitute item of material or equipment, CONTRACTOR shall make written application to ENGINEER for acceptance thereof, certifying that the proposed substitute will perform adequately the functions and achieve the results called for by the general design, be similar and of equal substance to that specified and be suited to the same use as that specified. The application will state that the evaluation and acceptance of the proposed substitution will not prejudice CONTRACTOR’s achievement of Substantial Completion on time, whether or not acceptance of the substitute for use in the Work will require a change in any of the Contract Documents (or in the provisions of any other direct contract with OWNER for work on the Project) to adapt the design to the proposed substitute and whether or not incorporation or use of the substitute in connection with the Work is subject to payment
of any license fee or royalty. All variations of the proposed substitute from that specified will be identified in the application and available maintenance, repair and replacement service will be indicated. The application will also contain an itemized estimate of all costs that will result directly or indirectly from acceptance of such substitute, including costs of redesign and claims of other contractors affected by the resulting change, all of which shall be considered by ENGINEER in evaluating the proposed substitute. ENGINEER may require CONTRACTOR to furnish at CONTRACTOR's expense additional data about the proposed substitute.

6.7.2. If a specific means, method, technique, sequence or procedure of construction is indicated in or required by the Contract Documents, CONTRACTOR may furnish or utilize a substitute means, method, technique or procedure of construction acceptable to ENGINEER, if CONTRACTOR submits sufficient information to allow ENGINEER to determine that the substitute proposed is equivalent to that indicated or required by the Contract Documents. The procedure for review by ENGINEER will be similar to that provided in paragraph 6.7.1 as applied by ENGINEER and as may be supplemented in the General Requirements.

6.7.3. ENGINEER will be allowed a reasonable time within which to evaluate each proposed substitute. ENGINEER will be the sole judge of acceptability, and no substitute will be ordered, installed or utilized without ENGINEER's prior written acceptance which will be evidenced by either a Change Order or an approved Shop Drawing. OWNER may require CONTRACTOR to furnish at CONTRACTOR's expense a special performance guarantee or other surety with respect to any substitute. ENGINEER will record time required by ENGINEER and ENGINEER's consultants in evaluating substitutions proposed by CONTRACTOR and in making changes in the Contract Documents occasioned thereby. Whether or not ENGINEER accepts a proposed substitute, CONTRACTOR shall reimburse OWNER for the charges of ENGINEER and ENGINEER's consultants for evaluating each proposed substitute.

Concerning Subcontractors, Suppliers and Others:

6.8.1. CONTRACTOR shall not employ any Subcontractor, Supplier or other person or organization (including those acceptable to OWNER and ENGINEER as indicated in paragraph 6.8.2), whether initially or as a substitute, against whom OWNER or ENGINEER may have reasonable objection. CONTRACTOR shall not be required to employ any Subcontractor, Supplier or other person or organization to furnish or perform any of the Work against whom CONTRACTOR has reasonable objection.

6.8.2. If the Supplementary Conditions require the identity of certain Subcontractors, Suppliers or other persons or organizations (including those who are to furnish the principal items of materials and equipment) to be submitted to OWNER in advance of the specified date prior to the Effective Date of the Agreement for acceptance by OWNER and ENGINEER and if CONTRACTOR has submitted a list thereof in accordance with the Supplementary Conditions, OWNER's or ENGINEER's acceptance (either in writing or by failing to make written objection thereto by the date indicated for acceptance or objection in the bidding documents or the Contract Documents) of any such Subcontractor, Supplier or other person or organization so identified may be revoked on the basis of reasonable objection after due investigation, in which case CONTRACTOR shall submit an acceptable substitute, the Contract Price will be increased by the difference in the cost occasioned by such substitution and an appropriate Change Order will be issued or Written Amendment signed. No acceptance by OWNER or ENGINEER of any such Subcontractor, Supplier or other person or organization shall constitute a waiver of any right of OWNER or ENGINEER to reject defective Work.

6.9. CONTRACTOR shall be fully responsible to OWNER and ENGINEER for all acts and omissions of the Subcontractors, Suppliers and other persons and organizations performing or furnishing any of the Work under a direct or indirect contract with CONTRACTOR just as CONTRACTOR is responsible for CONTRACTOR's own acts and omissions. Nothing in the Contract Documents shall create any contractual relationship between OWNER or ENGINEER and any such Subcontractor, Supplier or other person or organization, not shall it create any obligation on the part of OWNER or ENGINEER to pay or to see to the payment of any moneys due any such Subcontractor, Supplier or other person or organization except as may otherwise be required by Laws and Regulations.

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

6.11. All Work performed for CONTRACTOR by a Subcontractor will be pursuant to an appropriate agreement between CONTRACTOR and the Subcontractor which specifically binds the Subcontractor to the applicable terms and conditions of the Contract Documents for the benefit of OWNER and ENGINEER and contains waiver provisions as required by paragraph 5.11. CONTRACTOR shall pay each Subcontractor a just share of any insurance moneys received by CONTRACTOR on account of losses under policies issued pursuant to paragraphs 5.6 and 5.7.
Patent Fees and Royalties:

6.12. CONTRACTOR shall pay all license fees and royalties and assume all costs incident to the use in the performance of the Work or the incorporation in the Work of any invention, design, process, product or device which is the subject of patent rights or copyrights held by others. If a particular invention, design, process product or device is specified in the Contract Documents for use in the performance of the Work and if to the actual knowledge of OWNER or ENGINEER its use is subject to patent rights or copyrights calling for the payment of any license fee or royalty to others, the existence of such rights shall be disclosed by OWNER in the Contract Documents. CONTRACTOR shall indemnify and hold harmless OWNER and ENGINEER and anyone directly or indirectly employed by either of them from and against all claims, damages, losses and expenses (including attorney’s fees and court and arbitration 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 inventions, design, process, product or device not specified in the Contract Documents, and shall defend all such claims in connection with any alleged infringement of such rights.

Permits:

6.13. Unless otherwise provided in the Supplementary Conditions, CONTRACTOR shall obtain and pay for all construction permits and licenses. OWNER shall assist CONTRACTOR, when necessary, in obtaining such permits and licenses. CONTRACTOR shall pay all governmental charges and inspection fees necessary for the prosecution of the Work, which are applicable at the time of opening of Bids, or if there are no Bids on the Effective Date of the Agreement, CONTRACTOR shall pay all charges of utility owners for connections to the Work, and OWNER shall pay all charges of such utility owners for capital costs related thereto such as plant investment fees.

Laws and Regulations:

6.14.1. CONTRACTOR shall give all notices and comply with all Laws and Regulations applicable to furnishing and performance of the Work. Except where otherwise expressly required by applicable Laws and Regulations, neither OWNER nor ENGINEER shall be responsible for monitoring CONTRACTOR’s compliance with any Laws or Regulations.

6.14.2. If CONTRACTOR observes that the Specifications or Drawings are at variance with any Laws or Regulations, CONTRACTOR shall give ENGINEER prompt written notice thereof, and any necessary changes will be authorized by one of the methods indicated in paragraph 3.4. If CONTRACTOR performs any Work knowing or having reason to know that it is contrary to such Laws or Regulations, and without such notice to ENGINEER, CONTRACTOR shall bear all costs arising therefrom; however, it shall not be CONTRACTOR’s primary responsibility to make certain that the Specifications and Drawings are in accordance with such Laws and Regulations.

Taxes:

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

Use of Premises:

6.16. CONTRACTOR shall confine construction equipment, the storage of materials and equipment and the operations of workers to the Project site and land and areas identified in and permitted by the Contract Documents and other land and areas permitted by Laws and Regulations, rights-of-way, permits and easements, and shall not unreasonably encumber the premises with construction equipment or other materials or equipment. CONTRACTOR shall assume full responsibility for any damage to any such land or area, or to the owner or occupant thereto or of any land or areas contiguous thereto, resulting from the performance of the Work. Should any claim be made against OWNER or ENGINEER by any such owner or occupant because of the performance of the Work, CONTRACTOR shall promptly attempt to settle with such other party by agreement or otherwise resolve the claim by arbitration or at law. CONTRACTOR shall, to the fullest extent permitted by Laws and Regulations, indemnify and hold OWNER and 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 and arbitration costs) arising directly, indirectly or consequentially out of any action, legal or equitable, brought by any such other party against OWNER or ENGINEER to the extent based on a claim arising out of CONTRACTOR’s performance of the Work.

6.17. During the progress of the Work, CONTRACTOR shall keep the premises free from accumulations of waste materials, rubbish and other debris resulting from the Work. At the completion of the Work CONTRACTOR shall remove all waste materials, rubbish and debris from and about the premises as well as all tools, appliances, construction equipment and machinery, and surplus materials, and shall leave the site clean and ready for occupancy by OWNER. CONTRACTOR shall restore to original condition all property not designated for alteration by the Contract Documents.

6.18. CONTRACTOR shall not load nor permit any part of any structure to be loaded in any manner that will endanger the structure, nor shall CONTRACTOR subject any part of the Work or adjacent property to stresses or pressures that will endanger it.

Record Documents:

6.19. CONTRACTOR shall maintain in a safe place at the site one record copy of all Drawings, Specifications, Addenda, Written Amendments, Change Orders, Work Directive Changes, Field Orders and written interpretations and clarifications (issued pursuant to paragraph 9.4) in good order and annotated to show all changes made during construction. These record documents together with all approved samples and a counterpart of all approved Shop Drawings will be available to ENGINEER for reference. Upon completion of the Work, these record documents, samples and Shop Drawings will be delivered to ENGINEER for OWNER.

Safety and Protection:

6.20. CONTRACTOR shall be responsible for initiating, maintaining and supervising all safety precautions and programs in connection with the Work. CONTRACTOR shall take all necessary precautions for the safety of, and shall provide the necessary protection to prevent damage, injury or loss to:

6.20.1. all employees on the Work and other persons and organizations who may be affected thereby:
<table>
<thead>
<tr>
<th>Article or Paragraph Number</th>
<th>Shop Drawings and Samples</th>
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<tr>
<td>6.20.2.</td>
<td>all the Work and materials and equipment to be incorporated therein, whether in storage on or off the site; and</td>
</tr>
<tr>
<td>6.20.3.</td>
<td>other property at the site or adjacent thereto, including trees, shrubs, laws, walks, pavements, roadways, structures, utilities and Underground Facilities not designated for removal, relocation or replacement in the course of construction.</td>
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CONTRACTOR shall comply with all applicable Laws and Regulations 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. CONTRACTOR shall notify owners of adjacent property and of Underground Facilities and utility owners when prosecution of the Work may affect them, and shall cooperate with them in the protection, removal, relocation and replacement of their property. All damage, injury or loss to any property referred to in paragraph 6.20.2 or 6.20.3 caused, directly or indirectly, in whole or in part, by CONTRACTOR, any Subcontractor, Supplier or any other person or organization directly or indirectly employed by any of them to perform or furnish any of the Work or anyone for whose acts any of them may be liable, shall be remedied by CONTRACTOR (except damage or loss attributable to the fault of Drawings or Specifications or to the acts or omissions of OWNER or ENGINEER or anyone employed by either of them or anyone for whose acts either of them may be liable, and not attributable, directly or indirectly, in whole or in part, to the fault or negligence of CONTRACTOR). CONTRACTOR’s duties and responsibilities for the safety and protection of the Work shall continue until such time as all the Work is completed and ENGINEER has issued a notice to OWNER and CONTRACTOR in accordance with paragraph 14.13 that the Work is acceptable (except as otherwise expressly provided in connection with Substantial Completion).

6.21. CONTRACTOR shall designate a responsible representative at the site whose duty shall be the prevention of accidents. This person shall be CONTRACTOR’s superintendent unless otherwise designated in writing by CONTRACTOR to OWNER.

**Emergencies:**

6.22. In emergencies affecting the safety or protection of persons or the Work or property at the site or adjacent thereto, CONTRACTOR, without special instruction or authorization from ENGINEER or OWNER, is obligated to act to prevent threatened damage, injury or loss. CONTRACTOR shall give ENGINEER prompt written notice if CONTRACTOR believes that any significant changes in the Work or variations from the Contract Documents have been caused thereby. If ENGINEER determines that a change in the Contract Documents is required because of the action taken in response to an emergency, a Work Directive Change or Change Order will be issued to document the consequences of the changes or variations.

6.23. After checking and verifying all field measurements and after complying with applicable procedures specified in the General Requirements, CONTRACTOR shall submit to ENGINEER for review and approval in accordance with the accepted schedule of Shop Drawing submissions (see paragraph 2.9), or for other appropriate action if so indicated in the Supplementary Conditions, five copies (unless otherwise specified in the General Requirements) of all Shop Drawings, which will bear a stamp or specific written indication that CONTRACTOR has satisfied CONTRACTOR’s responsibilities under the Contract Documents with respect to the review of the submission. All submissions will be identified as ENGINEER may require. The data shown on the Shop Drawings will be complete with respect to quantities, dimensions, specified performance and design criteria, materials and similar data to enable ENGINEER to review the information as required.

6.24. CONTRACTOR shall also submit to ENGINEER for review and approval with such promptness as to cause no delay in Work, all samples required by the Contract Documents. All samples will have been checked by and accompanied by a specific written indication that CONTRACTOR has satisfied CONTRACTOR’s responsibilities under the Contract Documents with respect to the review of the submission and will be identified clearly as to material, Supplier, pertinent data such as catalog numbers and the use for which intended.

6.25.1. Before submission of each Shop Drawing or sample CONTRACTOR shall have determined and verified all quantities, dimensions, specified performance criteria, installation requirements, materials, catalog numbers and similar data with respect thereto and reviewed or coordinated each Shop Drawing or sample with other Shop Drawings and samples and with the requirements of the Work and the Contract Documents.

6.25.2. At the time of each submission, CONTRACTOR shall give ENGINEER specific written notice of each variation that the Shop Drawings or samples may have from the requirements of the Contract Documents, and, in addition, shall cause a specific notation to be made on each Shop Drawing submitted to ENGINEER for review and approval of each such variation.

6.26. ENGINEER will review and approve with reasonable promptness Shop Drawings and samples, but ENGINEER’s review and approval will be only for conformance with the design concept of the Project and for compliance with the information given in the Contract Documents and shall not extend to means, methods, techniques, sequences or procedures of construction (except where a specific means, method, technique, sequence or procedure of construction is indicated in or required by the Contract Documents) or to safety precautions or programs incident thereto. The review and approval of a separate item as such will not indicate approval of the assembly in which the item functions. CONTRACTOR shall make corrections required by ENGINEER, and shall return the required number of corrected copies of Shop Drawings and submit as required new samples for review and approval. CONTRACTOR shall direct specific attention in writing to revisions other than the corrections called for by ENGINEER on previous submittals.

6.27. ENGINEER’s review and approval of Shop Drawings or samples shall not relieve CONTRACTOR from responsibility for any variation from the requirements of the Contract Documents unless CONTRACTOR has in writing called ENGINEER’s attention to each such variation at the time of
6.28. Where a Shop Drawing or sample is required by the Specifications, any related Work performed prior to ENGINEER’s review and approval of the pertinent submission will be the sole expense and responsibility of CONTRACTOR.

Continuing the Work:

6.29. CONTRACTOR shall carry on the Work and adhere to the progress schedule during all disputes or disagreements with OWNER. No Work shall be delayed or postponed pending resolution of any disputes or disagreements, except as permitted by paragraph 15.5 or as CONTRACTOR and OWNER may otherwise agree in writing.

Indemnification:

6.30. To the fullest extent permitted by Laws and Regulations CONTRACTOR shall indemnify and hold harmless OWNER and ENGINEER and their consultants, agents and employees from and against all claims, damages, losses and expenses, direct, indirect or consequential (including but not limited to fees and charges of engineers, architects, attorneys and other professionals and court and arbitration costs) arising out of or resulting from the performance of the Work, provided that any such claim, damage, loss or expense (a) is attributable to bodily injury, sickness, disease or death, or to injury or destruction of tangible property (other than the Work itself) including the loss of use resulting therefrom and (b) is caused in whole or in part by any negligent act or omission of CONTRACTOR, any Subcontractor, any person or organization directly or indirectly employed by any of them to perform or furnish any of the Work or anyone for whose acts any of them may be liable, regardless of whether or not it is caused in part by a party indemnified hereunder or arises by or is imposed by Law and Regulations regardless of the negligence of any such party.

6.31. In any and all claims against OWNER or ENGINEER or any of their consultants, agents or employees by any employee of CONTRACTOR, any Subcontractor, any person or organization directly or indirectly employed by any of them to perform or furnish any of the Work or anyone for whose acts any of them may be liable, the indemnification obligation under paragraph 6.30 shall not be limited in any way by any limitation on the amount or type of damages, compensation or benefits payable by or for CONTRACTOR or any such Subcontractor or other person or organization under workers’ or workmen’s compensation acts, disability benefit acts or other employee benefit acts.

6.32. The obligations of CONTRACTOR under paragraph 6.30 shall not extend to the liability of ENGINEER, ENGINEER’s consultants, agents or employees arising out of the preparation or approval of maps, drawings, opinions, reports, surveys, Change Orders, designs or specifications.

ARTICLE 7 – OTHER WORK

Related Work at Site:

7.1. OWNER may perform other work related to the Project at the site by OWNER’s own forces, have other work performed by utility owners or let other direct contracts therefor which shall 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 CONTRACTOR prior to starting any such other work; and, if CONTRACTOR believes that such performance will involve additional expense to CONTRACTOR or requires additional time and the parties are unable to agree as to the extent thereof, CONTRACTOR may make a claim therefor as provided in Articles 11 and 12.

7.2. CONTRACTOR shall afford each utility owner and other contractor who is a party to such a direct contract (or OWNER, if OWNER is performing the additional work with 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 such work, and shall properly connect and coordinate the Work with theirs, 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 such other work. CONTRACTOR shall not endanger any work of others by cutting, excavating or otherwise altering their work and will only cut or alter their work with the written consent of ENGINEER and the others whose work will be affected. The duties and responsibilities of CONTRACTOR under this paragraph are for the benefit of such utility owners and other contractors to the extent that there are comparable provisions for the benefit of CONTRACTOR in said direct contracts between OWNER and such utility owners and other contractors.

7.3. If any part of CONTRACTOR’s Work depends for proper execution or results upon the work of any such other contractor or utility owner (or OWNER), CONTRACTOR shall inspect and promptly report to ENGINEER in writing any delays, defects or deficiencies in such work that render it unavailable or unsuitable for proper execution and results. CONTRACTOR’s failure so to report will constitute an acceptance of the other work as fit and proper for integration with CONTRACTOR’s Work except for latent or non-apparent defects and deficiencies in the other work.

Coordination:

7.4. If OWNER contracts with others for the performance of other work on the Project at the site, the person or organization who will have authority and responsibility for coordination of the activities among the various prime contractors will be identified in the Supplementary Conditions, and the specific matters to be covered by such authority and responsibility will be itemized, and the extent of such authority and responsibilities will be provided, in the Supplementary Conditions. Unless otherwise provided in the Supplementary Conditions, neither OWNER nor ENGINEER shall have any authority or responsibility in respect of such coordination.
ARTICLE 8 – OWNER’S RESPONSIBILITIES

8.1. OWNER shall issue all communications to CONTRACTOR through ENGINEER.

8.2. In case of termination of the employment of ENGINEER, OWNER shall appoint an engineer against whom CONTRACTOR makes no reasonable objection, whose status under the Contract Documents shall be that of the former ENGINEER. Any dispute in connection with such appointment shall be subject to arbitration.

8.3. OWNER shall furnish the data required of OWNER under the Contract Documents promptly and shall make payments to CONTRACTOR promptly after they are due as provided in paragraphs 14.4 and 14.13.

8.4. OWNER’s duties in respect of providing lands and easements and providing engineering surveys to establish reference points are set forth in paragraphs 4.1 and 4.4. Paragraph 4.2 refers to OWNER’s identifying and making available to CONTRACTOR copies of reports of explorations and tests of subsurface conditions at the site and in existing structures which have been utilized by ENGINEER in preparing the Drawings and Specifications.

8.5. OWNER’s responsibilities in respect of purchasing and maintaining liability and property insurance are set forth in paragraph 5.5 through 5.8.

8.6. OWNER is obligated to execute Change Orders as indicated in paragraph 10.4.

8.7. OWNER’s responsibility in respect of certain inspections, tests and approvals is set forth in paragraph 13.4.

8.8. In connection with OWNER’s right to stop Work or suspend Work, see paragraphs 13.10 and 15.1. Paragraph 15.2 deals with OWNER’s right to terminate services of CONTRACTOR under certain circumstances.

ARTICLE 9 – ENGINEER’S STATUS DURING CONSTRUCTION

Owner’s Representative:

9.1. ENGINEER will be OWNER’s representative during the construction period. The duties and responsibilities and the limitations of authority of ENGINEER as OWNER’s representative during construction are set forth in the Contract Documents and shall not be extended without written consent of OWNER and ENGINEER.

Visits to Site:

9.2. ENGINEER will make visits to the site at intervals appropriate to the various stages of construction to observe the progress and quality of the executed Work and to determine, in general, if the Work is proceeding in accordance with the Contract Documents. ENGINEER will not be required to make exhaustive or continuous on-site inspections to check the quality or quantity of the Work. ENGINEER’s efforts will be directed toward providing for OWNER a greater degree of confidence that the completed Work will conform to the Contract Documents. On the basis of such visits and on-site observations as an experienced and qualified design professional, ENGINEER will keep OWNER informed of the progress of the Work and will endeavor to guard OWNER against defects and deficiencies in the Work.

Project Representative:

9.3. If OWNER and ENGINEER agree, ENGINEER will furnish a Resident Project Representative to assist ENGINEER in observing the performance of the Work. The duties, responsibilities and limitations of authority of any such Resident Project Representative and assistants will be as provided in the Supplementary Conditions. If OWNER designates another agent to represent OWNER at the site who is not ENGINEER’s agent or employee, the duties, responsibilities and limitations of authority of such other person will be as provided in the Supplementary Conditions.

Clarifications and Interpretations:

9.4. ENGINEER will issue with reasonable promptness such written clarifications or interpretations of the requirements of the Contract Documents (in the form of drawings or otherwise) as ENGINEER may determine necessary, which shall be consistent with or reasonably inferable from the overall intent of the Contract Documents. If CONTRACTOR believes that a written clarification or interpretation justifies an increase in the Contract Price or an extension of the Contract Time and the parties are unable to agree to the amount or extent thereof, CONTRACTOR may make a claim therefor as provided in Article 11 or Article 12.

Authorized Variations in Work:

9.5. ENGINEER may authorize minor variations in the Work from the requirements of the Contract Documents which 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 may be accomplished by a Field Order and will be binding on OWNER, and also on CONTRACTOR who shall perform the Work involved promptly. If 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, CONTRACTOR may make a claim therefor as provided in Article 11 or 12.

Rejecting Defective Work:

9.6. ENGINEER will have authority to disapprove or reject Work which ENGINEER believes to be defective, and will also have authority to require special inspection or testing of the Work as provided in paragraph 13.9, whether or not the Work is fabricated, installed or completed.

Shop Drawings, Change Orders and Payments:

9.7. In connection with ENGINEER’s responsibility for Shop Drawings and samples, see paragraphs 6.23 through 6.29 inclusive.

9.8. In connection with ENGINEER’s responsibilities as to Change Orders, see Articles 10, 11 and 12.

9.9. In connection with ENGINEER’s responsibilities in respect of Applications for Payment, etc., see Article 14.
**Determination for Unit Price:**

9.10. ENGINEER will determine the actual quantities and classifications of Unit Price Work performed by CONTRACTOR. ENGINEER will review with CONTRACTOR ENGINEER's preliminary determinations on such matters before rendering a written decision thereon (by recommendation of an Application for Payment or otherwise). ENGINEER's written decisions thereon will be final and binding upon OWNER and CONTRACTOR, unless, within ten days after the date of any such decision, either OWNER or CONTRACTOR delivers to the other party to the Agreement and to ENGINEER written notice of intention to appeal from such a decision.

**Decisions on Disputes:**

9.11. ENGINEER will be the initial interpreter of the requirements of the Contract Documents and judge of the acceptability of the Work thereunder. Claims, disputes and other matters relating to the acceptability of the Work or the interpretation of the requirements of the Contract Documents pertaining to the performance and furnishing of the Work and claims under Articles 11 and 12 in respect of changes in the Contract Price or Contract Time will be referred initially to ENGINEER in writing with a request for a formal decision in accordance with this paragraph, which ENGINEER will render in writing within a reasonable time. Written notice of each such claim, dispute and other matter will be delivered to CONTRACTOR and the other party to the Agreement promptly (but in no event later than thirty days) after the occurrence of the event giving rise thereto, and written supporting data will be submitted to ENGINEER and the other party within sixty days after such occurrence unless ENGINEER allows an additional period of time to ascertain more accurate data in support of the claim.

9.12. When functioning as interpreter and judge under paragraphs 9.10 and 9.11, ENGINEER will not show partiality to OWNER or CONTRACTOR and will not be liable in connection with any interpretation or decision rendered in good faith in such capacity. The rendering of a decision by ENGINEER pursuant to paragraphs 9.10 and 9.11 with respect to any such claim, dispute or other matter (except any which have been waived by the making or acceptance of final payment as provided in paragraph 14.16) will be a condition precedent to any exercise by OWNER or CONTRACTOR of such rights or remedies as either may otherwise have under the Contract Documents or by Laws or Regulations in respect of any such claim, dispute or other matter.

**Limitations on ENGINEER’s Responsibilities:**

9.13. Neither ENGINEER's authority to act under this Article 9 or elsewhere in the Contract Documents nor any decision made by ENGINEER in good faith either to exercise or not exercise such authority shall give rise to any duty or responsibility of ENGINEER to CONTRACTOR, any Subcontractor, any Supplier, or any other person or organization performing any of the Work, or to any surety for any of them.

9.14. Wherever in the Contract Documents the terms “as ordered”, “as directed”, “as required”, “as allowed”, “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 ENGINEER 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 ENGINEER any duty or authority to supervise or direct the furnishing or performance of the Work or any duty or authority to undertake responsibility contrary to the provisions of paragraph 9.15 or 9.16.

9.15. ENGINEER will not be responsible for CONTRACTOR's means, methods, techniques, sequences or procedures of construction, or the safety precautions and programs incident thereto, and ENGINEER will not be responsible for CONTRACTOR's failure to perform or furnish the Work in accordance with the Contract Documents.

9.16. ENGINEER will not be responsible for the acts or omissions of CONTRACTOR or of any Subcontractor, any Supplier, or of any other person or organization performing or furnishing any of the Work.

**ARTICLE 10 – CHANGES IN THE WORK**

10.1. Without invalidating the Agreement and without notice to any surety, 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 Amendment, a Change Order, or a Work Directive Change. Upon receipt of any such document, CONTRACTOR shall promptly proceed with the Work involved which will be performed under the applicable conditions of the Contract Documents (except as otherwise specifically provided).

10.2. If OWNER and CONTRACTOR are unable to agree as to the extent, if any, of an increase or decrease in the Contract Price or an extension or shortening of the Contract Time that should be allowed as a result of a Work Directive Change, a claim may be made therefor as provided in Article 11 or Article 12.

10.3. CONTRACTOR shall not be entitled to an increase in the Contract Price or an extension of the Contract Time with respect to any Work performed that is not required by the Contract Documents as amended, modified and supplemented as provided in paragraphs 3.4. and 3.5, except in the case of an emergency as provided in paragraph 6.22 and except in the case of uncovering Work as provided in paragraph 13.9.

10.4. OWNER and CONTRACTOR shall execute appropriate Change Orders (or Written Amendments) covering:

10.4.1. changes in the Work which are ordered by OWNER pursuant to paragraph 10.1, are required because of acceptance of defective Work under paragraph 13.13 or correcting defective Work under paragraph 13.14, or are agreed to by the parties;

10.4.2. changes in the Contract Price or Contract Time which are agreed to by the parties; and

10.4.3. changes in the Contract Price or Contract Time which embody the substance of any written decision rendered by ENGINEER pursuant to paragraph 9.11;

provided that, in lieu of executing any such Change Order, an appeal may be taken from any such decision in accordance with the provisions of the Contract Documents and applicable Laws.
and Regulations, but during any such appeal, CONTRACTOR shall carry on the Work and adhere to the progress schedule as provided in paragraph 6.29.

10.5. If notice of any change affecting the general scope of the Work or the provisions of the Contract Documents (including, but not limited to, Contract Price or Contract Time) is required by the provisions of any Bond to be given to a surety, the giving of any such notice will be CONTRACTOR's responsibility, and the amount of each applicable Bond will be adjusted accordingly.

ARTICLE 11 – CHANGE OF CONTRACT PRICE

11.1. The Contract Price constitutes the total compensation (subject to authorized adjustments) payable to CONTRACTOR for performing the Work. All duties, responsibilities and obligations assigned to or undertaken by CONTRACTOR shall be at his expense without change in the Contract Price.

11.2. The Contract Price may only be changed by a Change Order or by a Written Amendment. Any claim for an increase or decrease in the Contract Price shall be based on written notice delivered by the party making the claim to the other party and to ENGINEER promptly (but in no event later than thirty 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 within sixty days after such occurrence (unless ENGINEER allows an additional period of time to ascertain more accurate data in support of the claim) and shall be accompanied by claimant's written statement that the amount claimed covers all known amounts (direct, indirect and consequential) to which the claimant is entitled as a result of the occurrence of said event. All claims for adjustment in the Contract Price shall be determined by ENGINEER in accordance with paragraph 9.11 if OWNER and CONTRACTOR cannot otherwise agree on the amount involved. No claim for an adjustment in the Contract Price will be valid if not submitted in accordance with this paragraph 11.2.

11.3. 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:

11.3.1. 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 (subject to the provisions of paragraphs 11.9.1 through 11.9.3, inclusive).

11.3.2. By mutual acceptance of a lump sum (which may include an allowance for overhead and profit not necessarily in accordance with paragraph 11.6.2.1).

11.3.3. On the basis of the Cost of the Work (determined as provided in paragraphs 11.4 and 11.5) plus a CONTRACTOR's Fee for overhead and profit (determined as provided in paragraphs 11.6 and 11.7).

Cost of the Work:

11.4. The term Cost of the Work means the sum of all costs necessarily incurred and paid by CONTRACTOR in the proper performance of the Work. Except as otherwise may be agreed to in writing by OWNER, such costs shall be in amounts no higher than those prevailing in the locality of the Project, shall include only the following items and shall not include any of the costs itemized in paragraph 11.5:

11.4.1. Payroll costs for employees in the direct employ of CONTRACTOR in the performance of the Work under schedules of job classifications agreed upon by OWNER and CONTRACTOR. Payroll costs for employees not employed full time on the Work shall be apportioned on the basis of their time spent on the Work. Payroll costs shall include, but not be limited to, salaries and wages plus the cost of fringe benefits which shall include social security contributions, unemployment, excise and payroll taxes, workers' or workmen's compensation, health and retirement benefits, bonuses, sick leave, vacation and holiday pay applicable thereto. Such employees shall include superintendents and foremen at the site. The expenses of performing Work after regular working hours, on Saturday, Sunday or legal holidays, shall be included in the above to the extent authorized by OWNER.

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

11.4.3. Payments made by CONTRACTOR to the Subcontractors for Work performed by Subcontractors. If required by OWNER, CONTRACTOR shall obtain competitive bids from Subcontractors acceptable to CONTRACTOR and shall deliver such bids to OWNER who will then determine, with the advice of ENGINEER, which bids will be accepted. If a subcontract provides that the Subcontractor is to be paid on the basis of Cost of the Work Plus a Fee, the Subcontractor's Cost of the Work shall be determined in the same manner as CONTRACTOR's Cost of the Work. All subcontracts shall be subject to the other provisions of the Contract Documents insofar as applicable.

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

11.4.5. Supplemental costs including the following:

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

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

11.4.5.3. Rentals of all construction equipment and machinery and the parts thereof whether rented from CONTRACTOR or others in accordance
with rental agreements approved by OWNER with the advice of ENGINEER, and the costs of transportation, loading, unloading, installation, dismantling and removal thereof—all in accordance with terms of said rental agreements. The rental of any such equipment, machinery or parts shall cease when the use thereof is no longer necessary for the Work.

11.4.5.4. Sales, consumer, use or similar taxes related to the Work, and for which CONTRACTOR is liable, imposed by Laws and Regulations.

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

11.4.5.6. Losses and damages (and related expenses), not compensated by insurance or otherwise, to the Work or otherwise sustained by CONTRACTOR in connection with the performance and furnishing of the Work (except losses and damages within the deductible amounts of property insurance established by OWNER in accordance with paragraph 5.9), provided they have resulted from causes other than the negligence of CONTRACTOR, any Subcontractor, or anyone directly or indirectly employed by any of them or for whose acts any of them may be liable. Such losses shall include settlements made with the written consent and approval of OWNER. No such losses, damages and expenses shall be included in the Cost of the Work for the purpose of determining CONTRACTOR's Fee. If, however, any such loss or damage requires reconstruction and CONTRACTOR shall be paid for services a fee proportionate to that stated in paragraph 11.6.2.

11.4.5.7. The cost of utilities, fuel and sanitary facilities at the site.

11.4.5.8. Minor expenses such as telegrams, long distance telephone calls, telephone service at the site, expressage and similar petty cash items in connection with the Work.

11.4.5.9. Cost of premiums for additional Bonds and insurance required because of changes in the Work and premiums for property insurance coverage within the limits of the deductible amounts established by OWNER in accordance with paragraph 5.9.

11.5. The term Cost of the Work shall not include any of the following:

11.5.1. Payroll costs and other compensation of CONTRACTOR's officers, executives, principals (of partnership and sole proprietorships), general managers, engineers, architects, estimators, attorneys, auditors, accountants, purchasing and contracting agents, timekeepers, clerks and other personnel employed by CONTRACTOR whether at the site or in CONTRACTOR's principal or a branch office for general administration of the Work and not specifically included in the agreed upon schedule of job classifications referred to in paragraph 11.4.1 or specifically covered by paragraph 11.4.4-all of which are to be considered administrative costs covered by the CONTRACTOR's Fee.

11.5.2. Expenses of CONTRACTOR's principal and branch offices other than CONTRACTOR's office at the site.

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

11.5.4. Cost of premiums for all Bonds and for all insurance whether or not CONTRACTOR is required by the Contract Documents to purchase and maintain the same (except for the cost of premiums covered by sub-paragraph 11.4.5.9 above).

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

11.5.6. Other overhead or general expense costs of any kind and the costs of any item not specifically and expressly included in paragraph 11.4.

Contractor's Fee:

11.6. The CONTRACTOR’s Fee allowed to CONTRACTOR for overhead and profit shall be determined as follows:

11.6.1. a mutually acceptable fixed fee; or if none can be agreed upon.

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11.7. Whenever the cost of any Work is to be determined pursuant to paragraph 11.4 or 11.5, CONTRACTOR will submit in form acceptable to ENGINEER an itemized cost breakdown together with supporting data.

Cash Allowances:

11.8. It is understood that CONTRACTOR has included in the Contract Price all allowances so named in the Contract Documents and shall cause the Work so covered to be done by such Subcontractors or Suppliers and for such sums within the limit of the allowances as may be acceptable to ENGINEER, CONTRACTOR agrees that:

11.8.1. The allowances include the cost to CONTRACTOR (less any applicable trade discounts) of materials and equipment required by the allowances to be delivered at the site, and all applicable taxes; and
11.8.2. CONTRACTOR’s costs for unloading and handling on the site, labor, installation costs, overhead, profit and other expenses contemplated for the allowances have been included in the Contract Price and not in the allowances. No demand for additional payment on account of any thereof will be valid.

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

Unit Price Work:

11.9.1. Where the Contract Documents provide that all or part of the Work is to be Unit Price Work, initially the Contract Price will be deemed to include for all Unit Price Work an amount equal to the sum of the established unit prices for each separately identified item of Unit Price Work times the estimated quantity of each item as indicated in the Agreement. The estimated quantities of items of Unit Price Work are not guaranteed and are solely for the purpose of comparison of Bids and determining an initial Contract Price. Determinations of the actual quantities and classifications of Unit Price Work performed by CONTRACTOR will be made by ENGINEER in accordance with Paragraph 9.10.

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

11.9.3. Where the quantity of any item of Unit Price Work performed by CONTRACTOR differs materially and significantly from the estimated quantity of such item indicated in the Agreement and there is no corresponding adjustment with respect to any other item of Work and if CONTRACTOR believes that CONTRACTOR has incurred additional expense as a result thereof, CONTRACTOR may make a claim for an increase in the Contract Price in accordance with Article 11 if the parties are unable to agree as to the amount of any such increase.

ARTICLE 12 – CHANGE OF CONTRACT TIME

12.1. The Contract Time may only be changed by a Change Order or a Written Amendment. Any claim for an extension or shortening of the Contract Time shall be based on written notice delivered by the party making the claim to the other party and to ENGINEER promptly (but in no event later than thirty 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 sixty days after such occurrence (unless ENGINEER allows an additional period of time to ascertain more accurate data in support of the claim) and shall be accompanied by the claimant’s written statement that the adjustment claimed is the entire adjustment to which the claimant has reason to believe it is entitled as a result of the occurrence of said event. All claims for adjustment in the Contract Time shall be determined by ENGINEER in accordance with paragraph 9.11 if OWNER and 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 12.1.

12.2. The Contract Time will be extended in an amount equal to time lost due to delays beyond the control of CONTRACTOR if a claim is made therefor as provided in paragraph 12.1. Such delays shall include, but not be limited to, acts or neglect by OWNER or others performing additional work as contemplated by Article 7, or to fires, floods, labor disputes, epidemics, abnormal weather conditions or acts of God.

12.3. All time limits stated in the Contract Documents are of the essence of the Agreement. The provisions of this Article 12 shall not exclude recovery for damages (including but not limited to fees and charges of engineers, architects, attorneys and other professionals and court and arbitration costs) for delay by either party.

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

Warranty and Guarantee:

13.1. CONTRACTOR warrants and guarantees to OWNER and ENGINEER that all Work will be in accordance with the Contract Documents and will not be defective. Prompt notice of all defects shall be given to CONTRACTOR. All defective Work, whether or not in place, may be rejected, corrected or accepted as provided in this Article 13.

Access to Work:

13.2. ENGINEER and ENGINEER’s representatives, other representatives of OWNER, testing agencies and governmental agencies with jurisdictional interests will have access to the Work at reasonable times for their observation, inspecting and testing. CONTRACTOR shall provide proper and safe conditions for such access.

Tests and Inspections:
13.3. CONTRACTOR shall give ENGINEER timely notice of readiness of the Work for all required inspections, tests or approvals.

13.4. If Laws or Regulations of any public body having jurisdiction require any Work (or part thereof) to specifically be inspected, tested or approved, CONTRACTOR shall assume full responsibility therefor, pay all costs in connection therewith and furnish ENGINEER the required certificates of inspection, testing or approval. CONTRACTOR shall also be responsible for and shall pay all costs in connection with any inspection or testing required in connection with OWNER’s or ENGINEER’s acceptance of a Supplier of materials or equipment proposed to be incorporated in the Work, or of materials or equipment submitted for approval prior to CONTRACTOR’s purchase thereof for incorporation in the Work. The cost of all inspections, tests and approvals in addition to the above which are required by the Contract Documents shall be paid by OWNER (unless otherwise specified).

13.5. All inspections, tests or approvals other than those required by Laws or Regulations of any public body having jurisdiction shall be performed by organizations acceptable to OWNER and CONTRACTOR (or by ENGINEER if so specified).

13.6. If any Work (including the work of others) that is to be inspected, tested or approved is covered without written concurrence of ENGINEER, it must, if requested by ENGINEER, be uncovered for observation. Such uncovering shall be at CONTRACTOR’s expense unless CONTRACTOR has given ENGINEER timely notice of CONTRACTOR’s intention to cover the same and ENGINEER has not acted with reasonable promptness in response to such notice.

13.7. Neither observations by ENGINEER nor inspections, tests or approvals by other shall relieve CONTRACTOR from CONTRACTOR’s obligations to perform the Work in accordance with the Contract Documents.

Uncovering Work:

13.8. If any Work is covered contrary to the written request of ENGINEER, it must, if requested by ENGINEER, be uncovered for ENGINEER’s observation and replaced at CONTRACTOR’s expense.

13.9. If ENGINEER considers it necessary or advisable that covered Work be observed by ENGINEER or inspected or tested by others, CONTRACTOR, at ENGINEER’s request, shall uncover, expose or otherwise make available for observation, inspection or testing as ENGINEER may require, that portion of the Work in question, furnishing all necessary labor, material and equipment. If it is found that such Work is defective, CONTRACTOR shall bear all direct, indirect and consequential costs of such uncovering, exposure, observation, inspection and testing and of satisfactory reconstruction, (including but not limited to fees and charges of engineers, architects, attorneys and other professionals), and OWNER shall be entitled to an appropriate decrease in the Contract Price, and, if the parties are unable to agree as to the amount thereof, may make a claim therefor as provided in Article 11. If, however, such Work is not found to be defective, CONTRACTOR shall be allowed an increase in the Contract Price or an extension of the Contract Time, or both, directly attributable to such uncovering, exposure, observation, inspection, testing and reconstruction; and, if the parties are unable to agree as to the amount or extent thereof, CONTRACTOR may make a claim therefor as provided in Articles 11 and 12.

Owner May Stop the Work:

13.10. If the Work is defective, or CONTRACTOR fails to supply sufficient skilled workers or suitable materials or equipment, or fails to furnish or perform the Work in such a way that the completed Work will conform to the Contract Documents, OWNER may order CONTRACTOR to stop the Work, or any portion thereof, until the cause for such order has been eliminated; however, this right of OWNER to stop the Work shall not give rise to any duty on the part of OWNER to exercise this right for the benefit of CONTRACTOR or any other party.

Correction or Removal of Defective Work:

13.11. If required by ENGINEER, CONTRACTOR shall promptly, as directed, either correct all defective Work, whether or not fabricated, installed or completed, or, if the Work has been rejected by ENGINEER, remove it from the site and replace it with nondefective Work. CONTRACTOR shall bear all direct, indirect and consequential costs of such correction or removal (including but not limited to fees and charges of engineers, architects, attorneys and other professionals) made necessary thereby.

One Year Correction Period:

13.12. If within one year after the date of Substantial Completion or such longer period of time as may be prescribed by Laws or Regulations or by the terms of any applicable special guarantee required by the Contract Documents or by any specific provision of the Contract Documents, any Work is found to be defective, CONTRACTOR shall promptly, without cost to OWNER and in accordance with OWNER’s written instructions, either correct such defective Work, or, if it has been rejected by OWNER, remove it from the site and replace it with nondefective Work. If CONTRACTOR does not promptly comply with the terms of such instructions, or in an emergency where delay would cause serious risk of loss or damage, OWNER may have the defective Work corrected or the rejected Work removed and replaced, and all direct, indirect and consequential costs of such removal and replacement (including but not limited to fees and charges of engineer, architects, attorneys and other professionals) will be paid by CONTRACTOR. In special circumstances where a particular item of equipment is placed in continuous service before Substantial Completion of all the Work, the correction period for that item may start to run from an earlier date if so provided in the Specifications or by Written Amendments.

Acceptance of Defective Work:

13.13. If, instead of requiring correction or removal and replacement of defective Work, OWNER (and, prior to ENGINEER’s recommendation of final payment, also ENGINEER) prefers to accept it, OWNER may do so, CONTRACTOR shall bear all direct, indirect and consequential costs attributable to OWNER’s evaluation of and determination to accept such defective Work (such costs to be approved by ENGINEER as to reasonableness and to include but not be limited to fees and charges of engineers, architects, attorneys and other professionals). If any such acceptance occurs prior to ENGINEER’s recommendation of final payment, a Change Order will be issued incorporating the necessary revisions in the Contract Documents with respect to the Work; and OWNER shall be entitled to an appropriate decrease in the Contract Price, and, if the parties are unable to agree as to the amount thereof, OWNER may make a claim therefor as provided in Article 11. If
the acceptance occurs after such recommendation, an appropriate amount will be paid by CONTRACTOR to OWNER.

OWNER May Correct Defective Work:

13.14. If CONTRACTOR fails within a reasonable time after written notice of ENGINEER in accordance with paragraph 13.11, or if CONTRACTOR fails to perform the Work in accordance with the Contract Documents with respect to the Work or to remove and replace rejected Work as required by ENGINEER, and engine shall be required to exercise the rights and remedies under this paragraph OWNER shall proceed expeditiously. To the extent necessary to complete corrective and remedial action, OWNER may include CONTRACTOR and suspend all of or part of the Work and suspend CONTRACTOR's services related thereto, take possession of CONTRACTOR's tools, appliances, construction equipment and machinery at the site and incorporate in the Work all materials and equipment stored at the site for which OWNER has paid CONTRACTOR but which are stored elsewhere. CONTRACTOR shall allow OWNER, OWNER's representatives, agents and employees such access to the site as may be necessary to enable OWNER to exercise the rights and remedies under this paragraph. All direct, indirect and consequential costs of OWNER in exercising such rights and remedies will be charged against CONTRACTOR in an amount approved as to reasonableness by ENGINEER, and a Change Order will be issued incorporating the necessary revisions in the Contract Documents with respect to the Work, and OWNER shall be entitled to an appropriate decrease in the Contract Price, and, if the parties are unable to agree as to the amount thereof, OWNER may make a claim therefor as provided in Article 11. Such direct, indirect and consequential costs will include but not be limited to fees and charges of engineers, architects, attorneys and other professionals, all court and arbitration costs and all costs of repair and replacement of work of others destroyed or damaged by correction, removal or replacement of CONTRACTOR's defective Work, CONTRACTOR shall not be allowed an extension of the Contract Time because of any delay in performance of the Work attributable to the exercise by OWNER of OWNER's rights and remedies hereunder.

ARTICLE 14 – PAYMENTS TO CONTRACTOR AND COMPLETION

Schedule of Values:

14.1. The schedule of values established as provided in paragraph 2.9 will serve as the basis for progress payments and will be incorporated into a form of Application for Payment acceptable to ENGINEER. Progress payments on account of Unit Price Work will be based on the number of units completed.

Application for Progress Payment:

14.2. At least twenty days before each progress payment is scheduled (but not often than once a month), CONTRACTOR shall submit to ENGINEER for review an Application for Payment filled out and signed by CONTRACTOR covering the Work completed as of the date of the Application and accompanied by such supporting documentation as is required by the Contract Documents. If payment is requested on the basis of materials and equipment not incorporated in the Work but delivered and suitably stored at the site or at another location agreed to in writing, the Application for Payment shall also be accompanied by a bill of sale, invoice or other documentation warranting that OWNER has received the materials and equipment free and clear of all liens, charges, security interests and encumbrances (which are hereinafter in these General Conditions referred to as "Liens") and evidence that the materials and equipment are covered by appropriate property insurance and other arrangements to protect OWNER's interest therein, all of which will be satisfactory to OWNER. The amount of retainage with respect to progress payments will be as stipulated in the Agreement.

CONTRACTOR’s Warranty of Title:

14.3. CONTRACTOR warrants and guarantees that title to all Work, materials and equipment covered by any Application for Payment, whether incorporated in the Project or not, will pass to OWNER no later than the time of payment free and clear of all Liens.

Review of Applications for Progress Payment:

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ENGINEER's opinion to protect OWNER from loss because:

14.6. ENGINEER's recommendation of final payment will constitute an additional representation by ENGINEER to OWNER that the conditions precedent to CONTRACTOR's being entitled to final payment as set forth in paragraph 14.13 have been fulfilled.

14.7. ENGINEER may refuse to recommend the whole or any part of any payment if, in ENGINEER's opinion, it would be incorrect to make such representations to OWNER. ENGINEER may also refuse to recommend any such payment, or, because of subsequently discovered evidence or the results of subsequent inspections or tests, nullify any such payment previously recommended, to such extent as may be necessary in ENGINEER's opinion to protect OWNER from loss because:

14.7.1. the Work is defective, or completed Work has been damaged requiring correction or replacement,

14.7.2. the Contract Price has been reduced by Written Amendment or Change Order;

14.7.3. OWNER has been required to correct defective Work or complete Work in accordance with paragraph 13.14, or

14.7.4. of ENGINEER's actual knowledge of the occurrence of any of the events enumerated in paragraphs 15.2.1 through 15.2.9 inclusive.

OWNER may refuse to make payment of the full amount recommended by ENGINEER because claims have been made against OWNER on account of CONTRACTOR's performance or furnishing of the Work or Liens have been filed in connection with the Work or there are other items entitling OWNER to a set-off against the amount recommended, but OWNER must give CONTRACTOR immediate written notice (with a copy to ENGINEER) stating the reasons for such action.

Substantial Completion:

14.8. When CONTRACTOR considers the entire Work ready for its intended use CONTRACTOR shall notify OWNER and ENGINEER in writing that the entire Work is substantially complete (except for items specifically listed by CONTRACTOR as incomplete) and request that ENGINEER issue a certificate of Substantial Completion. Within a reasonable time thereafter, OWNER, CONTRACTOR and ENGINEER shall make an inspection of the Work to determine the status of completion. If ENGINEER does not consider the Work substantially complete, ENGINEER will notify CONTRACTOR in writing giving the reasons therefor. If ENGINEER considers the Work substantially complete, ENGINEER will prepare and deliver to OWNER a tentative certificate of Substantial Completion which shall fix the date of Substantial Completion. There shall be attached to the certificate a tentative list of items to be completed or corrected before final payment. OWNER shall have seven days after receipt of the tentative certificate during which to make written objection to ENGINEER as to any provisions of the certificate or attached list. If, after considering such objections, ENGINEER concludes that the Work is not substantially complete, ENGINEER will within fourteen days after submission of the tentative certificate to OWNER notify CONTRACTOR in writing, stating the reasons therefor. If, after consideration of OWNER's objections, ENGINEER considers the Work substantially complete, ENGINEER will within said fourteen days execute and deliver to OWNER and CONTRACTOR a definitive certificate of Substantial Completion (with a revised tentative list of items to be completed or corrected) reflecting such changes from the tentative certificate as ENGINEER believes justified after consideration of any objections from OWNER. At the time of delivery of the tentative certificate of Substantial Completion ENGINEER will deliver to OWNER and CONTRACTOR a written recommendation as to division of responsibilities pending final payment between OWNER and CONTRACTOR with respect to security, operation, safety, maintenance, heat, utilities, insurance and warranties. Unless OWNER and CONTRACTOR agree otherwise in writing and so inform ENGINEER prior to ENGINEER's issuing the definitive certificate of Substantial Completion, ENGINEER's aforesaid recommendation will be binding on OWNER and CONTRACTOR until final payment.

14.9. OWNER shall have the right to exclude CONTRACTOR from the Work after the date of Substantial Completion, but OWNER shall allow CONTRACTOR reasonable access to complete or correct items on the tentative list.

Partial Utilization:

14.10. Use by OWNER of any finished part of the Work, which has specifically been identified in the Contract Documents, or which OWNER, ENGINEER and CONTRACTOR agree constitutes a separately functioning and useable part of the Work that can be used by OWNER without significant interference with CONTRACTOR's performance of the remainder of the Work, may be accomplished prior to Substantial Completion of all the Work subject to the following:

14.10.1. OWNER at any time may request CONTRACTOR in writing to permit OWNER to use any such part of the Work which OWNER believes to be ready for its intended use and substantially complete. If CONTRACTOR agrees, CONTRACTOR will certify to OWNER and ENGINEER that said part of the Work is substantially complete and request ENGINEER to issue a certificate of Substantial Completion for that part of the Work. CONTRACTOR at any time may notify OWNER and ENGINEER in writing that CONTRACTOR considers any such part of the Work ready for its intended use and substantially complete and request ENGINEER to issue a certificate of Substantial Completion for that part of the Work. Within a reasonable time after either such request, OWNER, CONTRACTOR and ENGINEER shall make an inspection of that part of the Work to determine its status of completion. If ENGINEER does not consider that part of the Work to be substantially complete, ENGINEER will notify OWNER and CONTRACTOR in writing giving the reasons therefor. If ENGINEER considers that part of the Work to be substantially complete, the provisions of paragraphs 14.8 and 14.9 will apply with respect to certification of Substantial Completion of that part of the Work and the division of responsibility in respect thereof and access thereto.

14.10.2. OWNER may at any time request CONTRACTOR in writing to permit OWNER to take over operation of any such part of the Work although it is not substantially complete. A copy of such request will be sent to ENGINEER and within a reasonable time thereafter OWNER, CONTRACTOR and ENGINEER shall make an
ENGINEER is satisfied that the Work has been completed and documentation – all as required by the Contract Documents, review of the final Application for Payment and accompanying Work during construction and final inspection, and ENGINEER's (satisfactory to OWNER) of all Liens arising out of or filed in with complete and legally effective releases or waivers documentation called for in the Contract Documents, together if any, to final payment.

have been paid or otherwise satisfied; and consent of the surety, bills, and other indebtedness connected with the Work for which an affidavit of CONTRACTOR that the releases and receipts OWNER, CONTRACTOR may furnish receipts or releases in full; in connection with the Work. In lieu thereof and as approved by OWNER, CONTRACTOR may furnish receipts or releases in full; an affidavit of CONTRACTOR that the releases and receipts include all labor, services, material and equipment for which a Lien could be filed, and that all payrolls, material and equipment bills, and other indebtedness connected with the Work for which OWNER or OWNER's property might in any way be responsible, have been paid or otherwise satisfied; and consent of the surety, if any, to final payment.

Final Payment and Acceptance:

14.13. If, on the basis of ENGINEER's observation of the Work during construction and final inspection, and ENGINEER's review of the final Application for Payment and accompanying documentation – all as required by the Contract Documents, ENGINEER is satisfied that the Work has been completed and CONTRACTOR's other obligations under the Contract Documents have been fulfilled, ENGINEER will, within ten days after receipt of the final Application for Payment, indicate in writing ENGINEER's recommendation of payment and present the Application to OWNER for payment. Thereupon ENGINEER will give written notice to OWNER and CONTRACTOR that the Work is acceptable subject to the provisions of paragraph 14.16. Otherwise ENGINEER will return the Application to CONTRACTOR, indicating in writing the reasons for refusing to recommend final payment, in which case CONTRACTOR shall make the necessary corrections and resubmit the Application. Thirty days after presentation to OWNER of the Application and accompanying documentation, in appropriate form and substance, and with ENGINEER's recommendation and notice of acceptability, the amount recommended by ENGINEER will become due and will be paid by OWNER to CONTRACTOR.

14.14. If, through no fault of CONTRACTOR, final completion of the Work is significantly delayed and if ENGINEER so confirms, OWNER shall, upon receipt of CONTRACTOR's final Application for Payment and recommendation of ENGINEER, and without terminating the Agreement, make payment of the balance due for that portion of the Work fully completed and accepted. If the remaining balance to be held by OWNER for Work not fully completed or corrected is less than the retainage stipulated in the Agreement, and if Bonds have been furnished as required in paragraph 5.1, the written consent of the surety to the payment of the balance due for that portion of the Work fully completed and accepted shall be submitted by CONTRACTOR to ENGINEER with the Application for such payment. Such payment shall be made under the terms and conditions governing final payment, except that it shall not constitute a waiver of claims.

Contractor's Continuing Obligation:

14.15. 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 ENGINEER, nor the issuance of a certificate of Substantial Completion, nor any payment by OWNER to CONTRACTOR under the Contract Documents, nor any use or occupancy of the Work or any part thereof by OWNER, nor any act of acceptance by OWNER nor any failure to do so, nor any review and approval of a Shop Drawing or sample submission, nor the issuance of a notice of acceptability by ENGINEER pursuant to paragraph 14.13, nor any correction of defective Work by OWNER will constitute an acceptance of Work not in accordance with the Contract Documents (except as provided in paragraph 14.16).

Waiver of Claims:

14.16. The making and acceptance of final payment will constitute:

14.16.1. a waiver of all claims by OWNER against CONTRACTOR, except claims arising from unsettled Liens, from defective Work appearing after final inspection pursuant to paragraph 14.11 or from failure to comply with the Contract Documents or the terms of any special guarantees specified therein; however, it will not constitute a waiver by OWNER of any rights in respect of CONTRACTOR's continuing obligations under the Contract Documents; and
14.16.2. a waiver of all claims by CONTRACTOR against OWNER other than those previously made in writing and still unsettled.

ARTICLE 15 – SUSPENSION OF WORK AND TERMINATION

Owner May Suspend Work:

15.1. OWNER may, at any time and without cause, suspend the Work or any portion thereof for a period of not more than ninety days by notice in writing to CONTRACTOR and ENGINEER which will fix the date on which Work will be resumed. CONTRACTOR shall resume the Work on the date so fixed. CONTRACTOR shall be allowed an increase in the Contract Price or an extension of the Contract Time, or both, directly attributable to any suspension if CONTRACTOR makes an approved claim therefor as provided in Articles 11 and 12.

Owner May Terminate:

15.2. Upon the occurrence of any one or more of the following events:

15.2.1. if CONTRACTOR commences a voluntary case under any chapter of the Bankruptcy Code (Title 11, United States Code), as now or hereafter in effect, or if CONTRACTOR takes any equivalent or similar action by filing a petition or otherwise under any other federal or state law in effect at such time relating to the bankruptcy or insolvency;

15.2.2. if a petition is filed against CONTRACTOR under any chapter of the Bankruptcy Code as now or hereafter in effect at the time of filing, or if a petition is filed seeking any such equivalent or similar relief against CONTRACTOR under any other federal or state law in effect at the time relating to bankruptcy or insolvency;

15.2.3. if CONTRACTOR makes a general assignment for the benefit of creditors;

15.2.4. if a trustee, receiver, custodian or agent of CONTRACTOR is appointed under applicable law or under contract, whose appointment or authority to take charge of property of CONTRACTOR is for the purpose of enforcing a Lien against such property or for the purpose of general administration of such property for the benefit of CONTRACTOR’s creditors;

15.2.5. if CONTRACTOR admits in writing an inability to pay its debts generally as they become due;

15.2.6. if CONTRACTOR persistently fails to perform the Work in accordance with the Contract Documents (including, but not limited to, failure to supply sufficient skilled workers or suitable materials or equipment or failure to adhere to the progress schedule established under paragraph 2.9 as revised from time to time);

15.2.7. if CONTRACTOR disregards Laws or Regulations of any public body having jurisdiction;

15.2.8. if CONTRACTOR disregards the authority of ENGINEER; or

15.2.9. if CONTRACTOR otherwise violates in any substantial way any provisions of the Contract Documents;

OWNER may, after giving CONTRACTOR (and the surety, if there be one) seven days’ written notice and to the extent permitted by Laws and Regulations, terminate the services of CONTRACTOR, exclude CONTRACTOR from the site and take possession of the Work and of all CONTRACTOR’s tools, appliances, construction equipment and machinery at the site and use the same to the full extent they could be used by CONTRACTOR (without liability to CONTRACTOR for trespass or conversion), incorporate in the Work all materials and equipment stored at the site or for which OWNER has paid CONTRACTOR but which are stored elsewhere, and finish the Work as OWNER may deem expedient. In such case CONTRACTOR shall not be entitled to receive any further payment until the Work is finished. If the unpaid balance of the Contract Price exceeds the direct, indirect and consequential costs of completing the Work (including but not limited to fees and charges of engineers, architects, attorneys and other professionals and court and arbitration costs) such excess will be paid to CONTRACTOR. If such costs exceed such unpaid balance, CONTRACTOR shall pay the difference to OWNER. Such costs incurred by OWNER will be approved as to reasonableness by ENGINEER and incorporated in a Change Order, but when exercising any rights or remedies under this paragraph OWNER shall not be required to obtain the lowest price for the Work performed.

15.3. Where CONTRACTOR’s services have been so terminated by OWNER, the termination will not affect any rights or remedies of OWNER against CONTRACTOR then existing or which may thereafter accrue. Any retention or payment of moneys due CONTRACTOR by OWNER will not release CONTRACTOR from liability.

15.4. Upon seven days’ written notice to CONTRACTOR and ENGINEER, OWNER may, without cause and without prejudice to any other right or remedy, elect to abandon the Work and terminate the Agreement. In such case, CONTRACTOR shall be paid for all Work executed and any expense sustained plus reasonable termination expenses, which will include, but not be limited to, direct indirect and consequential costs (including, but not limited to, fees and charges of engineers, architects, attorneys and other professionals and court and arbitration costs).

Contractor May Stop Work or Terminate:

15.5. If, through no act or fault of CONTRACTOR, the Work is suspended for a period of more than ninety days by OWNER or under an order of court or other public authority, or ENGINEER fails to act on any Application for Payment within thirty days after it is submitted, or OWNER fails for thirty days to pay CONTRACTOR any sum finally determined to be due, then CONTRACTOR may, upon seven days’ written notice to OWNER and ENGINEER, terminate the Agreement and recover from OWNER payment for all Work executed and any expense sustained plus reasonable termination expenses. In addition and in lieu of terminating the Agreement, if ENGINEER has failed to act on an Application for Payment or OWNER has failed to make any payment as aforesaid, CONTRACTOR may upon seven days’ written notice to OWNER and ENGINEER stop the Work until payment of all amounts then due. The provisions of this paragraph shall not relieve CONTRACTOR of the obligations under paragraph 6.29 to carry on the Work in accordance with
the progress schedule and without delay during disputes and disagreements with OWNER.

ARTICLE 16 – ARBITRATION

16.1. All claims, disputes and other matters in question between OWNER and CONTRACTOR arising out of, or relating to the Contract Documents or the breach thereof (except for claims which have been waived by the making or acceptance of final payment as provided by paragraph 14.16) will be decided to the Contract Documents or the breach thereof (except for any court having jurisdiction.

This agreement so to arbitrate and any other agreement or consent to arbitrate entered into in accordance herewith as provided in this Article 16 will be specifically enforceable under the prevailing law of any court having jurisdiction.

16.2. No demand for arbitration of any claim, dispute or other matter that is required to be referred to ENGINEER initially for decision in accordance with paragraph 9.11 will be made until the earlier of (a) the date on which ENGINEER has rendered a decision or (b) the tenth day after the parties have presented their evidence to ENGINEER if a written decision has not been rendered by ENGINEER before that date. No demand for arbitration of any such claim, dispute or other matter will be made later than thirty days after the date on which ENGINEER has rendered a written decision in respect thereof in accordance with paragraph 9.11; and the failure to demand arbitration within said thirty days’ period shall result in ENGINEER’s decision being final and binding upon OWNER and CONTRACTOR. If ENGINEER renders a decision after arbitration proceeding have been initiated, such decision may be entered as evidence but will not supersede the arbitration proceedings, except where the decision is acceptable to the parties concerned. No demand for arbitration of any written decision of ENGINEER rendered in accordance with paragraph 9.10 will be made later than ten days after the party making such demand has delivered written notice of intention to appeal as provided in paragraph 9.10.

16.3. Notice of the demand for arbitration will be filed in writing with the other party to the Agreement and with the American Arbitration Association, and a copy will be sent to ENGINEER for information. The demand for arbitration will be made within the thirty-day or ten-day period specified in paragraph 16.2 as applicable, and in all other cases within a reasonable time after the claim, dispute or other matter in question has arisen, and in no event shall any such demand be made after the date when institution of legal or equitable proceedings based on such claim, dispute or other matter in question would be barred by the applicable statute of limitations.

16.4. No arbitration arising out of or relating to the Contract Documents shall include by consolidation, joinder or in any other manner any other person or entity (including ENGINEER, ENGINEER’s agents, employees or consultants) who is not a party to this contract unless:

16.4.1. the inclusion of such other person or entity is necessary if complete relief is to be afforded among those who are already parties to the arbitration,

16.4.2. such other person or entity is substantially involved in a question of law or fact which is common to those who are already parties to the arbitration and which will arise in such proceedings, and

16.5. The award rendered by the arbitrators will be final, judgment may be entered upon it in any court having jurisdiction thereof, and will not be subject to modification or appeal except to the extent permitted by Sections 10 and 11 of the Federal Arbitration Act (9 U.S.C. §§ 10,11).

ARTICLE 17 – MISCELLANEOUS

Giving Notice:

17.1. 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.

Computation of Time:

17.2.1. When any period of time is referred to in the Contract Documents by days, it will be computed to exclude the first and include the last day of such period. If the last day of any such period falls on a Saturday or Sunday or on a legal holiday, such day will be omitted from the computation.

17.2.2. A calendar day of twenty-four hours measured from midnight to the next midnight shall constitute a day.

General:

17.3. Should OWNER or CONTRACTOR suffer injury or damage to person or property because of any error, omission or act of the other party or of any of the other party’s employees or agents or others for whose acts the other party is legally liable, claim will be made in writing to the other party within a reasonable time of the first observance of such injury or damage. The provisions of this paragraph 17.3 shall not be construed as a substitute for or a waiver of the provisions of any applicable statute of limitations or repose.

17.4. The duties and obligations imposed by these General Conditions and the rights and remedies available hereunder to the parties hereto, and, in particular but without limitation, the warranties, guarantees and obligations imposed upon CONTRACTOR by paragraphs 6.30, 13.1, 13.12, 13.14, 14.3 and 15.2 and all of the rights and remedies available to OWNER and...
ENGINEER thereunder, are in addition to, and are not to be construed in any way as a limitation of, any rights and remedies available to any or all of them which are otherwise imposed or available by Laws or Regulations, by special warranty or guarantee or by other provisions of the Contract Documents, and the provisions of this paragraph will be as effective as if repeated specifically in the Contract Documents in connection with each particular duty, obligation, right and remedy to which they apply. All representatives, warranties and guarantees made in the Contract Documents will survive final payment and termination or completion of the Agreement.
1. Enumeration of Plans, Specifications and Addenda
2. Stated Allowances
3. Contractor Payments
4. Payments to Covered Workers
5. Certification of Eligibility
6. Employment Practices
7. Special Hazards
8. Public Liability and Property Damage Insurance
9. Photographs of Project
10. Schedule of Minimum Hourly Wage Rates
11. Builder's Risk Insurance
13. Special Conditions Pertaining to Hazards, Safety Standards and Accident Prevention
14. Flood Disaster Protection
15. Access to Records/Maintenance of Records
16. Conflict of Interest
1. **ENUMERATION OF PLANS, SPECIFICATIONS AND ADDENDA**

Following are the Plans, Specifications and Addenda which for a part of this contract, as set forth in Paragraph 1 of the General Conditions, "Contract and Contract Documents":

**DRAWINGS**

<table>
<thead>
<tr>
<th>General Construction</th>
<th>Nos. 1 – 8</th>
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**SPECIFICATIONS:**

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**ADDENDA:**

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2. **STATE ALLOWANCES**

Pursuant to Article 11.8 of the General Conditions, the Contractor shall include the following cash allowances in his proposal:

(a) For _______________ (Page ____ of Specifications) $ ______________

(b) For _______________ (Page ____ of Specifications) $ ______________

(c) For _______________ (Page ____ of Specifications) $ ______________

(d) For _______________ (Page ____ of Specifications) $ ______________

(e) For _______________ (Page ____ of Specifications) $ ______________

(f) For _______________ (Page ____ of Specifications) $ ______________
3. CONTRACTOR PAYMENTS

A. PAYMENTS TO CONTRACTOR

(1) To insure the proper performance of this contract, the Owner shall retain five percent (5%) of the amount of each estimate until final completion and acceptance of all work covered by this contract: Provided further that on completion and acceptance of each separate building, public work, or other division of the contract, on which the price is stated separately in the contract, payment may be made in full, including retained percentages thereon, less authorized deductions.

(2) In preparing estimates the material delivered on the site and preparatory work done may be taken into consideration.

(3) All material and work covered by partial payments made shall thereupon become the sole property of the Owner, but this provision shall not be construed as relieving the Contractor from the sole responsibility for the care and protection of materials and work upon which payments have been made or the restoration of any damaged work, or as a waiver of the right of the Owner to require the fulfillment of all of the terms of the contract.

(4) Owner’s Right to Withhold Certain Amounts and Make Application Thereof: The Contractor agrees that he will indemnify and save the Owner harmless from all claims growing out of the lawful demands of subcontractors, laborers, workers, mechanics, materialmen, and furnishers of machinery and parts thereof, equipment, power tools, and all supplies, including commissary, incurred in the furtherance of the performance of this contract. The Contractor shall, at the Owner’s request, furnish satisfactory evidence that all obligations of the nature hereinabove designated have been paid, discharged, or waived. If the Contractor fails so to do, then the Owner may, after having served written notice on the said Contractor, either pay unpaid bills, of which the Owner has written notice, direct, or withhold from the Contractor’s unpaid compensation a sum of money deemed reasonably sufficient to pay any and all such lawful claims until satisfactory evidence is furnished that all liabilities have been fully discharged whereupon payment to the Contractor shall be resumed, in accordance with the terms of this contract, but in no event shall the provisions of this sentence be construed to impose any obligations upon the Owner to either the Contractor or his Surety. In paying any unpaid bills of the Contractor, the Owner shall be deemed the agent of the Contractor, and any payment so made by the Owner shall be considered as a payment made under the contract by the Owner to the Contractor and the Owner shall not be liable to the Contractor for any such payments made in good faith.

B. PAYMENTS BY CONTRACTOR

The Contractor shall pay (a) for all transportation and utility services not later than the 20th day of the calendar month following that in which services are
rendered, (b) for all materials, tools, and other expendable equipment to the extent of ninety percent (90%) of the cost thereof, not later than the 20th day of the calendar month following that in which such materials, tools, and equipment are delivered at the site of the project, and the balance of the cost thereof, not later than the 30th day following the completion of that part of the work in or on which such materials, tools, and equipment are incorporated or used, and (c) to each of his subcontractors, not later than the 5th day following each payment to the Contractor, the respective amounts allowed the Contractor on account of the work performed by his subcontractors to the extent of each subcontractor’s interest therein.

C. **TIME FOR COMPLETION AND LIQUIDATED DAMAGES**

It is hereby understood and mutually agreed, by and between the Contractor and the Owner, that the date of beginning and the time for completion as specified in the contract of the work to be done hereunder are ESSENTIAL CONDITIONS of this contract; and it is further mutually understood and agreed that the work embraced in this contract shall be commenced on a date to be specified in the “Notice to Proceed.”

The Contractor agrees that said work shall be prosecuted regularly, diligently, and uninterruptedly at such rate of progress as will insure full completion thereof within the time specified. It is expressly understood and agreed, by and between the Contractor and the Owner, that the time for the completion of the work described herein is a reasonable time for the completion of the same, taking into consideration the average climatic range and usual industrial conditions prevailing in this locality.

If the said Contractor shall neglect, fail or refuse to complete the work within the time herein specified, or any proper extension thereof granted by the Owner, then the Contractor does hereby agree, as a part consideration for the awarding of this contract, to pay to the Owner the amount specified in the contract, not as a penalty but as liquidated damages for such breach of contract as hereinafter set forth, for each and every calendar day that the Contractor shall be in default after the time stipulated in the contract for completing the work.

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 in such event sustain, and said amount is agreed to be the amount of damages which the Owner would sustain and said amount shall be retained from time to time by the Owner from current periodical estimates.

It is further agreed that time is of the essence of each and every portion of this contract and of the specifications wherein a definite and certain length of time is fixed for the performance of any act whatsoever; and where under the contract an additional time is allowed for the completion of any work, the new time limit fixed by such extension shall be of the essence of this contract. Provided that the Contractor shall not be charged with liquidated damages or any excess cost when the Owner determines that the Contractor is without fault and the Contractor’s reasons for the time extension are acceptable to the Owner;
Provided further that the Contractor shall not be charged with liquidated damages or any excess cost when the delay in completion of the work is due:

(1) To any preference, priority or allocation order duly issued by the Government.

(2) To unforeseeable cause beyond the control and without the fault or negligence of the Contractor, including, but not restricted to, acts of God, or of the public enemy, acts of the Owner, acts of another Contractor in the performance of a contract with the Owner, fires, floods, epidemics, quarantine restrictions, strikes, freight embargoes, and severe weather; and

(3) To any delays of Subcontractors or suppliers occasioned by any of the causes specified in subsections (1) and (2) of this article:

Provided further that the Contractor shall, within ten (10) days from the beginning of such delay, unless the Owner shall grant a further period of time prior to the date of final settlement of the contract, notify the Owner, in writing, of the delay and notify the Contractor within a reasonable time of its decision in the matter.

D. PROTECTION OF LIVES AND HEALTH

The Contractor shall exercise proper precaution at all times for the protection of persons and property and shall be responsible for all damages to persons or property, either on or off the site, which occur as a result of his prosecution of the work.

E. SUBCONTRACTS

The Contractor will insert in any subcontracts the wage provisions contained herein and such other clauses as the State of Tennessee Department of Economic and Community Development may by instructions require, and also, a clause requiring the subcontractors to include these clauses in any lower tier subcontracts which they may enter into, together with a clause requiring this insertion in any further subcontracts that may in turn be made.

F. INTEREST OF MEMBER OF OR DELEGATE TO CONGRESS

No member of or Delegate to Congress, or Resident Commissioner, shall be admitted to any share or part of this contract or to any benefit that may arise therefrom, but this provision shall not be construed to extent to this contract if made with a corporation for its general benefit.
G. OTHER PROHIBITED INTEREST

No official of the Owner who is authorized in such capacity and on behalf of the Owner to negotiate, make, accept or approve, or to take part in negotiating, making, accepting, or approving any architectural, engineering, inspection, construction or material supply contract or any subcontract in connection with the construction of the project, shall become directly or indirectly interested personally in this contract or in any part hereof. No officer, employee, architect, attorney, engineer or inspector of or for the Owner who is authorized in such capacity and on behalf of the Owner to exercise any legislative, executive, supervisory or other similar functions in connection with the construction of the project, shall become directly or indirectly interested personally in this contract or in any part thereof, any material supply contract, subcontract, insurance contract, or any other contract pertaining to the project.

H. USE AND OCCUPANCY PRIOR TO ACCEPTANCE BY OWNER

The Contractor agrees to the use and occupancy of a portion or unit of the project before formal acceptance by the Owner, provided the Owner:

1. Secures written consent of the Contractor except in the event, in the opinion of the Architect/Engineer, the Contractor is chargeable with unwarranted delay in final clean-up of punch list items or other contract requirements.

2. Secures endorsement from the insurance carrier and consent of the surety permitting occupancy of the building or use of the project during the remaining period of construction, or,

3. When the project consists of more than one building, and one of the buildings is occupied, secures permanent fire and extended coverage insurance, including a permit to complete construction. Consent of the surety must also be obtained.

I. PHOTOGRAPHS OF THE PROJECT

If required by the Owner, the Contractor shall furnish photographs of the project, in the quantities and as described in the Supplemental General Conditions.

J. SUSPENSION OF WORK

Should the Owner be prevented or enjoined from proceeding with work either before or after the start of construction by reason of any litigation or other reason beyond the control of the Owner, the Contractor shall not be entitled to make or assert claim for damage by reason of said delay; but time for completion of the work will be extended to such reasonable time as the Owner may determine will compensate for time lost by such delay with such determination to be set forth in writing.
4. PAYMENTS TO COVERED WORKERS

A. Definitions

(1) “Apprentices” means those persons registered individually under a bona fide apprenticeship program registered with the Bureau of Apprenticeship and Training in the United States Department of Labor. The contractor or subcontractor using the apprentice must submit evidence of his/her indenture and/or apprenticeship registration when the apprentice’s name first appears on a submitted payroll.

(2) “Commission” means the prevailing wage commission or its administrative delegation, the Tennessee Department of Labor.

(3) “Covered Worker” means all workers employed on State construction projects as defined by T.C.A. §12-4-402(c).

(4) “Subcontractor” means one who performs part of the job called for in the prime contract. This term shall include materialmen whose employees engage in substantial operations at the project site, provided the employee of the materialman devotes as much as 20 percent of his work time on the construction premises.

B. Prevailing Wage Rate Determination

For those projects involving road construction, all covered workers shall receive the wages specified for their respective classifications in the prevailing wage determination and in accordance with the policies, conditions and rules of the State of Tennessee Department of Labor pursuant to the Prevailing Wage Act of 1975, as amended.

The current wage rate determination is bound herein or will be issued by addendum.

C. Classification of Covered Workers

For those projects involving road construction, all contractors and subcontractors must classify covered workers in the contract and payroll records, in conformity with the schedule of classifications appearing in the Department of Labor form “Wage Rate Determination.”

D. Posting of Wage Rates

For those projects involving road construction, each contractor or subcontractor shall post and keep posted in a conspicuous place at the site of the construction work a copy of the prevailing wage rates prescribed in this contract and make these rates available to all covered workers employed on this project at all reasonable times.

E. Overtime Compensation

All contractors and subcontractors must pay overtime compensation as required
by any applicable Federal or State laws, rules or regulations.

F. DEDUCTIONS

The contractors and all subcontractors shall make only those deductions from wages authorized by law.

G. SUBMITTAL OF PAYROLLS

The contractors and all subcontractors shall submit weekly a copy of all payrolls to the contracting agency and shall state that the payrolls are correct and complete, and that the wage rates paid to covered workers during the reporting period equal or exceed those determined by the Commission, and that the classifications set forth for each covered worker conform with the work s/he performs.

H. INSPECTION OF RECORDS

The contractor will make his/her employment records available for inspection by representatives of the contracting agency, the Commission, and the Tennessee Department of Labor, and will permit such representatives to visit construction projects at all reasonable times. Payroll records shall not be destroyed for one (1) year following the completion of the project.

I. UNDERPAYMENTS OF WAGES

Underpayment for covered workers shall be handled in accordance with policies and conditions of the Tennessee Department of Labor.

J. BOND FOR COMPLIANCE

The bond of the contractor or subcontractor shall contain a provision obligating such contractor or subcontractor to a faithful performance of each and every requirement imposed upon such contractor or subcontractor under the terms of this contract.

K. SUBCONTRACTS

The contractor shall insert in any subcontracts the clauses set forth in Section 4 and also a clause requiring the subcontractors to include these clauses in any lower tier subcontracts which they may enter into, together with a clause requiring this insertion in any further subcontracts that may in turn be made.

5. CERTIFICATION OF ELIGIBILITY

By entering into this contract, the contractor certifies that neither if (nor he or she) nor any person or firm who has an interest in the contractor’s firm is a person or firm ineligible to be awarded Government contracts.
6. **EMPLOYMENT PRACTICES**

The Contractor (1) shall, to the greatest extent practicable, following hiring and employment practices for work on the project which will provide new job opportunities for the unemployment and underemployed, and (2) shall insert or cause to be inserted the same provisions in each construction subcontract.

7. **SPECIAL HAZARDS**

The Contractor’s and his Subcontractors Public Liability and Property Damage Insurance shall provide adequate protection against the following special hazards:

8. **CONTRACTOR’S AND SUBCONTRACTOR’S PUBLIC LIABILITY, VEHICLE LIABILITY, AND PROPERTY DAMAGE INSURANCE**

SEE SPECIAL CONDITIONS SECTION 29.00 FOR FURTHER REQUIREMENTS ON INSURANCE

9. **PHOTOGRAPHS OF PROJECT**

As provided in Paragraph 3.1 of the Supplemental General Conditions, the Contractor will furnish photographs in the number, type, and stage as enumerated below:


Given on Pages _____, _____ and _____.

11. **BUILDER’S RISK INSURANCE**

As provided in the General Conditions, Article 5.6, the Contractor will/will not* maintain Builder’s Risk Insurance (fire and extended coverage) on a 100 percent completed value basis on the insurable portions of the project for the benefit of the Owner, the Contractor, and all Subcontractors, as their interests may appear.

12. **SPECIAL EQUAL OPPORTUNITY PROVISIONS**

A. The Contractor shall take specific affirmative actions to ensure equal employment opportunity. The evaluation of the Contractor’s compliance with these specifications shall be based upon its effort to achieve maximum results from its actions. The Contractor shall document these efforts fully, and shall implement affirmative action steps at least as extensive as the following:

   (1) Ensure and maintain a working environment free of harassment, intimidation, and coercion at all sites, and in all facilities at which the

   * Strike out one.
Contractor's employees are assigned to work. The Contractor, where possible, will assign two or more women to each construction project. The Contractor shall specifically ensure that all foremen, superintendents, and other on-site supervisory personnel are aware of and carry out the Contractor's obligation to maintain such a working environment, with specific attention to minority or female individuals working at such sites or in such facilities.

(2) Establish and maintain a current list of minority and female recruitment sources, provide written notification to minority and female recruitment sources and to community organizations when the Contractor or its unions have employment opportunities available, and maintain a record of the organizations' responses.

(3) Maintain a current file of the names, addresses, and telephone numbers of each minority and female off-the-street applicant and minority or female referral from a union, a recruitment source, or community organization and of what action was taken with respect to each such individual. If such individual was sent to the union hiring hall for referral and was not referred back to the Contractor by the union or, if referred, not employed by the Contractor, this shall be documented in the file with the reason therefor, along with whatever additional actions the Contractor may have taken.

(4) Develop on-the-job training opportunities and/or participate in training programs for the area which expressly include minorities and women, including upgrading programs and apprenticeship and trainee programs relevant to the Contractor's employment needs, especially those programs funded or approved by the Department of Labor. The Contractor shall provide notice of these programs to the sources compiled under b above.

(5) Disseminate the Contractor's EEO policy by providing notice of the policy to unions and training programs and requesting their cooperation in assisting the Contractor in meeting its EEO obligations; by including it in any policy manual and collective bargaining agreement; by publicizing it in the company newspaper, annual report, etc; by specific review of the policy with all management personnel and with all minority and female employees at least once a year; and by posting the company EEO policy on bulletin boards accessible to all employees at each location where construction work is performed.

(6) Review, at least annually, the company's EEO policy and affirmative action obligations under these specifications with all employees having any responsibility for hiring, assignment, layoff, termination, or other employment decisions including specific review of these items with on-site supervisory personnel such as Superintendents, General Foremen, etc., prior to the initiation of construction work at any job site. A written record shall be made and maintained identifying the time and place of these meetings, persons attending, subject matter discussed, and disposition of the subject matter.
(7) Disseminate the Contractor’s EEO policy externally by including it in any advertising in the news media, specifically including minority and female news media, and providing written notification to and discussing the Contractor’s EEO policy with other Contractors and Subcontractors with whom the Contractor does or anticipates doing business.

(8) Direct its recruitment efforts, both oral and written, to minority, female and community organizations, to schools with minority and female students and to minority and female recruitment and training organizations serving the Contractor's recruitment area and employment needs. Not later than one month prior to the date of the acceptance of applications for apprenticeship or other training by any recruitment source, the Contractor shall send written notification to organizations such as the above, describing the openings, screening procedures, and tests to be used in the selection process.

(9) Encourage present minority and female employees to recruit other minority persons and women and, where reasonable, provide after school, summer, and vacation employment to minority and female youth both on the site and in other areas of a Contractor’s work force.

B. Contractors are encouraged to participate in voluntary associations which assist in fulfilling one or more of their affirmative action obligations a through p. The efforts of a contractor association, joint contractor-union, contractor-community, or other similar group of which the Contractor is a member and participant, may be asserted as fulfilling any one or more of its obligations under a through p of these Specifications provided that the Contractor actively participates in the group, makes every effort to assure that the group has a positive impact on the employment of minorities and women in the industry, ensures that the concrete benefits of the program are reflected in the Contractor’s minority and female workforce participation, makes a good faith effort to meet its individual goals and timetables, and can provide access to documentation which demonstrates the effectiveness of actions taken on behalf of the Contractor. The obligation shall not be a defense for the Contractor’s non-compliance.

C. The Contractor shall designate a responsible official to monitor all employment related activity to ensure that the company EEO policy is being carried out, to submit reports relating to the provisions hereof as may be required by the Government and to keep records. Records shall at least include for each employee, the name, address, telephone numbers, construction trade, union affiliation if any, employee identification number where assigned, social security number, race, sex, status (e.g., mechanic, apprentice trainee, helper, or laborer), dates of changes in status, hours worked per week in the indicated trade, rate of pay, and location at which the work was performed. Records shall be maintained in an easily understandable and retrievable form; however, to the degree that existing records satisfy this requirement, contractor shall not be required to maintain separate records.
D. **CERTIFICATION OF NON-SEGREGATED FACILITIES (OVER $10,000)**

By the submission of this bid, the bidder, offeror, applicant or subcontractor certifies that s/he does not maintain or provide for his/her employees any segregated facility at any of his/her establishments, and that s/he does not permit employees to perform their services at any location, under his/her control, where segregated facilities are maintained. S/He certifies further that s/he will not maintain or provide for employees any segregated facilities at any of his/her establishments, and s/he will not permit employees to perform their services at any location under his/her control where segregated facilities are maintained. The bidder, offeror, applicant or subcontractor agrees that a breach of this certification is a violation of the Equal Opportunity Clause of this contract.

As used in this certification, the term “segregated facilities” means any waiting rooms, work areas, rest rooms and wash rooms, restaurants and other eating areas, time clocks, locker rooms, and other storage or dressing areas, transportation and housing facilities provided for employees which are segregated on the basis of race, color, religion, or are in fact segregated on the basis of race, color, religion, or otherwise. S/He further agrees that (except where s/he has obtained identical certifications from proposed subcontractors for specific time periods) s/he will obtain identical certification from proposed subcontractors prior to the award of subcontracts exceeding $10,000 which are not exempt from the provisions of the Equal Opportunity Clause; that s/he will retain such certifications in his/her files; and that s/he will forward the following notice to such proposed subcontractors (except where proposed subcontractors have submitted identical certifications for specific time periods).

E. **CIVIL RIGHTS ACT OF 1964**

Under Title VI of the Civil Rights Act of 1964, no person shall, on the grounds of race, color, or national origin, be excluded from participation in, be denied the benefits of, or be subjected to discrimination under any program or activity receiving Federal financial assistance.

F. **AGE DISCRIMINATION ACT OF 1975**

No person in the United States shall, on the basis of age, be excluded from participation in, be denied the benefits of, or be subjected to discrimination under, any program or activity receiving Federal financial assistance.

G. **SECTION 504 HANDICAPPED**

Non-Discrimination for Handicapped Workers

(a) No otherwise qualified handicapped individual in the U.S., as defined in Section 7, Paragraph 6 of the Rehabilitation Act of 1973 shall, solely by reason of this handicap, be excluded from the participation in, be denied the benefits of, or be subjected to discrimination under any program or activity receiving Federal financial assistance.

* parking lots, drinking fountains, recreation or entertainment areas.
13. **SPECIAL CONDITIONS PERTAINING to HAZARDS SAFETY STANDARDS and ACCIDENT PREVENTION**

A. **USE OF EXPLOSIVES (MODIFY AS REQUIRED)**

When the use of explosives is necessary for the prosecution of the work, the Contractor shall observe all local, state and Federal laws in purchasing and handling explosives. The Contractor shall take all necessary precautions to protect completed work, neighboring property, water lines, or other underground structures. Where there is danger to structures or property from blasting, the charges shall be reduced and the material shall be covered with suitable timber, steel or rope mats.

The Contractor shall notify all owners of public utility property of intention to use explosives at least eight hours before blasting is done, close to such property. Any supervision or direction of use of explosives by the engineer, does not in any way reduce the responsibility of the Contractor or his Surety for damages that may be caused by such use.

B. **DANGER SIGNALS AND SAFETY DEVICES (MODIFY AS REQUIRED)**

The Contractor shall make all necessary precautions to guard against damages to property and injury to persons. He shall put up and maintain in good condition, sufficient red or warning lights at night, suitable barricades and other devices necessary to protect the public. In case the Contractor fails or neglects to take such precautions, the Owner may have such lights and barricades installed and charge the cost of this work to the Contractor. Such action by the Owner does not relieve the Contractor of any liability incurred under these specifications or contract.

14. **FLOOD DISASTER PROTECTION**

This Contract is subject to the requirements of the Flood Disaster Protection Act of 1973 (P.L. 93-234). Nothing included as a part of this Contract is approved for acquisition or construction purposes as defined under Section 3(a) of said Act, for use in an area identified by the Secretary of HUD as having special flood hazards which is located in a community not then in compliance with the requirements for participation in the national flood insurance program pursuant to Section 201(d) of said Act; and the use of any assistance provided under this Contract for such acquisition or construction in such identified areas in communities then participating in the national flood insurance program shall be subject to the mandatory purchase of flood insurance requirements of Section 102(a) of said Act.

Any contract or agreement for the sale, lease, or other transfer of land acquired, cleared or improved with assistance provided under this Contract shall contain, if such land is located in an area identified by the Secretary as having special flood hazards and in which the sale of flood insurance has been made available under the National Flood Insurance Act of 1968, as amended, 42 U.S.C. 4001 et seq., provisions obligating the transferee and its successors or assigns to obtain and maintain, during the ownership of such land, such flood insurance as required
with respect to financial assistance for acquisition or construction purposes under section 102(a) of the Flood Disaster Protection Act of 1973.

15. ACCESS TO RECORDS/MAINTENANCE OF RECORDS

The Contractor shall maintain accounts and records, including personnel, property, and financial records, adequate to identify and account for all costs pertaining to the contract and such other records as may be deemed necessary by the locality to assure proper accounting for all funds. These records will be available for audit purposes to the locality or the State or any other authorized representative, and will be retained for three years after contract completion unless permission to destroy them is granted by the locality. Moreover, the locality, State, or any authorized representative shall have access to any books, documents, papers, and records of the Contractor which are directly pertinent to this contract for the purpose of making audit, examination, excerpts, and transcriptions.

16. CONFLICT OF INTEREST OF OFFICERS OR EMPLOYEES OF THE LOCAL JURISDICTION, MEMBERS OF THE LOCAL GOVERNING BODY, OR OTHER PUBLIC OFFICIALS

No officer or employee of the local jurisdiction or its designees or agents, no member of the governing body, and no other public official of the locality who exercises any function or responsibility with respect to this contract, during his/her tenure or for one year thereafter, shall have any interest, direct or indirect, in any contract or subcontract, or the proceeds thereof, for work to be performed. Further, the contractor shall cause to be incorporated in all subcontracts the language set forth in this paragraph prohibiting conflict of interest.
PERFORMANCE BOND

KNOW ALL MEN BY THESE PRESENTS, that

______________________________________________________________________
(Name of Contractor)

______________________________________________________________________
(Address of Contractor)

a ____________________________________________, hereinafter called Contractor,
(Corporation, Partnership, Individual or Joint Venture)

and __________________________________________________________________
(Name of Surety)

______________________________________________________________________
(Address of Surety)

hereinafter called Surety, are held and firmly bound unto

______________________________________________________________________
(Name of Owner)

______________________________________________________________________
(Address of Owner)

hereinafter called OWNER, in their penal sum of ________________ Dollars, $(_______________) in lawful money of the United States, for the payment of which sum well and truly to be made, we bind ourselves, successors, and assigns, jointly and severally, firmed by these presents, this sum being in the amount of one hundred percent (100%) of the contract amount.

THE CONDITION OF THIS OBLIGATION is such that whereas, the contractor has entered into a certain contract with the OWNER, dated the ______ day of __________, 20____, a copy of which is hereto attached and made a part hereof for the construction of:

Upgrade Watewater Pumping Station, North Fork Subdivision
2022 Imminent Threat Grant
Moscow, Tennessee
NOW, THEREFORE, if the Contractor shall well, truly and faithfully perform its duties, all the undertakings, covenants, terms conditions, and agreements of said contract during the original term thereof, and any extensions thereof which may be granted by the OWNER, with or without notice to the Surety and during the one year guaranty period, and if he shall satisfy all claims and demands incurred under such contract, and shall full indemnify and save harmless the OWNER from all costs and damages which it may suffer by reason of failure to do so, and shall reimburse and repay the OWNER all outlay and expense which the OWNER may incur in making good any default, then this obligation shall be void; otherwise to remain in full force and effect.

PROVIDED, FURTHER, that the said Surety for value received hereby stipulates and agrees that no change, extension of time, alternation or addition to the terms of the contract or to the WORK to be performed thereunder or the SPECIFICATIONS accompanying the same shall in any wise affect its obligation on this BOND, and it does hereby waive notice of any such change, extension of time, alteration or addition to the terms of the contract or to the WORK or to the SPECIFICATIONS.

PROVIDED, FURTHER, that no final settlement between the OWNER and the CONTRACTOR shall abridge the right of any beneficiary hereunder, whose claim may be unsatisfied.

IN WITNESS WHEREOF, this instrument is executed in ______________ counterparts (number) each one of which shall be deemed an original, this the ______________ day of ________________________, 20______.

ATTEST:

____________________________________   ______________________________
(Contractor) Corporate Official                                                         Contractor

(SEAL)                                                               By: ______________________________
Title: ___________________________________
Address: ________________________________

____________________________________
Witness to Contractor

____________________________________
Address

____________________________________

ATTEST:

____________________________________   ________________________________  
Witness to Surety                                                                            Surety

____________________________________ By: ______________________________
Address                                                                              Attorney-in-Fact

___________________________________________________________________________________
Address

NOTE: Date of BOND must not be prior to date of Contract. If CONTRACTOR is Partnership, all partners should execute BOND.

BOND is not valid unless accompanied by Power of Attorney.

IMPORTANT: Surety companies executing Bonds must appear on the Treasury Department’s most current list (Circular 570 as amended) and be authorized to transact business in the State where the Project is located.
PAYMENT BOND

KNOW ALL MEN BY THESE PRESENTS, that

________________________________________
(Name of Contractor)

________________________________________
(Address of Contractor)

a ______________________________________________, hereinafter call Contractor,
(Corporation, Partnership, Individual or Joint Venture)

and

________________________________________
(Name of Surety)

________________________________________
(Address of Surety)

hereinafter called Surety, are held and firmly bound unto

________________________________________
(Name of Owner)

________________________________________
(Address of Owner)

hereinafter called OWNER, in the penal sum of ______________________________
_______________________________________________ Dollars, $(___________) in
lawful money of the United States, for the payment of which sum well and truly to be
made, we bind ourselves, successors, and assigns, jointly and severally, firmly by these
presents, this sum being in the amount of one hundred percent (100%) of the contract
amount.

THE CONDITION OF THIS OBLIGATION is such that whereas, the contractor has
entered into a certain contract with the OWNER, dated the _____ day of ___________,
20_____, a copy of which is hereto attached and made a part hereto fore the
construction of:

Upgrade Wastewater Pumping Station, North Fork Subdivision
2022 Imminent Threat Grant
Moscow, Tennessee
NOW, THEREFORE, if the Contrator shall promptly make payment to all persons, firms, SUBCONTRACTORS, and corporations furnishing materials for or performing labor in the prosecution of the WORK provided for in such contract, and any authorized extension or modification thereof, including all amounts due to materials, lubricants, oil, gasoline, coal and coke, repairs on machinery, equipment and tools, consumed or used in connection with the construction of such WORK, and all insurance premiums on said WORK, and for all labor, performed in such WORK whether by SUBCONTRACTOR or otherwise, then this obligation shall be void; otherwise to remain in full force and effect.

PROVIDED, FURTHER, that the said Surety for value received hereby stipulates and agrees that no change, extension of time, alteration or addition to the terms of the contract or to the WORK to be performed thereunder or the SPECIFICATIONS accompanying the same shall in any wise affect its obligation on this BOND, and it does hereby waive notice of any such change, extension of time, alteration or addition to the terms of the contract or to the WORK or to the SPECIFICATIONS.

PROVIDED, FURTHER, that no final settlement between the OWNER and the CONTRACTOR shall abridge the right of any beneficiary hereunder, whose claim may be unsatisfied.

IN WITNESS WHEREOF, this instrument is executed in ______________ counterparts (number) each one of which shall be deemed an original,

this the ______ day of ____________________, 20______.

ATTEST:

____________________________________   ______________________________

(Contractor) Corporate Official                                                     Contractor

(SEAL)                                                                 By: _____________________________

Title: ____________________________

Address: _________________________

___________________________________

Witness to Contractor

___________________________________

Address
ATTEST:

Witness to Surety ________________________________  Surety ________________________________

By: ______________________________

Address  Attorney-in-Fact  Address

NOTE:  Date of BOND must not be prior to date of Contract. If CONTRACTOR is Partnership, all partners should execute BOND.

BOND is not valid unless accompanied by Power of Attorney.

IMPORTANT:  Surety companies executing Bonds must appear on the Treasury Department’s most current list (Circular 570 as amended) and be authorized to transact business in the State where the Project is located.
CERTIFICATE OF OWNER’S ATTORNEY

I, the undersigned, ________________________________, the duly authorized and acting legal representative of the City of Moscow, Tennessee, 14075 Highway 57, Moscow, TN 38057 do hereby certify as follows:

I have examined the attached contract(s) and surety bonds and the manner of execution thereof, and I am of the opinion that each of the aforesaid agreements has been duly executed by the proper parties thereto acting through their duly authorized representatives; that said representatives have full power and authority do execute said agreements on behalf of the respective parties named thereon; and that the foregoing agreements constitute valid and legally binding obligations upon the parties executing the same in accordance with terms, conditions and provisions thereof.

Date: __________________________  __________________________
NOTICE TO PROCEED

Owner: City of Moscow

Contractor: King Engineering Consultants, Inc.

Engineer: King Engineering Consultants, Inc.

Project: Upgrade Wastewater Pumping Station
North Fork Subdivision
2022 Imminent Threat Grant

TO CONTRACTOR:

Owner hereby notifies Contractor that the Contract Times under the above Contract will commence to run on

________________________, 20__, [see Paragraph 4.01 of the General Conditions]

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 Agreement, the date of Substantial Completion is

________________________, 20__, and the date of readiness for final payment is _____________________

________________________, 20__.

Before starting any Work at the Site, Contractor must comply with the following:
[Note any access limitations, security procedures, or other restrictions]

________________________
Authorized Signature

By: Brenda Mitchell

Title: Mayor

Date Issued: _____________________, 20__

Copy: Engineer
SC-1.00 NOTICE

1.01 The General Conditions, Special Conditions and all other herein bound and accompanying documents are part of this section of the Contract. Submission of proposal implies that the Bidder is fully conversant with all requirements of all above-mentioned documents.

1.02 The Engineer shall not have control over or be in charge of and shall not be responsible for construction methods, means, sequences, techniques or procedures. The Contractor shall be responsible for safety precautions and programs in connection with the work. The Contractor shall be responsible for work schedules and the performance of work in accordance with the Contract Documents. The Engineer shall not be in charge of or have control over acts of omissions of the General Contractor, Sub-Contractors or their employees, agents or any other persons performing portions of the work.

1.03 Anything mentioned in the Specifications and not shown on the Drawings, or shown on the Drawings and not mentioned in the Specifications, shall be of like effect as if shown or mentioned in both.

1.04 In case of a difference between the Drawings and the Specifications, the Specifications shall govern. If there are further differences between the Special Conditions and other sections of the Technical Specifications, the Special Conditions shall govern.

SC-2.00 SHOP DRAWINGS

2.01 Detailed shop drawings, in amplification of the Drawings referred to in this Contract, on all equipment, steel, piping arrangements and all other items requiring the Engineer’s approval, shall be submitted to the Engineer before proceeding with the work. Five (5) copies of such drawings shall be submitted to the Engineer in the form of blueprints for approval. If approved, two (2) sets of such prints will be returned to the Contractor marked approved. If changes or corrections are necessary, one (1) set will be returned to the Contractor with such changes or corrections noted, and the Contractor shall resubmit corrected or changed prints in five (5) copies.

2.02 It is understood that the approval by the Engineer of the Contractor’s drawings, whether general or detailed, is a general approval relating only to their sufficiency and compliance with the intention of the Contract and shall not excuse or constitute a waiver of errors, discrepancies or omissions.

2.03 The Contractor shall obtain shop drawings of the proposed pumps and provide the diameters needed for the holes in the proposed walls before concrete is poured.
SC-3.00 RIGHTS OF ENTRY

The right to enter on any site of construction or material storage is reserved by the Owner and all Government agencies involved in any way with the project.

SC-4.00 LIQUIDATED DAMAGES

Bidder hereby agrees to commence work under this contract on or before a date to be specified in the NOTICE TO PROCEED and to fully complete the project within the consecutive calendar days as listed in the Agreement. Bidder further agrees to pay as liquidated damages the sum as listed in the Agreement for each consecutive calendar day until completion of the project.

SC-5.00 SCHEDULE AND PROGRESS CHART

Upon starting construction, the Contractor shall submit to the Engineer a schedule and progress chart which indicates the manner in which he anticipates meeting the time schedule requirements of this Contract. This chart shall be realistic and shall meet the approval of the Engineer and the Owner.

SC-6.00 ADDITIONAL HELP BY THE CONTRACTOR

The Contractor will be required to furnish assistance as needed by the Resident Inspector in measuring for construction record drawings and/or determination of quantities.

SC-7.00 COMPETENCE OF WORKERS

Any worker on any part of the work shall be competent to perform the task to which they are assigned. Supervision for each crew shall be done by a foreman or superintendent that is capable of directing the work. Conditions which require the constant presence of an Inspector to assure the quality of the work will not be tolerated. Any worker who does not produce quality workmanship through lack of cooperation or incompetence shall be removed from the job. The judge of quality of workmanship shall be the Engineer.

SC-8.00 UNDERGROUND UTILITIES AND STRUCTURES

Location of utilities and underground structures shown on the plans are approximate and those shown are not necessarily all of the existing utilities and structures. It is the Contractor’s responsibility to determine the exact location and existence of all utilities and underground structures.

SC-9.00 TESTING

The Owner shall pay the cost of all independent laboratory fees and fees charged by an independent laboratory for field tests during construction of the project. Testing or test results for products such as seed, cement, etc. shall be provided by the supplier to the Contractor for approval by the Engineer.
**SC-10.00 EXISTING UTILITIES, STRUCTURES, OR OBSTRUCTIONS**

10.01 Prior to any excavation, it shall be the responsibility of the Contractor to locate and avoid damage to any existing water, underground utility or structure. The Contractor shall contact the Utility Departments or other responsible agencies to obtain location drawings or other assistance in the location of existing underground work. Avoid all surface obstructions and protect same from damage.

10.02 The Contractor shall repair or pay for all damage caused by his operations to any existing utility property, public property, or private property, whether it is below ground or above ground, and shall settle in total cost all damages which may arise as a result of his operations.

10.03 Protect non-owned vehicular traffic, stored materials, site and structures from damage.

**SC-11.00 CLEAN UP**

After completion of construction, the Contractor shall remove all surplus material, tools, and temporary structures from the site. All rubbish and excess earth shall be removed and the construction site left in a clean, satisfactory condition.

**SC-12.00 GUARANTEE**

The Contractor shall guarantee all workmanship and materials under this contract for a period of twelve (12) months after final acceptance of the contract and shall in the event of failure of any item due to workmanship or materials replace same without cost to the Owner.

**SC-13.00 BASIS OF PAYMENT**

All work included under this contract shall be paid for by the lump sum or unit price bid method for work actually performed. The Proposal Form shall indicate pay items. All work of any nature required to complete the items shall be included in the lump sum or unit price bid for such item.

**SC-14.00 DETERMINATION OF LOW BIDDER**

All bids will be checked by the Engineer for mathematical accuracy. The quantities will be multiplied by the unit prices bid. Then the sum of the products will be calculated. The unit prices govern. If there are errors in the multiplication or addition, the Engineer will make corrections in order to determine the lowest bidder. No consideration will be made as to a bidders intent rather than what was written on the bid form except under unusual circumstances.

**SC-15.00 BUDGET AMOUNTS, DEDUCTIVE ALTERNATES, AND BASIS OF AWARD**

If the lowest responsible bid is within the budget amount, the contract will be awarded to the lowest, responsible bidder. If the base bid exceeds the funds available, Deductive Alternate No. One will be used to reduce the construction cost. Then if funds are available, the contract will be awarded to the lowest responsible bidder based upon the base bid less Deductive Alternate No. One. The same principle applies to all other deductive alternates.
**SC-16.00  PROTECTION OF LIVES AND HEALTH**

The Contractor alone shall be responsible for the safety, efficiency and adequacy of this plant, appliances and methods, and for any damage which may result from their failure or their improper construction, maintenance or operation.

**SC-17.00  SELECTION OF EQUIPMENT AND MATERIALS**

17.01 All equipment items and materials used in the work shall be products of reputable manufacturers and shall conform to specifications requirements, accepted standard practice and to State, Federal and Municipal laws and regulations. These items shall be the best of respective equipment and materials available for the purpose for which used. Equipment and materials not conforming to specifications will not be considered.

17.02 The Contractor shall furnish to the Engineer complete, accurate information regarding all equipment and materials he proposes to furnish. Selection and approval of equipment for use in the work is based in part upon information furnished by the Contractor.

**SC-18.00  OPERATION AND MAINTENANCE MANUALS**

The manufacturers of the equipment installed under this contract will be required to furnish three (3) copies of all available operation, maintenance and parts manuals for the equipment furnished by him. It will be the responsibility of the Contractor to furnish this material to the Engineer. This will be in addition to shop drawings and shall reflect any field alterations or deviations from the approved shop drawings. All material shall be bound in a single booklet and a reference tab for each piece of equipment be provided. Three (3) copies of the data shall be furnished to the Engineer for distribution. Final payment will be held until the materials have been received.

**SC-19.00  PUMPING STATION SUCTION PIPE**

Prior to fabrication of suction pipe, Contractor shall determine length of suction pipe such that it terminates 6-inches above the floor of the wet well. This determination shall be made by taking field measurements. Secondly, the suction pipe shall be sized and positioned so as not to interfere with the concrete fillet on the base of the wet well.

**SC-20.00  PUMPING STATION BYPASS PUMPING**

Installation of the pumping station will require bypass pumping. Under no circumstances shall wastewater back up such that it interferes with upstream homeowner’s ability to properly drain wastewater.

**SC-21.00  DEMOLITION**

The Contractor is responsible for removing items shown on plans to city's wastewater lagoon site.

**SC-22.00  ALL PIPEWORK AND VALVES**

These plans are based upon the original design plans. All dimensions, pipe sizes, and valve sizes shall be field confirmed by the Contractor prior to submittal of shop drawings.
**SC-23.00 INSULATION AND ELECTRICAL HEAT TAPE**

The Technical Specifications include a section on insulation. Apply insulation and electrical heat tape to the exposed discharge pipes, fittings, and valves.

**SC-24.00 EQUIPMENT**

All equipment shall be new.

**SC-25.00 EASEMENTS**

Easements have been obtained from landowners for the installation of the proposed pump station and sewer force main.

**SC-26.00 WET CONNECTION**

Prior to making any wet connections, the Contractor shall have all items at the site to make a proper tie-in prior to cutting any pipe. Prolonged outages will not be allowed.

**SC-27.00 FILLETS**

Fillets are expected to be in the invert of the wetwell. It is assumed that if the existing submersible pumps fit, the new pumps will also. Any adjustment will have to be paid for by change order which will include additional time for bypass pumping.

**SC-28.00 SCADA**

The bid form shows an allowance for the City’s SCADA expert to connect the existing SCADA system to the proposed pump. The Contractor will pay the controls expert and be reimbursed by pay request. The actual amount of the payment may vary. The Contractor shall be responsible for coordinating the work with Ken Fortson, Dexter Fortson Associates, (205) 531-4795 cell or (205) 432-2707 office, kfortson@dfa-inc.com.

**SC-29.00 BONDS AND INSURANCE**

Add the following new paragraph immediately after Paragraph 8 of Supplementary Conditions and Article 5 – Bonds and Insurance:

> The limits of liability for the insurance required in the General Conditions and Supplementary Conditions shall provide coverage for not less than the following amounts or greater where required by Laws and Regulations:
1. Workers’ Compensation, and related coverages under of the General Conditions and Supplementary Conditions:

<table>
<thead>
<tr>
<th>Coverage</th>
<th>Limit</th>
</tr>
</thead>
<tbody>
<tr>
<td>State:</td>
<td>Statutory</td>
</tr>
<tr>
<td>Federal, if applicable (e.g., Longshoreman’s):</td>
<td>Statutory</td>
</tr>
<tr>
<td>Jones Act coverage, if applicable:</td>
<td></td>
</tr>
<tr>
<td>Bodily injury by accident, each accident</td>
<td>$ N/A</td>
</tr>
<tr>
<td>Bodily injury by disease, aggregate</td>
<td>$ N/A</td>
</tr>
<tr>
<td>Employer’s Liability:</td>
<td></td>
</tr>
<tr>
<td>Bodily injury, each accident</td>
<td>$ 100,000</td>
</tr>
<tr>
<td>Bodily injury by disease, each employee</td>
<td>$ 100,000</td>
</tr>
<tr>
<td>Bodily injury/disease aggregate</td>
<td>$ 100,000</td>
</tr>
</tbody>
</table>

For work performed in monopolistic states, stop-gap liability coverage shall be endorsed to either the worker’s compensation or commercial general liability policy with a minimum limit of:

<table>
<thead>
<tr>
<th>Limit</th>
</tr>
</thead>
<tbody>
<tr>
<td>$ N/A</td>
</tr>
</tbody>
</table>

Foreign voluntary worker compensation

<table>
<thead>
<tr>
<th>Limit</th>
</tr>
</thead>
<tbody>
<tr>
<td>Statutory</td>
</tr>
</tbody>
</table>

2. Contractor’s Commercial General Liability:

<table>
<thead>
<tr>
<th>Coverage</th>
<th>Limit</th>
</tr>
</thead>
<tbody>
<tr>
<td>General Aggregate</td>
<td>$ 2,000,000</td>
</tr>
<tr>
<td>Products - Completed Operations Aggregate</td>
<td>$ 2,000,000</td>
</tr>
<tr>
<td>Personal and Advertising Injury</td>
<td>$ 1,000,000</td>
</tr>
<tr>
<td>Each Occurrence (Bodily Injury and Property Damage)</td>
<td>$ 1,000,000</td>
</tr>
</tbody>
</table>
3. Automobile Liability under the General Conditions and Supplementary Conditions:

Bodily Injury:
- Each person $1,000,000
- Each accident $1,000,000

Property Damage:
- Each accident $1,000,000

4. Excess or Umbrella Liability:

- Per Occurrence $1,000,000
- General Aggregate $1,000,000

5. Contractor’s Pollution Liability:

- Each Occurrence $N/A
- General Aggregate $N/A

If box is checked, Contractor is not required to provide Contractor’s Pollution Liability insurance under this Contract

6. Additional Insureds: In addition to Owner and Engineer, include as additional insureds the following: N/A

7. Contractor’s Professional Liability:

- Each Claim $N/A
- Annual Aggregate $N/A

The Contractor shall carry the above-mentioned minimum coverage for the life of the construction project. This coverage may be in the form of a special policy or an Endorsement on the basic policy of the Contractor and additional costs (if any) to Owner will be included in the original Contract Total Bid Amount.

Contractor agrees to purchase such insurance from companies acceptable to Owner, to furnish Owner upon request from time to time with satisfactory evidence that such insurance is being properly carried, and to furnish the Owner and the Engineer with Certificates of Insurance of all policies and/or Endorsements before Owner will issue an order to commence Work.
All Contractor’s insurance policies shall name the Owner, Contractor, Subcontractor(s), Engineer, and Engineer’s Consultants on the Certificates of Insurance as additional insured.

All insurance policies shall provide that no cancellation or modification of the policy or Endorsement shall be effective until thirty (30) days following the mailing of written notices of such cancellation to the Engineer and to the Owner.

END OF SPECIAL CONDITIONS
SECTION 02210
GENERAL EARTHWORK

PART 1.00 NOTICE

The General Conditions, Special Conditions and all other herein bound and accompanying documents are part of these specifications and of the Contract. Submission of proposal implies that the Bidder is fully conversant with all requirements of all above mentioned documents.

PART 2.00 APPLICABLE PUBLICATIONS


PART 3.00 SCOPE OF WORK

The work in this section consists of furnishing all labor, equipment, tools, transportation, materials, accessories, services, and performing all operations in connection with general excavating, filling and grading in accordance with the lines, elevations, cross sections and notes as shown on the drawings and specified herein; including earth excavation and embankment construction on the project site and the shaping, trimming, and finishing thereof; removal of existing obstructions; removal and disposal of surplus, unstable and unsuitable material; top soil removal and conservation; borrow, protection of existing service lines, utilities structures and drainage facilities; shoulder construction; placing top soil; and protection of graded areas.

PART 4.00 JOB CONDITIONS

See General Conditions for detailed information regarding job conditions requirements.

PART 5.00 CLEARING AND GRUBBING

5.01 Clearing shall consist of felling and cutting of trees; the trimmings of trees left standing; and the satisfactory removal and disposal of all trees, logs, down timber, hedge, shrubs, brush, growing corn, weeds, grass, cornstalks, other herbaceous vegetation and rubbish.

5.02 Grubbing shall consist of the removal and disposal of stumps, hedges and roots.

5.03 Clearing and grubbing shall be performed:
   A. In areas within the slope limits of embankments.
   B. In areas to be excavated.
   C. In other areas as designated on the drawings.

   1) Down timber and logs shall be cleared from all areas within the slope limits of embankment, areas to be excavated and areas designated on the drawings.
2) Hedge or shrub shall be pulled or grubbed from all areas within the slope limits of embankments, areas to be excavated, and areas designated on the drawings.

3) Trees, stumps, shrubs, bushes, and roots shall be pulled, grubbed in all areas within the slope limits of embankments, areas to be excavated.

4) Trees, stumps, shrubs, bushes and roots as designated on the drawings shall be removed below the elevation of the sub-grade, unless otherwise directed by the Engineer.

5) All areas within the slope limits of embankments and areas to be excavated shall be cleared or stripped of any remaining vegetation such as bushes, growing corn, weeds, grass, cornstalks, roots and other herbaceous vegetation and all decayed vegetable matter, rubbish and similar unsuitable materials.

5.04 Trees, shrubs, and other vegetation to be left standing shall be protected from damage during clearing and other construction operations by methods subject to the approval of the Owner. Clearing and grubbing operations shall be performed in such a manner as to prevent damage to structures, trees, shrubs, and other vegetation to be left standing, and to provide for the safety of the employees and others. In the event that any tree or shrub designated to be left standing is damaged by the Contractor, such plants shall be repaired immediately or replaced, as directed by the Owner, in accordance with standard horticultural practices at the Contractor’s expense and at no expense to the Owner.

5.05 The cleared and grubbed material shall in general be disposed of away from the site. Combustible materials may be disposed of by burning on the site, when approved by the Owner. Disposal of cleared and grubbed material shall be performed legally.

PART 6.00 EARTH EXCAVATION

6.01 Earth excavation shall consist of the excavation, removal and satisfactory disposal, all as specified herein, of all material regardless of its nature encountered within the area to be graded and/or in a borrow area.

6.02 Excavation of materials shall be performed to the lines, elevations, and cross sections as shown on the drawings and as herein specified. Excavated materials that are suitable shall be used in the construction of embankments, so far as possible, and no such material shall be wasted without authority from the Engineer.

6.03 Excavation operations shall be conducted so that material outside of the limits of slopes will not be removed or disposed. In the event that such material is removed or loosened, it shall be replaced as directed by the Engineer.

6.04 Care shall be taken not to excavate material below the elevations and lines indicated on the drawings. If materials are excavated below the elevations and lines indicated on the drawings, the Contractor shall, as directed by the Engineer, construct embankment to the said elevations and lines and/or in the case of ditches or waterways place stone in the ditches or waterways, all at no expense to the Owner.
6.05 Excavated areas shall be continuously maintained such that the surface shall be smooth and have sufficient slope to allow water to drain from the surface. If the Contractor fails to maintain partly finished work in a satisfactory manner, excavation shall be discontinued, if so ordered in writing by the Engineer, until the work is in satisfactory condition.

PART 7.00 REMOVAL OF EXISTING OBSTRUCTIONS

All obstructions and accumulations of rubbish of whatever nature, and existing structures, the removal of which is not otherwise provided for in the contract, shall be removed from the grading site and disposed of, as directed by the Engineer.

PART 8.00 PROTECTION OF SERVICE LINES, UTILITIES STRUCTURES AND DRAINAGE FACILITIES

8.01 Existing utility lines which are to be retained, as well as utility lines constructed during excavation and filling operations, and if damaged, shall be repaired by the Contractor at his expense. In the event that existing utility lines are encountered at such locations or elevations that they must be relocated to avoid conflict with the new work, and where such relocation is not included as part of the proposed work, then the necessary relocation may be accomplished by “others” or by the Contractor as directed by the Owner. Such work when ordered by the Owner and performed by the Contractor shall be paid for in accordance with the provisions of the General Conditions.

8.02 If it is necessary in the execution of the work to interrupt natural drainage of the surface, or the flow of artificial drains, the Contractor shall provide temporary drainage facilities at his expense that will prevent damage to public or private interests, and shall restore the original drains at his expense as the work will permit. The Contractor shall be liable for all damages which may result from his neglect to provide for either natural or artificial drainage which the work may have interrupted.

PART 9.00 REMOVAL AND DISPOSAL OF SURPLUS, UNSTABLE AND UNSUITABLE MATERIALS

9.01 Prior to starting excavation of soil material:

   A. Existing oiled earth or bituminous surfaces may be broken into pieces not to exceed six-inches (6") in largest diameter, and unless otherwise noted on the drawings, the material may be embedded in embankments, or otherwise shall be removed from the site.

   B. Existing Portland cement concrete pavement, bituminous concrete pavement and existing sidewalks shall be removed from the site of the work and disposed of in a suitable manner by the Contractor.

9.02 Unstable material is soils material of such a nature that, in the opinion of the Engineer, it cannot be properly consolidated in embankments or material that will not or cannot be made to function to satisfy the project conditions.
A. Unstable materials shall be removed, and disposed of as directed by the Engineer. All the material of the same soil type as that indicated to be removed shall be removed to the limit of its existence regardless of the relationship between the actual limits of the type and the indicated limits shown on the drawings.

B. Where unstable material not shown on the drawings is encountered, at or below the elevation of the finished grade line, or at or below the original ground line on which embankment is to be constructed, the Engineer may direct the Contractor to, and the Contractor shall, when so directed, remove and dispose of the unstable material and backfill, to the finished, grade line, with suitable material as specified by the Engineer. The volume of such unstable material ordered removed and replaced, shall be measured for payment.
11.02 When the plans or specifications require that material from borrow areas be furnished by the Contractor, the Contractor shall furnish the borrow areas, shall obtain from the Owners of said borrow areas the right to excavate material, shall pay all royalties and other charges involved and shall pay all expenses in developing the source, including the cost of rights-of-way required for hauling the material.

11.03 Procedures and requirements specified herein for other excavation are also applicable to excavation from borrow areas.

11.04 The Contractor shall notify the Engineer at least ten (10) days in advance of the opening of any borrow pit to permit any necessary elevations or measurements to be taken or any desired material tests to be made.

**PART 12.00 EMBANKMENTS**

12.01 The construction of embankments shall consist of the preparation of the site and the placement and compaction of excavated materials, including earth, stone, gravel or other materials of acceptable quality, as specified herein, and to the lines, elevations and cross sections as shown on the drawings.

12.02 Before embankment is constructed, all Clearing and Grubbing, Top Soil Removal and Conservation, and Removal and Disposal of Unstable and Unsuitable Material shall be performed as specified in this section on the area which is to receive the fill material.

12.03 The surfaces upon which embankment is to be constructed shall, if directed by the Engineer, be loosened by scarifying, discing, or by other approved methods to provide bond between existing ground and the embankment. Wherever an embankment is to be constructed on or against a slope steeper than four (4) horizontally to one (1) vertically, the slope shall be cut into steps having horizontal dimension of not less than one-foot (1') and a vertical rise, as the construction of the new embankment progresses.

12.04 Snow and ice, if present shall be removed from the area to be covered by embankment. Embankment shall not be constructed on frozen ground nor shall frozen materials be deposited in embankments.

12.05 Embankments shall be constructed by depositing excavated materials, approved by the Engineer, in horizontal layers not exceeding six-inches (6") loose thickness. So far as practicable, each layer shall extend the full width of the embankment. The material shall be leveled before compaction by means of bulldozers, blade graders, or other equipment approved by the Engineer. The surface of the material shall be continuously maintained smooth and have sufficient slope to allow water to drain from the surface. If the Contractor fails to maintain partly finished work in a satisfactory manner, embankment construction shall be discontinued, if so ordered in writing by the Engineer, until the work is in satisfactory condition. The paths of the hauling equipment shall be distributed over the width of the embankment.

12.06 After each layer is leveled and before the next layer is deposited, the entire area of each layer shall be compacted to the following compaction requirements, or to compaction
requirements otherwise noted on the drawings or specified in the contract documents. A qualified testing laboratory may determine the standard proctor density by the Standard Methods of Test, AASHO, unless another method is specified or is determined to be more applicable by the Engineer. The determination that the compacted embankment material meets the compaction requirements may be performed by a qualified testing laboratory by the Standard Methods of Test, AASHO. The Contractor shall provide the qualified testing laboratory with sufficient opportunity to perform this determination test before proceeding with additional layers of materials. Testing included in this provision will be paid for by the Owner unless the tests fail. Tests that do not pass will be paid for by the Contractor.

PART 13.00 COMPACTION REQUIREMENTS

13.01 Fill:

<table>
<thead>
<tr>
<th>TYPE OF FILL</th>
<th>STANDARD PROCTOR AASHTO T-99</th>
</tr>
</thead>
<tbody>
<tr>
<td>Compacted fill under buildings and structures</td>
<td>95</td>
</tr>
<tr>
<td>Compacted fill under roadway* and other areas to be paved except the uppermost 6-inch of the subgrade</td>
<td>90</td>
</tr>
<tr>
<td>The uppermost 6-inch forming subgrade for roadway and other pavements</td>
<td>95</td>
</tr>
<tr>
<td>Compacted fill in levees and dikes</td>
<td>95</td>
</tr>
<tr>
<td>Compacted fill in overlot areas</td>
<td>80</td>
</tr>
</tbody>
</table>

* In overlot areas where the roadway or other paving section is not well defined, the boundary for this compaction requirement shall be defined by planes sloping outward from the pavement section on 1:1 slopes beginning at lines in the finished surface located four-feet (4’) outside of the edge of the pavements.

13.02 Compaction shall be obtained by rolling with approved tamping type rollers, pneumatic-tired rollers, or three-wheel rollers, as approved by the Engineer. In general, a tamping-type roller will be required and each layer of embankment material will be compacted until the full weight of the roller is supported by the tamping feet of the roller or the compaction requirement is reached.

13.03 If the moisture content of the deposited material is such that the above compaction requirements cannot be obtained without drying or wetting the materials, the Contractor shall dry the material by discing, harrowing or other approved method, or wet the material uniformly by the application of water, whichever is necessary.

13.04 In the construction of levee embankments and where fill materials from excavation and borrow have decidedly different values of permeability when compacted, the most pervious materials shall be placed in the water side face of the embankment.
13.05 Materials used for embankment construction may contain stones smaller than six-inches (6") in diameter, and such stones shall be interspersed through the soil. If these stones interfere with the compaction of the embankment, they shall be removed and otherwise disposed of. Stones larger than three-inches (3") in diameter will not be permitted in the uppermost one-foot (1’) of embankment.

**PART 14.00 SHOULDER CONSTRUCTION**

14.01 At locations where shoulders are to be constructed adjacent to a rigid type surfacing, such as Portland cement concrete pavement, or any bituminous surface course constructed on a Portland cement concrete base course, or adjacent to curb, gutter, or curb and gutter, the following shall apply:

A. After surfacing, curb, gutter or curb and gutter have been constructed, the placing of earth for the shoulders shall be completed and the earth compacted, shaped, and finished to the lines, elevations and cross sections shown on the drawings.

14.02 At locations where shoulders are to be constructed adjacent to a non-rigid type surfacing, such as gravel or crushed stone base of surface course, or any bituminous surface course not constructed on a Portland cement concrete course, the following shall apply:

A. When the elevation of the shoulder is to be at, or near to the surface elevation of the surface or base course, the earth for the shoulders shall be roughed in before the material for the base or surface course is deposited. The edge of the shoulder abutting the base or surface course shall be constructed as nearly vertical as practicable. The earth shall be placed so that it will be possible to retain and compact the edges of the base or surface course against the shoulder. After the base or surface course is constructed, the balance of the earthwork required to complete the shoulders shall be performed, and the shoulders shall be compacted, shaped and finished to the lines, elevations and cross sections shown on the drawings.

B. When the elevation of the shoulder is below the surface elevation of the surface course, the earthwork required to complete the shoulders shall be performed before the surface course is constructed. The shoulders shall be compacted, shaped and finished to the lines, elevations and cross sections shown on the drawings.

14.03 The Contractor shall at all times perform his shoulder construction operations in a manner such that the finished pavement, base or surface course, curb, gutter, curb and gutter or any structure will not be damaged. Any damage occurring shall be either repaired, or removed and replaced by the Contractor, as directed by the Engineer, at no expense to the Owner.

14.04 The shoulders shall be rolled with an approved pneumatic-tired roller.

**PART 15.00 FINISHING**

15.01 Excavation and embankment areas, including all earth areas disturbed by the construction work, shall be shaped, trimmed, smoothed, and finished uniformly in a workmanlike
manner to the lines, elevations and cross sections shown on the drawings. The degree of finish for grading shall be that ordinarily obtainable through the use of a blade grader or similar power equipment operating under favorable conditions and operated by skilled workmen. Other methods, including hand methods, will be required in the event satisfactory finishing is not otherwise obtained.

15.02 The finished surface of areas on which base and/or surface courses are to be constructed shall be constructed so that the average surface elevation of the earth shall not be higher than the average elevation of the subgrade and shall not be lower than 0.15-feet below this elevation. All other surfaces shall not vary in elevation more than 0.15-feet above or below the elevation or cross section as shown on the drawings or as established by the Engineer.

15.03 All earth surfaces shall be shaped and finished so that proper drainage is assured.

PART 16.00 PLACING TOP SOIL

16.01 Top soil shall not be placed until the area to be covered has been shaped, trimmed and finished. If the surface which is to receive the top soil is hardened or crusted, it shall be raked or otherwise broken up as to provide sufficient bond with the top soil to be placed thereon.

16.02 Top soil shall be spread over the area and to the depth indicated on the drawings. It shall be finished in accordance with the article entitled Finishing in this section of the specifications.

PART 17.00 PROTECTION OF GRADED AREAS

Newly graded areas shall be protected from traffic and erosion, and any settlement or washing away that may occur for any cause, prior to final acceptance, shall be repaired by the Contractor at his expense. Such repairs shall begin within twenty-four (24) hours after notification by the Engineer.
SECTION 02731.3
SEWER FORCE MAIN CONSTRUCTION
WASTEWATER PUMPING SYSTEM

PART 1.00 GENERAL

The General Conditions, Special Conditions and all other herein bound and accompanying documents are part of these Specifications and of the Contract. Submission of proposal implies that the Bidder is fully conversant with all requirements of all said documents. All materials specified herein are subject to the Engineer’s approval.

PART 2.00 SCOPE OF WORK

2.01 The work in this section consists of furnishing all materials, accessories, equipment, tools, transportation, services, labor and performing all operations required to execute sewer force main (all types) work for this project, all as indicated on the drawings and herein specified. Provide all sewer force main work in place complete.

2.02 Bidder’s proposal and the contract price shall include cost of all incidental work such as removal of trees, roots, timber, masonry structures and all other obstacles, and restoration of existing surfaces, including delay and damage occasioned by same.

PART 3.00 JOB CONDITIONS

Refer to the General Conditions for detailed information regarding job conditions requirements.

PART 4.00 SHOP DRAWINGS

Before commencing work submit for the Engineer’s approval, complete shop drawings as required for force main work. See the General Conditions for detailed information regarding shop drawings requirements.

PART 5.00 INSPECTION

5.01 Inspection of pipe and materials will be made at the point of destination. The Engineer reserves the right to provide factory inspection as necessary.

5.02 In case any pipe, fittings, and special castings delivered at the site(s) do not conform to specifications requirements, they will be rejected. The Engineer may appoint a competent inspector who shall inspect all such work at manufacturer’s plant(s).

PART 6.00 HANDLING AND STORAGE

6.01 Handle all pipe, special fittings, valves, castings and other accessories with care in accordance with manufacturer’s recommendations. Lift by hoists and slings or slide or roll same on skidways in a manner to prevent damage. Dropping and bumping against pipe, accessories or other objects on ground are prohibited. Do not damage coating;
repair coating if damaged. Replace all pipe or other items damaged in transit from shop or from cars to job site, in unloading and after delivery without extra cost to the Owner.

6.02 The Contractor shall and hereby does assume responsibility for the safe storage of all materials furnished by or to him and accepted by him, required for this work, and until said materials are incorporated in same.

PART 7.00 EXCAVATING

7.01 This paragraph applies to excavating for all types of pipe.

7.02 Do all excavating by any approved, customary method, to shapes and alignment shown on the drawings and of whatever material encountered. Excavating shall be unclassified. No extra compensation will be allowed for rock or hard pan unless a predetermined unit price is specified for it (herein or in the proposal form). Excavate only so far as directed in advance of pipe laying.

Trench-digging machinery may be used, subject to the Engineer’s approval, except in places where its operations will cause damage to trees, buildings, or existing structures, above or below ground. In such cases use hand methods.

7.03 Trench width may vary with and depend on depth, also on nature of excavated materials encountered. In any case, width shall be ample to permit proper laying and jointing of pipe, also proper placing and compaction of backfill. Minimum width of unsheathed trench (measured at top of pipe) shall be 12-inches plus outside diameter of bell or water main to be laid therein. Increase width of trenches necessary or directed where sheathing and shoring are required. Maximum width of trench (measured at top of pipe) shall be 24-inches plus nominal diameter of pipe. Minimum depth shall be such that there is at least 3-feet of cover measured below surface of roadway or natural ground to top of pipe, except as otherwise indicated herein or shown on the plans.

7.04 Trench shall have flat bottom, conforming to grade to which pipe is laid. Dig bell or coupling holes of proper sizes in earth at each joint to permit proper jointing of pipe and to permit barrel of pipe bearing on solid foundation for full length of barrel.

Earth mounds can be used for pipe support if the trench bottom is firm, and if firm mounds can be built that will hold pipe from settling during and after assembly until finally backfilled.

7.05 Pile all excavated materials at sides of trenches, beyond reach of slides, and so it does not endanger the work nor obstruct streets, roads and sidewalks, and with minimum inconvenience to public travel and occupants of adjoining property. If necessary to pile excavated material on sidewalks, erect barriers to keep earth at least 4-feet from fronts of all buildings. Provide access to all private property.

7.06 Where excavating through cinder fills, rock and other unsuitable backfill materials, excavate trench an additional 6-inches deep. Tamp selected clean earth into trench to bottom of pipe.
7.07 After installing pipe, backfill and tamp trench around sides of same and to thickness 6-inches above top of pipe with said selected clean earth. Backfill material above this level may be any kind of earth materials, but shall not contain cinders, boulders, broken concrete or similar unsuitable backfill materials.

7.08 Correct any part of trench which is excavated below grades specified or shown on drawings by filling low portions with approved materials, solidly compacted.

7.09 Provide and maintain during construction progress (and until trenched highway is safe for traffic), approved, adequate barricades, construction and warning signs, red lights, flares and guards. Observe all State and Local laws, ordinances, rules, regulations and provisions, also rules and regulations of utilities, respecting construction and safety.

7.10 Leave unobstructed and accessible during entire construction period except by traffic safeguards the following items:
   A. Valve pit covers
   B. Valve boxes
   C. Other utility controls

7.11 Make approved, adequate provision for and maintain flow of all sewers, drains and water courses encountered during construction period.

7.12 Wherever ground is sufficiently firm, lay pipe directly on bottom of trench or on earth mounds. Wherever necessary and shown on the plans provide approved timber or plank under pipe, without extra cost to the Owner.

7.13 Where trench bottom is soft and cannot support pipe, excavate trench deeper and wider and refill same with selected material, properly compacted to assure firm foundation for pipe, as directed.

7.14 Maintain roadways at intersecting streets as long as possible. Where necessary, provide timbering, planking or metal runways.

**PART 8.00 SHORING AND BRACING**

Wherever character of ground necessitates protecting the work, street, road or employees, shore and brace trenches in approved, suitable manner. The Contractor shall and hereby does assume responsibility for adequacy and safety of all shoring, bracing and sheathing work.

**PART 9.00 DEWATERING**

All pumping and bailing, building of all drains and all other work, also furnishing of all materials, fuel, electric current and personnel necessary to keep trenches and excavations for sewer force mains work free of water at all times during progress of construction, is included in this contract, under this section and shall be done without extra cost to the Owner. Provide means of conveying water from excavation to approved discharge point.
PART 10.00  STREETS AND ROADS

10.01 This paragraph applies to all streets, roads and drives inside and outside corporate limits of the Municipality.

10.02 Removals and replacements of surface and structures mentioned herein shall be done as part of this contract, payment to be made for paving at the unit prices bid.

10.03 When removing materials of salvageable nature (in suitable condition and so approved) for reuse as directed, do such work carefully and keep such materials separate from the other excavated materials. After laying pipe and backfilling, replace said materials in as good and safe condition as they were before removal. Removals and replacements apply to and include existing planting, culverts, tile and other drainage structures.

10.04 Remove materials of unsalvageable nature as a unit (such as paving, road and drive surfaces, curbs, concrete and brick sidewalks and similar materials) by approved, customary methods of excavation. Where removed, replace road and drive surfaces to original condition. Replace concrete and brick sidewalks and curbs (where removed) to same shapes and dimensions as they were originally. Salvageable materials, such as brick, may be reused in replacement of surface, provided they are in suitable condition and so approved.

PART 11.00  GENERAL INSTRUCTIONS LAYING PIPE

11.01 Lower each separate length of pipe into trench by means of derrick, crane, slings, ropes or other suitable methods with approved tools and equipment. Use care to prevent damage to pipe or coating. Dropping or dumping pipe into trench is prohibited. Do not lay pipe in water, mud or on frozen subgrade.

A. Before lowering and while pipe is suspended, inspect same for defects. Defective, damaged and unsound pipe will be rejected. Replace same without extra cost to the Owner.

B. Before lowering pipe into trench, remove all dirt and other foreign matter from the interior. Keep all pipe clean and free of dirt, trench water, and foreign matter during and after laying. Do not damage coating.

11.02 Lay all pipe on firm bed. Lay pipe line straight. Excavate under each bell or coupling so that entire length of pipe will lie on bottom of trench and not on bells or couplings. Earth mounds, as previously described, will be accepted.

11.03 Unless otherwise directed, lay all pipe (all types) with flange or bell ends facing in direction of laying. For lines with appreciable slope, face flange or bell ends up-grade, when directed.

11.04 Do all required cutting of pipe (all types) for inserting valves or closure pieces in an approved manner and without damaging pipe.
PART 12.00  SPECIAL PRECAUTIONS LAYING PIPE

12.01 If the force main is improperly installed, air pockets in the main will occur. The formation of air pockets results in a higher amount of friction loss than the pumps were designed to pump against. The plans show positive and negative grades that result in high points, at which air release valves are located.

12.02 The Contractor shall be responsible for installing a pipeline that will not pocket air. The plans show invert elevations which are designed to accomplish this purpose. The Contractor shall take adequate elevations ahead of construction to determine that a rise or drop in ground level is anticipated and adjustments made to avoid air pockets and achieve the needed pipe cover.

12.03 In order to achieve the grades shown on the plans, the Contractor has the option of using a laser beam as discussed in Part 12.08 or having a surveyor’s level on the project continually. If the latter option is selected, a shot must be taken on the end of each joint to ensure that the end of each joint is either rising or falling as per the profiles of the plans.

12.04 If a level is used to install the main, records of elevations must be kept.

12.05 Sewer force main shall be laid with tracer wire.

12.06 The force main shall be the material shown on the bid form.

12.07 Thrust blocking requirements are shown at the end of this section.

12.08 Laser beam systems for maintaining line and grade shall be used. The Superintendent will make all setups and adjustments to the laser beam unless other persons are authorized by that resident engineer. A suitable tripod or compression bar will be used to hold the laser beam in a steady position during construction. Machinery operations should not affect the accuracy of the laser beam. The laser beam equipment shall be accurately adjusted and serviced as needed so as to assure proper placement of sewer pipe. A line finder transit will be used above ground to accurately determine the proposed centerline of the sewer pipe. During hot weather, heat waves may affect the accuracy of the laser beam. The Contractor will provide fresh air blowers to cool air inside of sewer pipe. The Contractor shall use manufacturer’s recommendations for care and operation of the laser beam and equipment.

PART 13.00  FORCE MAIN GRADES

The profiles of the sewer force main plans show grades on the pipe and invert elevations at the change in grades. The purpose of these data is to ensure that air pockets do not occur at points other than where air release valves are proposed. The formation of air pockets results in a higher amount of friction loss than the pumps were designed to pump against.

The grades may be varied from those shown on the plans only under the following conditions:

A. If the profiles show a positive grade, the installed pipe must be laid on a positive grade.
B. If the profiles show a negative grade, the installed pipe must be laid on a negative grade.

C. The cover over the pipe, which is shown on the plans, must be maintained as a minimum.

**PART 14.00 TRACER WIRE FOR FORCE MAIN**

All plastic piping shall be wrapped with tracer wire per standard practices. The tracer wire shall have a minimum of 2-feet of wire coiled inside the valve box and the manhole at each air release valve installed. The tracer wire shall be as follows:

#12 AWG, solid copper, type THHN-THWN, black thermoplastic insulated, made in accordance with ASTM designation; B3 “Standard Specification for soft or annealed copper wire” as last revised and Underwriters Laboratories designation: ANSI/UL 83, “Standard for Thermoplastic-Insulated Wires” as last revised. Splices to be made using a 3M Direct Burial Splice Kit, which is in a plastic sleeve. (Waterproof)

**PART 15.00 TRACER WIRE MARKERS AND TEST STATIONS**

Every 1000-feet of force main shall be marked by a Rhino Triview marker having a manufacturer’s number of TVTIN 66 GB2R. The marker shall be 66-inches and buried 3-feet in the ground. The marker shall have two inside terminals. The marker shall serve two purposes. One purpose is to mark the line. The other purpose is to serve as a termination point for the tracer wire to be used in conjunction with the inductive locator.

Each marker shall have one high performance decal with the words “WARNING SEWER PIPE BELOW”. The decal shall be 3M cast vinyl sheeting with UV shield protective coating.

**PART-16.00 AIR RELEASE VALVES AND MANHOLE**

The air release valves and manholes shown on the drawings are diagrammatic. Air release valves and manholes must be located at the high points of the pipe. The items shown on the detail shall be paid for under the bid item “Valve and Manhole”. The same is true for the combination air/vacuum release valve.

The combination valve shall be A.R.I., nylon body, sized to meet the force mains maximum capacity or approved equal.

The size(s) of the valve(s) is/are shown on the plans and/or bid form.

No other air release valves than those shown on the plans should be needed. If the Contractor installs the force main in such a manner that air entrapment occurs so that pumping rates are effected, additional air release valves shall be installed at air entrapment points at his own expense.

**PART 17.00 CONNECTIONS AND BLOCKING**

17.01 Cap or plug in approved manner all unconnected ends of all crosses, tees, branches and wyes. Properly block with concrete against solid unexcavated earth to take reaction of the following items: all pipes laid around curves and on unsupported changes of direction, all tees, crosses and other fittings. Secure all plugs at blanked openings with
blocks or concrete. All concrete shall be as specified in the Concrete section. Blocking shall be included in price per linear foot of pipe.

17.02 Locations of connections, sizes of existing mains and connections with same shown on drawings attached hereto and hereby made a part hereof, are approximate only. The Contractor shall provide in place complete, proper connections required within limits shown on the drawings.

17.03 Connections with existing mains, cutting of pipe, special castings, plugs and similar appurtenances, labor for shutting off and turning on sewer or similar items shall be included in the contract price per linear foot of pipe unless otherwise indicated on the bid sheet.

17.04 Necessary regulation or operation of valves on existing mains to permit connections to be made will be performed by or with permission of Owner’s authorized employees at the Contractor’s expense and without extra cost to the Owner.

17.05 Carefully support and protect from injury all underground structures and utilities encountered while excavations are in progress or backfilling is being finished as necessary and until proper authorities remove or change same.

PART 18.00 BACKFILLING

18.01 This paragraph applies to backfilling for all types of sewer force main pipes and appurtenances. Where exceptions are specified for certain conditions, they shall govern.

18.02 After pipe is laid and as soon as possible after testing, fill trench to surface of ground, and in unimproved streets, place remaining earth on top of trench, as hereinafter specified. If additional backfill material is required, the Contractor shall furnish same without extra cost to the Owner and in sufficient quantity to fill trench to level of surrounding surface after compaction.

18.03 Do not leave backfilling unfinished more than 500-feet behind finished pipe work unless otherwise directed.

18.04 Do not withdraw sheathing (where used in connection with the work) until trench is sufficiently filled to prevent injury to banks, road surfaces, adjacent pipes, railway tracks, sidewalks and other property, public or private.

Withdraw sheathing in increments of not over 1-foot. Backfill and thoroughly compact voids left by withdrawn sheathing. Except as shown on the drawings or ordered by the Engineer, no sheathing, shoring or bracing shall remain permanently in place.

18.05 Leave backfilling in all cases with smooth, rounded surface and with minimum obstruction to traffic.
18.06 Compact backfilling solidly around pipes and to distance 6-inches above same in not over 6-inch layers. Make compaction properly so that it causes no lateral movement to the pipe.

Backfill material shall be selected earth, free of large stones, boulders, trash and foreign matter. Ashes, cinders or other corrosive materials are prohibited.

18.07 In refilling trench at intersection streets, fill and solidly compact backfill in roadway for full depth.

18.08 If approved by the Engineer, backfill trench with properly compacted, approved, bank-run sand and gravel free from foreign substances and of such consistency that it flows readily into the trench. If this method is used, backfill entire space between sides of trench to the bottom of the pavement base with the same material. Additional payment will be made in accordance with unit price bid for foundation sand.

18.09 After backfill has been placed in the trench and before traffic or weathering have hardened the surface, water jet the trench by means of a 2-inch jet running water to the bottom of the trench. Completely wet the entire backfill and break any crust which has inadvertently bridged over the trench. Water jetting will not be required with sand backfill. Water jetting will not be required if trench is less than 5-feet 6-inches (5'6") deep. For trenches less than 5-feet 6-inches (5'6") deep, a good faith effort of compaction must be made. However, a sheep’s foot roller is not required.

18.10 Regardless of the method of compaction, the Contractor is responsible for correcting settling that may occur during the one-year warranty period.

PART 19.00 RAILROAD CROSSINGS

19.01 Refer to Highway and Railroad Crossings Section and Special Conditions for detailed information regarding requirements.

19.02 Unless otherwise shown on the drawings, the average depth of casing of enclosure for pipes (for full length as shown on drawings) crossing under tracks shall be at least 4-feet 6-inches (4'6") below base of rail to top of casing pipe.

19.03 Unless otherwise required by the railroad company, lay all water main pipe in enclosing pipe (plain steel casing, corrugated metal pipe or otherwise as shown on the plans) and of sizes shown on drawings or required by the railroad company. Place said enclosing pipe either by jacking method, tunneling or boring. If tunneling method is used, cribbing or shoring shall remain in place. Fill space between cribbing and enclosing pipe with approved, bank-run sand and gravel. Method of placing enclosing pipe is subject to the Engineer’s approval before commencing construction thereon.

PART 20.00 HIGHWAY CROSSINGS

See Highway and Railway Crossings Section and Special Conditions for detailed information regarding requirements.
PART 21.00 NOTE

Submission of proposal implies that the Bidder is fully conversant with all of Highway and Railroad Departments requirements, also as to all of State, County, and Township requirements. No extra compensation will be paid on account of Bidder’s failure to be so informed.

PART 22.00 WATER MAINS ADJACENT TO OR CROSSING SEWER LINES

22.01 HORIZONTAL AND VERTICAL SEPARATION

A. Lay sewer force main at least 10-feet horizontally from any existing or proposed water line, if possible.

B. Wherever sewer force mains cross water mains, lay sewer force main at such elevation that bottom of water main is at least 18-inches above top of sewer force main. Maintain said vertical separation for that portion of water main located within 10-feet, horizontally, of any water main crossed; said 10-feet to be measured as normal distance from water main to sewer force main.

22.02 CONSTRUCTION REQUIREMENTS

A. If impossible to obtain proper horizontal and vertical separation as specified above, then construct both water and sewer of approved mechanical joint ductile iron pipe.

B. Approved sewer force main pressure pipe can be substituted for mechanical joint ductile iron pipe.

PART 23.00 TESTING PIPE AND JOINTS IN TRENCHES (ALL TYPES OF PIPES)

23.01 Make tests between valves and as far as practicable in sections of approximately 1000-feet to 2000-feet long, as directed. Make test when possible, within twelve (12) working days of completion of said sections.

23.02 To determine rate of leakage, provide suitable pump, pressure gauge, water meter, water container and other appliances for measuring the amount of water pumped. Test these instruments for accuracy as frequently as directed.

23.03 Provide all labor and materials necessary to make tests to perform all work incidental thereto. Provide pump to raise pressure to required pressure.

23.04 Before applying test, expel all air from pipe. Make taps if necessary at high points of elevation. Afterward, plug same tightly.

23.05 Examine carefully, all exposed pipe, fittings, valves, and joints during open trench test. Where mechanical joint or joints made by rubber couplings show visible leaks take them apart, clean and reassemble same, with new parts, as necessary, until no leaks are visible.

A. Replace rubber gaskets where necessary to eliminate leaks.
B. Remove and replace without extra cost to the Owner, all cracked or otherwise defective pipe, fittings, valves and hydrants discovered in consequence of pressure test.

C. After making all required repairs and replacements, repeat pressure tests until all work is satisfactory to the Engineer.

23.06 After a section of main is installed, partially backfilled and is ready for testing, fill same with water from existing distribution system, or other approved source; then isolate this section from balance of system.

23.07 Raise pressure to class specified unless otherwise stipulated. Maintain pressure for period of at least two (2) hours. Make determination of amount of water forced into main during these periods; such amount shall be basis for computing leakage for twenty-four (24) hours. Pressure shall not vary over two pounds (2 lbs.) during said periods.

23.08 Compute allowable leakage on basis of 10 gallons per inch of pipe diameter, per mile of length, per twenty-four (24) hours. Pressure shall not vary over two pounds (2 lbs.) during said period. Allowable leakage per one thousand (1,000) linear feet of sewer force main is as follows:

<table>
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<tr>
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23.09 If leakage is a greater rate than specified in sub-paragraph (23.08) above, re-excavate trench as necessary, replace defective work until leakage is reduced to allowable amount. All costs for labor and materials for said re-excavation, re-caulking pipe, removing defective valves, pipes, or special casting sand replacing same with new valves, pipes and castings, also for refilling trench and replacing any pavement disturbed shall be paid by the Contractor without extra cost to the Owner.

23.10 Whenever testing of any main is delayed beyond time specified above, the Engineer may give written notice to the Contractor to make said test forthwith. If the Contractor does not comply with such order within five (5) days from date of same, the Owner may make required test and deduct the cost thereof (including cost of all excavation and other work.
required to make pipe, joints, valves, hydrants and other items water-tight) from monies due or to become due to the Contractor under this contract.

23.11 Wherever it is impracticable to test between valves or near connections to existing mains, place temporary caps or plugs on mains and test sections of new main so closed. Do such capping or plugging without extra cost to the Owner.

PART 24.00 WATER FOR TESTING

24.01 If for any reason the Owner is unable to furnish water for testing, flooding or other purposes, the Contractor shall at his own expense, and without extra cost to the Owner, make all connections and other necessary provisions and shall provide all water mains and pipe (all types), hydrants, valves and appurtenances specified herein conform to specifications requirements and of such character as to leave all said pipe and connections watertight.

24.02 When the Owner can conveniently furnish water to the Contractor for flooding trenches, testing pipe, joints and for other purposes, there will be no charge except for labor of shutting off or turning on water. The Owner is in no way obligated to furnish water to the Contractor, with or without charge.

PART 25.00 CLEAN UP AND DAMAGE REPAIR

25.01 The Contractor shall clean up on a daily basis the waste from the site; provide barriers as required at all times.

25.02 Upon completion of the work, the Contractor shall remove from the sites all construction equipment, unused materials, salvaged materials, and debris resulting from the work.

PART 26.00 GUARANTEE

26.01 The Contractor shall and hereby does guarantee that all material and work for Sewer Force Main work shall be free from defects of material and labor and shall be and remain in good condition for a period of one (1) year from date of Owner’s final acceptance of same.

26.02 The Contractor shall and hereby does further agree that he will, at his own expense and without extra cost to Owner, remove, repair and replace all said defective work occasioned by operations under this section of the specifications which occurs during the one (1) year guaranty period and that he will also make good at his own expense and without extra cost to the Owner any and all damages to other work caused by such repair and replacement operations.

THE FOLLOWING PAGES ARE THE END OF SECTION
NOTE: THRUST BLOCK TO BE Poured AGAINST UNDISTURBED EARTH. SEE NEXT SHEET FOR SIZE.

SIDE OF TRENCH

TYPICAL SECTION

6'-30. STEEL PLATE - 1"THICK

PLUG

Sewer Force Main Construction
Wastewater Pumping System
Section 02731.3
### Sewer Force Main Construction

#### Wastewater Pumping System

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### THRUST BLOCKING DIMENSIONS TBD2

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Sewer Force Main Construction

Wastewater Pumping System

Section 02731.3

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PART 1.00 NOTICE

The General Conditions, Special Conditions and all other herein bound and accompanying documents are part of these Specifications and of the Contract. Submission of proposal implies that the Bidder is fully conversant with all requirements of all above mentioned documents.

PART 2.00 SCOPE OF WORK

Work covered by this section consists of furnishing all plant, labor, equipment, appliances and material and in performing all operations in connection with the installation of concrete work complete, in strict accordance with this section of the specifications and applicable drawings and subject to the terms and conditions of the contract.

PART 3.00 APPLICABLE SPECIFICATIONS

The Standard Specifications of the American Society for Testing and Materials (ASTM) and the American Concrete Institute (ACI) as they appear herein or on the Plans by reference form a part of this specification.

Other Referenced Standards:

1. Concrete Reinforcing Steel Institute, "Manual of Standard Practice".

2. American Concrete Institute, ACI 301 "Specifications for Structural Concrete for Buildings". Contractor shall comply with the applicable provisions herein except as modified. Maintain a copy of this specification and the ACI SP-15 "Field Reference Manual" at the site during concrete work.
   a. Do not use materials containing calcium chloride or other chlorides.
   b. Concrete Mixture Proportioning shall meet the requirements of the plans and specifications and shall comply with the requirements of ACI 301, Chapter 3, “Proportioning”.
   c. Earth cuts may be used for footings if sufficiently stable for accurate forming.
   d. Welding of reinforcing is not permitted.
   e. At corners and intersections of footings, walls, and grade beams, provide bent bars of equal size and at same spacing as reinforcing in straight sections of concrete. Embed such corner bars 48 diameters but not less than 24-inches.
   f. When concrete is below maximum slump, up to 1.5 gal/CY of water may be added in 1.0 gal/CY increments with 3 minutes additional mixing time to bring mix to specified slump if all the following requirements are complied with:
i. Maximum water-cement ratio is not exceeded.

ii. Method of measuring water is approved in writing by Engineer.

iii. Standard cylinder samples are taken after addition of water and tested at Contractor's expense.

iv. Person authorized to add water shall be named, documented, and mutually acceptable to Engineer, Contractor, and concrete producer.

v. Concrete does not require slump change of more than 2-inches.

g. Cold Weather Procedures: Comply with ACI 306; exhibit preparations for compliance before scheduling concrete work.

h. Hot Weather Procedures: Comply with ACI 305; exhibit preparations for compliance before scheduling concrete work.

PART 4.00 SHOP DRAWINGS & SUBMITTALS

Submit Shop Drawings: Submit for the Engineer’s review complete shop drawings for all reinforcing steel required for this project. Refer to the General Conditions for detailed information regarding shop drawings requirements. Submit shop drawings which show information required for fabrication, bending, and placement of concrete reinforcement. Comply with ACI 315 "Manual of Standard Practice for Detailing Reinforced Concrete Structures" plus the following. Indicate material grade, bar size, length, number, spacing, location, bar schedules, bent bar diagrams, splicing, concrete cover, and accessories. Also, include plans, elevations, sections, and details with sufficient dimensions and of large enough scale for proper fabrication and placement. Detail wall reinforcement in elevation views and slab reinforcement in plan views. Elevations and sections are required for all concrete and masonry walls. Reproduction of any portions of design drawings for use as shop drawings will not be permitted.

Submit Product Data: Proprietary products. Provide material certificates or test reports for other materials as requested by Engineer.

Submit Mix Designs: Submit written reports of concrete mixture designs for Engineer’s review for each class of concrete at a minimum of thirty (30) days prior to concrete placement. Include Product Data for admixtures.

Additional Submittals:

1. Material Certifications: Submit following per ACI 301.
   a. Mill tests for cement.
   b. Admixture certification: include statement of chloride ion content.
   c. Aggregate certifications.

2. Quality Control Submittals:
   a. Locations of construction joints and contraction joints not shown on Drawings.
b. Proposed method for developing bond at joints.
c. Proposed materials and methods for curing.

3. Ready-Mix Delivery Tickets: Submit 2 copies per requirements of ASTM C94; include description and quantity of site-added materials (including water) with authorizing signatures.

4. Special Procedures: Submit proposed hot and cold weather procedures.

5. Submit temperature records weekly during hot and cold weather placement.

6. Test Reports: Submit written laboratory reports within 24 hours of tests.

PART 5.00 GENERAL

Full cooperation shall be given other trades to install embedded items. Suitable templates or instructions or both will be provided for setting items in place in the forms. Embedded items shall have been inspected and tests for concrete or other materials or for mechanical operation shall have been completed and approved before concrete is placed.

PART 6.00 JOB CONDITIONS

Refer to the General Conditions for detailed information regarding job conditions requirements.

PART 7.00 MATERIALS

7.01 CONCRETE MATERIALS

7.01.1 Ready-mix concrete or equal shall be used. Ready mixed concrete or equal shall conform to ASTM Standard C94, latest revision. Submit proposed concrete mixture designs, tested per ACI 350 or ACI 318, a minimum of thirty (30) days prior to concrete placement for Engineer’s review.

7.01.2 Portland Cement. Portland Cement shall be Type II meeting the requirements of ASTM C150 and shall be used in all tanks and basins. Supply all Portland Cement from a single supplier. And at a minimum content as shown in Part 8.00.

7.01.3 Slag Cement. The Contractor will be allowed to submit, for use in the tank/basin, a concrete mixture design incorporating a Slag Cement (Ground Granulated Blast Furnace Slag) which meets the requirements of ASTM C989. Slag Cement may be used to replace up to 30% of the Portland cement, but this shall not alleviate any of the other fresh or hardened concrete requirements. Supply all Slag Cement from a single supplier. The water-cementitious materials ratio (W/CM) shall be calculated by dividing the weight of water by the weight of Portland Cement, plus Slag Cement plus any additional pozzolans.

7.01.4 Normal Weight Aggregates. Coarse and fine aggregates shall be normal weight, from a single source, and meeting the requirements of ASTM C33.
7.01.5 Water. Water shall be potable, from a municipal source, and shall be free of contaminants or staining substances.

7.01.6 Fly Ash. Fly Ash shall not be allowed.

7.01.7 Air-Entraining Admixture: ASTM C260.

7.01.8 Water-Reducing Admixture: ASTM C494, Type A and containing not more than 0.05 percent chloride ions.

7.01.9 High-Range Water-Reducing Admixture: ASTM C494, Type F or Type G and containing not more than 0.05 percent chloride ions. Slump for Concrete with High-Range Water-Reducing Admixture: Deliver concrete to site with 2 to 3 inch slump. After verification of slump on site, add high-range water-reducing admixture to achieve not more than 9 inch slump.

7.01.10 Water-Reducing, Retarding Admixture: ASTM C494, Type D and containing not more than 0.05 percent chloride ions.

7.01.11 Other Admixtures: If desired, submit product data for proposed retarding or other admixtures to Architect/Engineer for review. No admixture containing calcium chloride, thiocyanates, or more than 0.05 percent chloride ions may be used.

7.02 CURING MATERIALS:

7.02.1 Waterproof Paper – ASTM C171, latest revision, Type I

7.02.2 Membrane Curing Compound - ASTM C309, latest revision, Type I. Curing compounds, for water retaining structures, must be nontoxic and free of taste and odor. Apply in accordance with the manufacturer’s recommendations.

7.03 EXPANSION JOINTS shall be pre-molded, and shall conform to ASTM D1751, latest revision.

7.04 WATER STOPS shall be dumbbell water stops and shall be vertical and horizontal, of required types, shapes, sizes as indicated, (Neoprene Rubber or approved equal). Provide corner and “L” members (flat or horizontal), tees, unions, and split dumbbell. Install per the manufacturer’s printed instructions in all joints of liquid containment structures.

7.05 JOINT SEALER shall be cold application type or hot poured elastic type as approved by the Engineer. Concrete joint sealer cold application type shall conform to ASTM D1850, latest revision. Concrete joint sealer, hot poured elastic type, shall conform to ASTM D1854, latest revision.

7.06 FORMWORK shall be wood, metal, or other approved material and shall conform to the following requirements:

7.06.1 Provide formwork of sufficient strength to prevent displacement, distortion, and deflection and as needed for required finishes. Design and construct formwork to
support construction loads until concrete properly cures and can support loads. Provide bracing to maintain correct position.

7.06.2 Wood Formwork

7.06.2.1 Unexposed Concrete Surfaces - No. 2 common or better lumber.

7.06.2.2 Exposed Concrete Surfaces - dressed and matched boards of uniform thickness of a width not exceeding 10-inches, or new plywood or MDO plywood. After first use, undamaged plywood may be re-used. Limit surface irregularity to 1/8-inch in 5-ft. Arrange form components for minimum size and number of joints.

7.06.3 Construct formwork to be readily removable without damage to concrete surfaces or adjacent materials.

7.06.4 Construct formwork joints to prevent leakage of mortar.

7.06.5 Chamfer exposed corners with applied strips that produce straight, smooth edges and surfaces.

7.06.6 Arrange form components to minimize size and number of joints.

7.06.7 Provide openings in formwork to accommodate work of other trades.

7.06.8 Accurately place and securely support items built into forms.

7.06.9 Clean and adjust forms before placing concrete. Remove dirt, debris, and other waste or foreign materials.

7.06.10 Retighten forms and bracing after concrete placement as needed to eliminate mortar leaks and maintain alignment.

7.06.11 When using earth forms, hand trim sides and bottoms, and remove loose dirt before placing concrete.

7.07 FORM TIES shall be suitable for the purpose of the structure. In liquid containment structures, the portions of single rod ties that remain in the wall shall be provided with an integral waterstop at mid point. The assembly shall provide cone shaped depressions at the surface, at least 1-inch in diameter and 1½-inches deep, to allow filling and patching.

Through ties that are to be entirely removed shall be tapered over the portion that passes through the concrete. The large end shall be on the liquid side of the wall.

All tie depressions and/or holes shall be filled. The Contractor shall demonstrate and submit for review the methods and materials used for filling the voids formed by the ties. Filling material shall be non-shrink.
7.08 FORM RELEASE AGENT shall be commercial quality, colorless, mineral oil, free of kerosene and of a viscosity suitable for the intended use.

7.09 REINFORCEMENT shall be positioned, supported, and secured for accurate placement with required clearance and to prevent displacement during the casting operations. For additional requirements for reinforcement see General Notes on structural drawings.

PART 8.00 CLASSES OF CONCRETE AND USAGE

8.01 See table below for requirements of strength, maximum water cement ratio, and slump. Concrete of the various classes required shall be proportioned in such manner to give the following tabulated minimum strength and shall not exceed the listed maximum water cement ratios shown.

<table>
<thead>
<tr>
<th>Class of Concrete</th>
<th>Compressive Strength at 28 Days</th>
<th>Maximum Water Cementitious Material Ratio</th>
<th>Max. Slump</th>
<th>Coarse Aggregate</th>
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<tr>
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<td>0.45 (minimum cement content 6¼ sacks/cy)</td>
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<tr>
<td>Class C</td>
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<td>0.59 (minimum cement content 5¼ sacks/cy)</td>
<td>8-inches</td>
<td>Contractor’s Option</td>
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8.02 USAGES:

Concrete of the various classes shall be used as follows:

A. Class A Concrete:

For general concrete work, including all steel reinforced structural elements of buildings, tanks and appurtenant structures, slabs, on grade and sidewalks.

B. Class C Concrete:

For all concrete not reinforced including fill concrete in hydraulic structures.

PART 9.00 AIR-ENTRAINED CONCRETE

9.01 Unless otherwise stated, all structures and all concrete exposed to the weather shall be air-entrained. Air entraining admixtures conforming to ASTM C260 are required for air-entrained concrete. Do not use air-entrained cement.

9.02 Total air content shall be 5%, with a tolerance of ± 1%.
9.03 All equipment and labor necessary to determine air content of the concrete shall be furnished by the Contractor. If the Contractor is unable to perform the test, then the Contractor shall coordinate with a Testing Laboratory to perform the necessary tests.

**PART 10.00 TESTS**

10.01 The Owner shall, as part of this Contract, pay costs of all laboratory and other tests. Contractor shall be responsible for taking cylinders and for notifying Testing Lab when their services are required. At least one (1) sample shall be taken consisting of three (3) cylinders for each twenty-five (25) cubic yards or a minimum of one (1) sample per day. Testing shall be as follows:

- One (1) seven (7) days in laboratory.
- One (1) twenty-eight (28) days in laboratory (hold as reserve).
- One (1) twenty-eight (28) days in laboratory.

10.02 Cylinders shall be properly identified as to placement location of the concrete sampled and cured in the field until the Testing Laboratory takes possession of the cylinders. Cylinders should be covered with damp burlap until initial set occurs. Once initial set occurs, the cylinders should be immersed in water, which is similar to the process used by Testing Laboratories.

**PART 11.00 REMOVAL OF FORMS**

11.01 Wall and column forms shall remain in place a minimum of seven (7) days. During this time, the forms shall be kept wet. Other forms may be removed at any time that removal does not cause damage to the slab edges. The forms shall be removed carefully so as to avoid damage to the concrete. After the forms have been removed, the sides shall be cured as outlined in one of the methods indicated below. Major honeycombed areas will be considered as defective work, and all unsound material shall be removed and replaced with satisfactory material at the Contractor’s expense.

11.02 Remove from work carefully, without using wrecking tools or crowbars directly against concrete. The Contractor shall make good at his own expense, without extra cost to the Owner, all damages to concrete and building occasioned by removal of forms and shores. No wood forms shall remain in place.

**PART 12.00 CURING**

12.01 In all cases in which curing requires the use of water, the curing shall have prior right to all water supply or supplies. Failure to provide a sufficient quantity of one of the curing materials or lack of water to adequately take care of both curing and other requirements shall be cause for immediate suspension of concreting operations. The concrete shall not be left exposed for more than one-half (½) hour between stages of curing or during the curing period. Immediately after the finishing operations have been completed and as soon as marring of the concrete will not occur, the entire surface of the newly placed concrete shall be covered and cured in accordance with one of the following methods:
A. COTTON OR BURLAP MATS:

The surface of the slab shall be entirely covered with mats. The mats used shall be of such length (or width) that, as laid, they will extend at least twice the thickness of the pavement beyond the edges of the slab. The mats shall be placed so that the entire surface and both edges of the slab are completely covered. Prior to being placed, the mats shall be saturated thoroughly with water. The mats shall be so placed and weighted down as to cause them to remain in intimate contact with the surface covered, and the covering shall be maintained fully wetted and in position for seventy-two (72) hours after the concrete has been placed or the forms have been removed unless otherwise specified.

B. IMPERVIOUS MEMBRANE METHOD:

1. The entire surface of the slab or wall shall be sprayed uniformly with white pigmented curing compound immediately after the finishing of the surface and before the set of the concrete has taken place, or if the slab or wall is cured initially with jute or cotton mats, it may be applied upon removal of the mats. The curing compound shall not be applied during rainfall.

2. Curing compound shall be applied under pressure by mechanical sprayers at the rate recommended by the manufacturer but in no case at a rate less than one (1) gallon to each 150 square feet. The spraying equipment shall be of the fully atomizing type equipped with a tank agitator. At the time of use, the compound shall be in a thoroughly mixed condition with the pigment uniformly dispersed throughout the vehicle. During application, the compound shall be stirred continuously by effective mechanical means. Hand spraying of odd widths or shapes will be permitted. Curing compound shall not be applied to the inside faces of joints to be sealed. Should the film become damaged, portions shall be repaired immediately with additional compound.

3. Upon removal of side forms, the sides of the slabs exposed shall be protected immediately by applying curing treatment equal to that provided for the surface.

C. WHITE POLYETHYLENE SHEETING:

The tip surface and sides of the slab or wall shall be entirely covered with polyethylene sheeting. The units used shall be lapped at least 18-inches. The sheeting shall be so placed and weighted down as to cause it to remain in intimate contact with the surface covered. The sheeting, as prepared for use, shall have such dimension that each unit as laid will extend beyond the edges of the slab at least twice the thickness of the pavement. The surface of the slab or wall shall be thoroughly wetted prior to placing the sheeting. Unless, otherwise specified, the covering shall be maintained in place for seventy-two (72) hours after the concrete has been placed.
D. REQUIREMENTS:


3. Copies of the above publications shall be obtained by the Contractor and kept on the jobsite for reference.

PART 13.00 FINISHES OF CONCRETE OTHER THAN SLABS

13.01 Immediately after removal of the forms, all fins and loose materials shall be removed; honeycomb aggregate pockets, voids and holes of ½-half-inch in diameter or greater shall be cut out to solid concrete or to the limits defined by the Engineer and patched with an approved patching material.

13.02 The surfaces shall be rubbed with a carborundum brick and watered to produce a uniform plane surface free from form marks and other blemishes. Cement mortar or grout shall not be added to the surface during the rubbing operation. Particular care shall be exercised to preserve chamfer lines, mouldings and other treatments at the intersection of two (2) plane or curved surfaces.

13.03 In the event that the Contractor elects to use membrane curing compound, all patchwork noted above shall be completed within one (1) day after removal of forms and before application of curing compound.

PART 14.00 CONCRETE SLAB FINISHES

14.01 Finished slab surfaces shall be true plane surfaces with a tolerance of 1/8-inch in 10-feet, unless otherwise indicated on the drawings. The dusting of finished surfaces with dry cement will not be permitted. All slab surfaces shall be monolithic finish produced as follows:

A. Immediately after placing the concrete, the surface of the slab shall be screeded and floated with highway straight edges to bring the surface to the required finish level. While the concrete is still green, but sufficiently hardened to bear a man’s weight without deep imprint, it shall be wood floated to a true, even plane with no coarse aggregate visible. After surface moisture has disappeared, surface shall again be wood floated to a smooth even finish, free from float and shall then be followed by a light coverage with a steel trowel.

PART 15.00 FINISHES FOR CONCRETE SIDEWALK AND DRIVEWAY

Concrete sidewalk and driveway shall be finished true to sections shown on the drawings as specified for concrete slab finished except that the final coverage with steel trowel shall be replaced by a light brushing with a stiff bristled brush.

END OF SECTION
SECTION 07211.1
PIPE INSULATION COVERING

PART 1.00 NOTICE

The General Conditions, Special Conditions and all other herein bound and accompanying documents are part of these specifications and of the Contract. Submission of proposal implies that the Bidder is fully conversant with all requirements of all above-mentioned documents.

PART 2.00 SCOPE OF WORK

The work in this section consists of furnishing all materials, accessories, equipment, tools, transportation, services, labor, and performing all operations to provide insulation for pipework.

PART 3.00 DESCRIPTION

Piping shall be insulated with pre-molded fiberglass pipe insulation with a protective jacket. Thickness shall be at least one-inch (1") and extend into the ground a minimum of eighteen-inches (18"). Insulation shall be coated with waterproof metallic coating manufactured for the specific purpose of sealing over the insulation. Wrapping with metallic covering without manufactured connections will not be acceptable. The completed work shall not allow rain water to wet the insulation.

END OF SECTION
SECTION 15045.1

PERFORMANCE SPECIFICATION

SUBMERSIBLE PUMPS, CONTROLS, VALVES & ACCESSORIES

1.0 GENERAL DESCRIPTION

1.01 SCOPE

A. This section includes equipment for one duplex submersible pump station to be supplied with integral electric motors, discharge elbows, guide bar brackets, access cover, valves and electrical control panel assembly, and other miscellaneous installation accessories. All equipment shall be supplied by a single source supplier that adheres to the quality standards established and expressly defined in this specification, for installation by the contractor.

B. Acceptable manufacturers are those who meet this specification in its entirety and that can demonstrate compliance with these specifications through the submittal process outlined in section 2.04 such that no exceptions or deviations are noted (See Paragraph 2.04 Submittal). The System Supplier, for all equipment approved for this project shall meet or exceed all performance, service, and warranty requirements of this specification.

C. The Bidder shall be responsible for supplying the equipment specified herein to meet or exceed these specifications as obtained from the System Supplier for this project. The System Supplier shall be an Authorized Distributor of the proposed products and shall be capable of servicing the products with repair service and parts availability within 100 miles of the City of Moscow. The responsive System Supplier shall routinely stock complete pumps, controls and parts to repair those units in their own facility. All equipment approved for this project shall meet or exceed all performance, service, and warranty requirements of this specification.

1.02 RELATED REQUIREMENTS

A. Bid Form
B. General Conditions
C. Shop Drawings
D. Painting
E. Electrical

2.0 QUALITY ASSURANCE

2.01 GENERAL

The pumps shall be suitable for pumping raw sewage and shall be designed and fully guaranteed for this use. The fluid temperature range shall be from 40 degrees to 104 degrees F.
2.02 STANDARDS
The test code of the American Hydraulic Institute for testing pumps and sound engineering practice shall be used. All pump performance documentation, including flow/head curves, shall adhere to the Hydraulic Institute Standards and shall allow no negative tolerance on flow, head, hydraulic efficiency or any other criteria deemed by the Engineer to be necessary to evaluate pumping system performance.

2.03 ENVIRONMENTAL CONDITIONS
All equipment as specified herein shall be so supplied with respect to environmental conditions at the jobsite.

2.04 SUBMITTALS
Complete equipment and control submittals, complete assembly, foundation support, and installation drawings, together with detailed specifications and data covering pumps, motors, material used, parts, devices and other accessories forming a part of the equipment furnished shall be submitted for approval in accordance with the procedure set forth in the General Conditions.

Data and specifications for the equipment shall include, but shall not be limited to the following:

A. Setting plans. Setting plans shall include:
   1. Anchor bolt layout
   2. Anchor bolt dimensions.
   3. Outline dimensions and weights of pumps, bases, motors, and control enclosures.

B. Pumps. Data and drawings shall include:
   1. Manufacturer, type and model number.
   2. Assembly drawing, nomenclature and material list, O & M manual, and parts list.
   3. Type, manufacturer, model numbers, location and spacing of bearings.
   4. Impeller type, diameter, thru-let dimensions, sphere size, number of vanes and identification number.
   5. Complete motor performance data including: rating, voltage/phase/frequency; design type; service factor; insulation class; motor pole number; actual rotation speed when combined with the specified pumps; current, power factor and active input power (KW), and as a continuous function of shaft power from no load to at least 115 percent load; start (max. inrush) current; locked rotor current; NEC code letter; and motor torque as a continuous function through the motor start cycle from no rotation to synchronous speed.
   6. Complete performance test curve(s) showing full range (shutoff to run-out) head vs. capacity, NPSHR, hydraulic efficiency, motor active (KW) input power, motor total (KVA) input power (based on measured
current and voltage), and shaft power (BHP). See Section 3.01 SHOP TEST

7. Location and description of Service Centers and spare parts stock.
8. Warranty for the proposed equipment.

C. Controls. Complete Schematics and Documentation shall include:

1. The panel layout drawings that show accurate dimensions, location of components, and proper connection of terminations with complete schematics of the proposed equipment.
2. Cut sheets on all items to be provided.
3. Operation manuals on VFDs or PLCs to be provided.

The manufacturer shall indicate, by arrows to points on the Q/H curves, limits recommended for stable operation, between which the pumps are to be operated to prevent surging, cavitation, and vibration. The stable operating range shall be as large as possible, and shall be based on actual hydraulic and mechanical characteristics of the units and shall meet the hydraulic performance requirements of the proposed system.

3.0 TESTING

3.01 SHOP TESTS

Pumps and Motors. Each pump and motor shall be performance tested as specified hereinafter; all pumps shall be tested with motor cables to be supplied with the pumps.

Each pump shall be tested for performance at the factory to determine the head vs. capacity, motor total electrical power draw (KVA), and motor active electrical power draw (KW) for the full speed at which the pumps are specified and shown on a performance test curve. The motor and cable on each pump shall be tested for moisture content or insulation defects. After the test, the pump cable end shall be fitted with a shrink-fit rubber boot to protect it from moisture or water.

3.02 ACCEPTANCE TESTS

Acceptance tests shall be run to demonstrate that the pumping units, motors and control system meet the following requirements:

A. The pumping units operate as specified without excessive noise, cavitation, vibration, and without overheating of the bearings.

B. All automatic and manual controls function in accordance with the specified requirements.

C. All drive equipment operates without being overloaded.

4.0 PERFORMANCE

Submersible pumps shall meet the following performance requirements:
### North Fork Pump Station

**03/29/22**

#### 15045.1 - 4 City of Moscow

<table>
<thead>
<tr>
<th>Required Performance Rating (GPM/ft.)</th>
<th>125 gpm @ 28'</th>
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<tr>
<td>Minimum Shutoff Head (ft.)</td>
<td>79 Ft.</td>
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<tr>
<td>Maximum Specific Energy at Primary Duty Point (KWHr/MG)</td>
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<td>Min Motor Rating (HP) at 40 degrees C</td>
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<td>Motor Design Type</td>
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<td>Motor Service Factor</td>
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<tr>
<td>Motor Insulation Rating</td>
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<td>Maximum Rated Current (Amps)</td>
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<tr>
<td>Minimum Pump Discharge Connection Size (inches)</td>
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<tr>
<td>Power Supply (Voltage/Cycle/Phase)</td>
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</table>

### 5.0 PUMPING EQUIPMENT

#### 5.01 PUMP DESIGN (WET WELL MOUNTED)

The pump shall be capable of handling raw, unscreened sewage. The discharge elbow shall be permanently installed in the wet well along with the discharge piping. The pumps shall be automatically connected to the discharge connection elbow when lowered into place. Pumps shall be easily removable for inspection or service, requiring no bolts, nuts or other fasteners to be removed for the purpose and no need for personnel to enter the pump well. Sealing of the pumping unit to the discharge elbow shall be accomplished by a simple linear downward motion of the pumps with the entire weight of the pumping units guided to and pressed tightly against the discharge elbow with a metal to metal watertight contact. Sealing of the discharge interface by means of an elastomeric diaphragm, O-ring, profile gasket, grommet or any other device shall not be acceptable. No portion of the pump shall bear directly on the floor of the sump, and there shall be no more than one 90 degree bend allowed between the volute discharge flange and sump piping. Guide bars, which shall steer the pump into proper contact with the discharge elbow, shall be non-adjustable and shall not bear the weight of the pump. Systems incorporating guide cables in lieu of guide bars shall not be acceptable.
5.02 PUMP CONSTRUCTION

A. Major pump components shall be of grey cast iron, ASTM A-48, Class 35B, with smooth surfaces devoid of blow holes or other irregularities. All exposed nuts or bolts shall be AISI type 316 stainless steel or brass construction. All metal surfaces coming into contact with the pumpage, other than stainless steel or brass, shall be protected by a factory applied spray coating of acrylic dispersion zinc phosphate primer with a polyester resin paint finish on the exterior of the pump.

B. Sealing design shall incorporate metal-to-metal contact between machined surfaces. Critical mating surfaces where watertight sealing is required shall be machined and fitted with Nitrile or Viton rubber O-rings. Fittings will be the result of controlled compression of rubber O-rings in two planes and O-ring contact of four sides without the requirement of a specific torque limit.

C. Rectangular cross sectioned gaskets requiring specific torque limits to achieve compression shall not be considered as adequate or equal. No secondary sealing compounds, elliptical O-rings, quad rings, grease or other devices shall be used.

D. The pump, mechanical seals and motor units provided under this specification shall be from the same manufacturer in order to achieve standardization of operation, maintenance, spare parts, manufacturer's service and warranty. Pumps incorporating motors or mechanical seals from sources other than the pump manufacturer shall not be acceptable.

5.03 CABLE SEAL

The cable entry seal design shall preclude specific torque requirements to insure a watertight and submersible seal. The cable entry shall consist of a dual cylindrical elastomer grommet, flanked by washers, all having a close tolerance fit against the cable outside diameter and the entry inside diameter and compressed by the body containing a strain relief function, separate from the function of sealing the cable. The assembly shall provide ease of changing the cable when necessary using the same entry seal. The cable entry junction chamber and motor shall be separated by a stator lead sealing gland or terminal board, which shall isolate the interior from foreign material gaining access through the pump top. Epoxies, silicones, or any other secondary sealing systems will not be acceptable.

5.04 COOLING SYSTEM

A. Each unit shall be provided with an adequately designed cooling system that allows up to 15 motor starts per hour on a continuous basis and the ability to pump liquids of up to 104°F with no damage to motor windings, bearings, or drive shaft seals when utilized on across the line starting. Starting on VFD’s shall be only limited by the VFD.
B. The motor shall be provided with an integral motor cooling system. A radiant cooling system shall be provided. The system shall work in fully or partially submerged conditions and shall provide adequate cooling in liquid or ambient temperatures of up to 104°F (40°C). Operational restrictions at temperatures below 104°F are not acceptable. Fans, blowers or auxiliary cooling systems that are mounted external to the pump motor are not acceptable.

5.05 MECHANICAL SEAL

A. Each pump shall be provided with a positively driven dual, tandem mechanical shaft seal system consisting of two seal sets, each having an independent spring. The lower primary seal, located between the pump and seal chamber, shall contain one stationary and one positively driven rotating corrosion resistant tungsten-carbide ring. The upper secondary seal, located between the seal chamber and the seal inspection chamber, shall contain one stationary and one positively driven rotating corrosion resistant tungsten-carbide seal ring. All seal rings shall be individual solid sintered rings. Each seal interface shall be held in place by its own spring system. The seals shall not depend upon direction of rotation for sealing. Mounting of the lower seal on the impeller hub is not acceptable. Shaft seals without positively driven rotating members or conventional double mechanical seals containing either a common single or double spring acting between the upper and lower seal faces are not acceptable. The seal springs shall be isolated from the pumped media to prevent materials from packing around them, limiting their performance.

B. Each pump shall be provided with a lubricant chamber for the shaft sealing system. The lubricant chamber shall be designed to prevent overfilling and shall provide capacity for lubricant expansion. The seal lubricant chamber shall have one drain and one inspection plug that are accessible from the exterior of the motor unit. The seal system shall not rely upon the pumped media for lubrication.

5.06 SHAFT

The pump and motor shaft shall be the same unit. The pump shaft shall be an extension of the motor shaft. Couplings shall not be acceptable. The shaft shall be AISI Type 431 stainless steel and shall be completely isolated from the pumped liquid. The use of Stainless steel sleeves shall not be considered equal to stainless steel shafts.

5.07 IMPELLER AND VOLUTE

A. The impeller shall be of ASTM A-532 (Alloy III A) 25% chrome cast iron dynamically balanced, semi-open, multi-vane, back swept, screw-shaped, non-clog design. The impeller leading edges shall be mechanically self-cleaned automatically upon each rotation as they pass across a spiral groove located on the volute suction. The screw-shaped leading edges of
the impeller shall be hardened and shall be capable of handling solids, fibrous materials, heavy sludge and other matter normally found in wastewater. The screw shape of the impeller inlet shall provide an inducing effect for the handling of up to 5% sludge and rag-laden wastewater. The impeller to volute clearance shall be readily adjustable by the means of a single trim screw. The impellers shall be locked to the shaft, held by an impeller bolt and shall be coated with alkyd resin primer.

B. The pump volute shall be a single piece gray cast iron, ASTM A-48, Class 35B, non-concentric design with smooth passages of sufficient size to pass any solids that may enter the impeller. Minimum inlet and discharge size shall be as specified. The volute shall have a replaceable suction cover insert ring in which are cast spiral-shaped, sharp-edged groove(s). The spiral groove(s) shall provide trash release pathways and sharp edge(s) across which each impeller vane leading edge shall cross during rotation so to remain unobstructed. The insert ring shall be cast of ASTM A-532 (Alloy III A) 25% chrome cast iron and provide effective sealing between the multi-vane semi-open impeller and the volute housing.

5.08 BEARINGS

A. The pump shaft shall rotate on at least two bearings. Motor bearings shall be permanently grease lubricated. The upper bearing shall be a single deep groove ball bearing. The lower bearing shall be a two row angular contact bearing to compensate for axial thrust and radial forces. Single row lower bearings are not acceptable.

B. On units 10 Hp and larger, the integral pump/motor shaft shall rotate on two bearings. The motor bearings shall be sealed and permanently grease lubricated with high temperature grease. The upper motor bearing shall be a single ball type bearing to handle radial loads. The lower bearing shall be a two row angular contact ball bearing to handle the thrust and radial forces. The minimum L10 bearing life shall be 50,000 hours at any usable portion of the pump curve.

5.09 MOTOR & PROTECTION DEVICES

A. The pump motor shall be a NEMA B design, induction type with a squirrel cage rotor, shell type design, housed in an air filled, watertight chamber. The stator windings shall be insulated with moisture resistant Class H insulation rated for 180°C (356°F). The stator shall be insulated by the trickle impregnation method using Class H monomer-free polyester resin resulting in a winding fill factor of at least 95%. The motor shall be inverter duty rated in accordance with NEMA MG1, Part 31. The stator shall be heat-shrink fitted into the cast iron stator housing. The use of multiple step dip and bake-type stator insulation process is not acceptable. The use of bolts, pins or other fastening devices requiring penetration of the stator housing shall not be acceptable. The motor shall be designed for continuous duty handling pumped media of 40°C (104°F) and capable of up to 30 evenly spaced
starts per hour. The rotor bars and short circuit rings shall be made of cast aluminum. Thermal switches set to open at 125°C (260°F) shall be embedded in the stator lead coils to monitor the temperature of each phase winding. These thermal switches shall be used in conjunction with and supplemental to external motor overload protection and shall be connected to the control panel. The junction chamber containing the terminal board shall be hermetically sealed from the motor by an elastomer compression seal. Connection between the cable conductors and stator leads shall be made with threaded compression type binding posts permanently affixed to a terminal board. The use of wire nuts, bayonet or crimp-type connector shall not be acceptable. The motor and the pump shall be produced by the same manufacturer. Motors manufactured by sources other than the pump manufacturer shall not be acceptable.

B. The combined service factor (combined effect of voltage, frequency and specific gravity) shall be a minimum of 1.15. The motor shall have a voltage tolerance of plus or minus 10%. The motor shall be designed for operation up to 40°C (104°F) ambient and with a temperature rise not to exceed 80°C. A performance chart shall be provided upon request showing curves for torque, current, power factor, input/output kW and efficiency. This chart shall also include data on starting and no-load characteristics.

C. The power cable shall be sized according to the NEC and ICEA standards and shall be of sufficient length to reach the junction box without the need of any splices. The outer jacket of the cable shall be oil resistant chloroprene rubber. The motor and cable shall be capable of continuous submergence underwater without loss of watertight integrity to a depth of 65 feet.

D. The motor horsepower shall be adequate so that the pump is non-overloading throughout the entire pump performance curve from shut-off to the point of minimum system static discharge head.

E. All stators shall incorporate thermal switches in series to monitor the temperature of each phase winding. At 140°C (284°F) the thermal switches shall open, stop the motor and activate an alarm.

F. A leakage sensor shall be used to detect water in the stator chamber. The Float Leakage Sensor (FLS) is a small float switch used to detect the presence of water in the stator chamber. When activated, the FLS will send an alarm and, if desired, stop the motor. The pump control system shall monitor the circuit in each pump and prohibit operation in the instance of a fault.

5.10 GUIDE BAR & BRACKETS

A. Two AISI 304 stainless steel schedule 40 guide bars and brackets shall be provided by the pump supplier for each pump for the purpose of guiding the pump unit in raising and lowering. The guide bars shall not support any portion of the weight of the pump. The lower guide bar holders shall be
integral with the discharge elbow. The pump unit shall be guided on the bars by a guide bracket which shall be an integral part of the pump.

B. Guide systems incorporating cables in lieu of stainless steel guide bars shall not be considered equal to guide bars and shall not be acceptable.

5.11 LIFTING CHAIN & FITTINGS

Submersible pumps in duplex pump stations shall be furnished with a pump lifting-chain positive-recovery system consisting of the following components:

A. A forged “grip-eye” of wrought alloy steel, provided separately to connect to end of the lifting chain of the pump.

B. An adequate length of 304 stainless steel lifting chain with shackles & clevis’ shall be provided for each pumping unit. The lifting chain shall extend from the pump lifting bale to a point four (4) feet minimum above the wet well top. The working load of the lifting chain shall be 50% greater than the unit weight of the pump.

PART 6 – CONTROL PANEL

6.01 SCOPE

The System Supplier shall provide a Duplex Pump Control system that shall control connected pumps in an energy conservation mode of operation. The system shall be capable of adapting to changing inflow conditions and shall automatically regulate pumped outflow based on inflow conditions and shall seek an optimal energy efficiency for the pump station. This shall be accomplished by either providing a Programmable Logic Controller (PLC) with Variable Frequency Drives (VFDs) to provide a station adaptable feature or Variable Frequency Drive with integral software designed for this purpose. This system will incorporate the functionality as noted in the following sections.

Additionally, the control panel shall be capable of powering up and connecting to the existing SCADA system provided by Dexter Fortson Associates.

6.02 ELECTRICAL CONTROL PANEL SPECIFICATIONS

A. The System Supplier shall furnish a NEMA 3R Painted (white) steel control panel enclosure that will house the equipment furnished as specified herein to provide integral liquid level control, moisture and thermal protection modules with either a PLC and VFD’s or Advanced Integrated VFD. The enclosure shall be a definite purpose enclosure to maximize cooling of the installed equipment and will be provided with a minimum of the following:

a. Main Lugs for Incoming Power. The Control Panel shall incorporate Feeder Breakers of the appropriate size. The breakers shall be Heavy Duty NEMA rated and suitable for use with aluminum or copper conductors. Utility Meter and
Fused Disconnect shall be located outside of the panel and be provided by an Electrical Contractor or shall be existing where applicable.

b. Each pump motor circuit shall be protected by a properly sized H frame molded case circuit breaker. Each pole of these breakers shall provide inverse time delay overload protection and instantaneous short circuit protection by means of a thermal magnetic element. The breaker shall be operated by a toggle type handle and shall have a Quick-make, Quick-break over center switching mechanism that is mechanically trip free from the handle so that the contacts cannot be held closed against short circuits and abnormal currents. Tripping due to overload or short circuit shall be clearly indicated by the handle automatically assuming a position midway between the manual “ON” and “OFF” position. The minimum interrupting rating of the breaker shall be 42,000 amps at 460 VAC. Pump motor circuit breaker toggle shall be operable through a cutout in the inner door.

c. Hand-Off-Automatic (external or integral to the VFD HMI) switches to select the operating mode for each pump installed on the control panel inner deadfront door.

d. Elapsed time meters and Run, Fail and Alarm Lights shall be provided for each pump motor with appropriate relays as required.

e. In the event either pump operation selector switch is in the “Off” position, the control system software shall automatically designate the operating pump motor as the “next pump motor to operate” after that pump motor is started.

f. The hinged inner door shall be provided and fabricated from, 5052-H32.080, marine alloy aluminum. The hinged inner door shall contain cutouts for all circuit breaker toggles. Control switches and indicators shall be labeled and mounted to the hinged inner door to keep operators from entering the live electrical compartment. A warning sign stating “DANGER -- Disconnect All Sources Of Power Before Opening Door” shall be installed on the inner door. The inner door shall be completely removable for ease of service and shall be held closed by at least (2) hand operated 1/4 turn fasteners. The following items shall be mounted on the inner door:

g. Hand-Off-Automatic – External or Integral to the VFD Operator Interface

h. Back-panel - The control system enclosure shall include a removable back-panel. The back-panel shall be painted white and fabricated from cold roll steel.

i. Components shall be fastened to the back-panel using stainless steel pinhead machine screws. All devices shall be clearly labeled in accordance with the schematic ladder diagram.

j. Transient Voltage Surge Suppressors on the 120VAC circuit

k. Loop Power Surge Suppressor
I. Dual Signal Splitters 9106 for a total of 3 Analog Outputs

m. Lightening Arrestor

n. Cooling Fan and Enclosure Light

o. Top Mounted Weatherproof Alarm Light

B. Energy Management Components furnished by the System Supplier

a. A Variable Frequency Drive with integral wastewater algorithms or a PLC with Variable Frequency Drive shall be provided for each pump in the system, sized for the appropriate voltage and power. The units(s) shall be supplied by the System Supplier and designed for wastewater pumping and with functionality pre-programmed for the specific pump model used. The VFD with Integral Control or PLC with VFD shall provide all level control functionality, hand/auto operation, pump alternation, pump over temperature monitoring, seal leakage monitoring, pump self-cleaning, sump cleaning and pipe cleaning algorithms. The supplied system shall also include capability to monitor station inflow, pump speed and energy consumption in order to automatically operate the pump station at optimal energy efficiency.

b. The system shall be tested and approved in accordance national and international standards and comply with Directive 98/37/EC, Safety of Machinery and EN60204-1.

c. It shall conform to the relevant safety provisions of the Low Voltage Directive 2006/95/EC and the EMC Directive 2004/108/EC and has been designed and manufactured in accordance with the following harmonized European standards:

<table>
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<th>Standard</th>
<th>Description</th>
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<tr>
<td>EN 61800-5-1: 2003</td>
<td>Adjustable speed electrical power drive systems. Safety requirements. Electrical, thermal and energy.</td>
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<tr>
<td>EN 61800-3 2nd Ed: 2004</td>
<td>Adjustable speed electrical power drive systems. EMC requirements and specific test methods</td>
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<td>EN 55011: 2007</td>
<td>Limits and Methods of measurement of radio disturbance characteristics of industrial, scientific and medical (ISM) radio-frequency equipment (EMC)</td>
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<tr>
<td>EN60529: 1992</td>
<td>Specifications for degrees of protection provided by enclosures</td>
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d. The variable frequency drive ampere rating shall be equal to or greater than the ampere rating listed on the motor being driven by the variable frequency drive.
e. The drive units shall be modularly constructed. Printed circuit boards shall
be connected in such manner that they are easily removed from the unit. Power components shall be readily accessible and be connected in such manner that they are easily removed from the unit. The pump drive shall be freestanding for wall mounting or cabinet installation construction, for 230-480V, 60HZ 3Phase supply and shall be rated for IP55 and IP66 isolation class.

C. System Operation – VFD with Integral Control or PLC and VFD Functionality

a. High/Low Level Sump Control: The system shall provide automatic level control via means of a submersible pressure transducer (4-20mADC) and one (1) non-mercury liquid level float switch. A user-programmable Start Level shall indicate the point at which the pump will start. Upon activation the pump shall run at maximum speed for a pre-determined period, then ramp down to an energy efficient optimal speed, calculated by the system. When the water level reaches the Stop Level, the pump shall stop. The Optimal Speed shall either be calculated by the system or manually entered by the user but shall be capable of either scenario:

1. In case of high inflow, the system shall increase pump speed until the water level begins to decrease. When the water level reaches the Stop Level, the pump shall stop.

2. In case of very high inflow, when a pump or pumps are unable to overcome the inflow conditions even at maximum speed, additional pumps shall be activated and run at maximum speed until the stop Level is reached. If water levels continue to rise, a High Level Alarm shall be activated.

3. The system shall incorporate a Minimum Speed function that prevents the pump from operating at speeds too low to move water based on the pump curve.

b. Run Time Averaging:

The system shall provide capability to balance run times for even wear among available operable pumps. This shall be a function of the control system and not require external devices, such as an Alternating Relay. The function shall operate by determining a “random” start level based on the Start Level setting. The system shall determine a random start level independent of each other. The system shall determine new random start levels every 24 hours. The pump with the lowest random start level shall be first to start on any given pump cycle. Other pumps shall remain in Standby capacity in case the lead and/or lag pump shall not be able to lower the water level as described in the section above. By recalculating the random start levels every 24 hours, balanced run times are accomplished.
c. Pump Cleaning Function:

The system shall incorporate a “self-cleaning” function to remove debris from the pumps. The cleaning shall be triggered by three circumstances:

1. Soft Clogging: When motor current equals 20% or greater above rated motor current, in the drive, for a period of 7 seconds
2. Hard Clogging: When motor current equals 80% or greater above rated current for a period of 0.01 seconds
3. Schedule Cleaning: The system is pre-programmed to perform cleaning regularly. The cleaning function shall consist of forced stopping, reversal and forward runs timed to allow for debris to fall from the impeller. After cleaning cycle is complete, drive shall resume to automatic operation.

d. Sump Cleaning Function:

The system shall incorporate a sump cleaning function to ensure surface solids and grease is regularly removed from the sump. The sump cleaning function shall perform regularly when enabled by the operator. Sump cleaning shall consist of the following functions:

1. Sump cleaning is triggered when internal timer expires and during a normal pump down cycle
2. Pump is automatically ramped to maximum speed
3. Pump runs at maximum speed for designated time or until the pump are snoring.
4. When Sump Cleaning is over, the pump is shut off and resumes normal operation.

e. Pipe Cleaning Function: The system shall incorporate a pipe cleaning function to avoid discharge pipe sedimentation and clogging due to reduced pump speed. This shall be an automatic feature that initiates with every pump cycle. Upon reaching Pump Start Level, the system shall operate the pump at 100% speed for a determined time before ramping down to the most energy efficient speed for the duration of the cycle.

f. Energy Efficiency Speed Finder:

The system shall provide a function that automatically calculates the most energy efficient speed for the pump based on station inflow characteristics. An algorithm calculates the optimal speed whereby the most water is pumped using the least amount of energy, the optimal speed is constantly adjusted to account for changes inflow without requiring operator adjustment, multiple setpoints, etc. The energy efficient function prevents the drive from running off of the system
curve for the pump. This will ensure maximum hydraulic efficiency as well as electrical efficiency is maintained.

g. Alarms & Monitoring:

The system shall provide alarms and monitoring for the system, pump and sump. Alarms shall be presented on the display, via a Summary Alarm relay and via Modbus registers. All alarms, when occurring, shall remain active until reset. Alarms shall have a built-in 4 second delay to prevent nuisance tripping. Alarms shall be as follows:

1. Pump Monitoring:
   a. Pump Over Temperature (thermal contacts in motor stator)
   b. Pump Seal Leak (Seal leakage sensor)

2. Sump Monitoring:
   a. High Sump Level (via level float switch or submersible transducer)
   b. Submersible transducer Sensor Error (Submersible transducer is not connected, reports faulty values or the wrong start level is used)

3. Pump drive Monitoring (includes, but not limited to):
   a. Drive Overcurrent
   b. Drive Overload Trip
   c. Drive Overvoltage
   d. Drive Undervoltage
   e. Drive Overttemperature (internal)
   f. Drive Overttemperature (ambient)
   g. Drive Undertemperature (ambient)
   h. Input Phase Loss
   i. Drive Output Max Torque Exceeded

D. Submersible Pressure Transducer

a. The liquid level of the wet well shall be sensed by a submersible level transducer. The transducer shall be a 2-wire type to operate from the level controller’s regulated loop power supply and produce an instrumentation signal (4-20mA) in direct proportion to the measured level excursion over a factory-calibrated range of zero to (30) feet of water. The level transmitter shall measure level from 0 to 12 inch through 0 to 1000 feet as specified at the time of ordering.

b. The transducer shall be of the ceramic capacitive, relative pressure sensing type, suitable for continuous submergence and operation and shall be installed in accordance with manufacturer's instructions. The bottom diaphragm face of the sensor shall be installed approximately 6 inches above the wet well floor. The sensor shall be hung in the wet well using a cable bracket including two
sliding cable locking jaws in a location in the wet well and as shown on the job plans.

c. The transducer housing shall be fabricated of PPS (polyphenylene sulfide) with a ceramic bottom diaphragm.

d. The transducer element shall incorporate high over-pressure protection and be designed to withstand intermittent overpressures (10) times the full-scale range being sensed. Metallic diaphragms shall not be acceptable in that they are subject to damage or distortion. Sensing principles employing LVDTs, resistive or pneumatic elements shall not be acceptable.

e. The internal pressure of the lower transducer assembly shall be relieved to atmospheric pressure through a heavy-duty urethane jacketed hose/cable assembly and a slack PVC bellows mounted in the control panel. The sealed breather system shall compensate for variations in barometric pressure and expansion and contraction of air due to temperature changes and altitude as well as prevent fouling from moisture and other corrosive elements.

f. The transducer assembly shall be installed where directed by the Engineer and connected with other system elements and placed in successful operation.

g. The transducer shall have a programming feature using a standard USB interface and a laptop computer, the servicing transmitter can be programmed on-the-fly to the required measuring range. The design without sharp edges prevents particles, textiles and paper from sticking to the housing or the diaphragm. The transducer shall be surge resistant.

h. The transducer power cable shall be steel reinforced PUR cable with high tensile strength (2,000 lb).

PART 7 – PUMP STATION VALVES

GENERAL

7.01 PUMP STATION VALVES

The system supplier shall furnish two check valves, and two plug valves. These items shall be shipped loose for installation in the pump station valve vault and along the force main as required. Piping, fittings, bolts, gaskets in the valve vault and along the force main shall be supplied by the contractor.

7.02 PUMP STATION VALVES

A. Plug valves shall be of the non-lubricating, eccentric type and shall be designed for a working pressure of 175 psi for valves 12” and smaller, 150 psi for valves 14” and larger. Valves shall provide tight shut-off at rated pressure. Valve shall be manufactured by Henry Pratt. Valves 20” and
smaller shall have round port design. Minimum port area for all valves shall be 80% of corresponding pipe area.

B. The plug valve body shall be cast iron ASTM A126 Class B with welded-in overlay of 90% nickel alloy content on all surfaces contacting the face of the plug. Sprayed, plated, nickel welded rings or seats screwed into the body are not acceptable. The valve plug shall be cast iron ASTM A126 Class B, with Buna N resilient seating surface to mate with the body seat. Valve flanges shall be in strict accordance with ANSI B16.1, Class 125.

C. Plug valve shall be furnished with permanently lubricated sleeve type bearings conforming to AWWA C504. Bearings shall be of sintered, oil impregnated type 316 stainless steel ASTM A-743 Grade CF-8M or bronze ASTM B-127. Valves shaft seals shall be of the "U" cup type, in accordance with AWWA C504. Seals shall be self adjusting and repackable without moving the bonnet from the valve. 6" and smaller exposed valves shall be provided with wrench actuators. 8" and larger exposed valves shall be provided with worm gear type manual actuators. All buried valves shall be provided with worm and gear actuators suited for the intended service.

D. Rubber Flapper Check Valves. Check valves shall include weight and lever swing. Valves conform to all standards set forth in AWWA C508, with ANSI B16.1 Flanges, Class 125 and the valves shall be rated to 250 psi. The valve body shall be constructed of ductile iron ASTM A-536 Grade 65-45-12 with flow area equal to the nominal pipe inside diameter throughout the valve. Seat shall be constructed on a 45 degree angle to reduce disc travel. The seat and internal body shall be fully coated with a two part thermosetting epoxy suitable for use in both potable water and wastewater applications. The domed bonnet shall be manufactured of ductile iron ASTM A-536 Grade 65-45-12. The bonnet-to-body seal shall be provided by a gasket to allow easy removal and replacement of the access bonnet. Bonnet bolting shall be SAE Grade 5. The resilient disc shall feature a fully encapsulated steel pressure plate with integral molded O-ring on the face of the elastomer. Nylon reinforcements shall be provided in the flexible hinge area of the disc assembly. The cracking pressure of the disc to open is 0.25 psi. If requested, the manufacturer shall furnish certified results of a proof of design test performed at an independent testing laboratory. Testing shall include a one (1) million-cycle continuous test to demonstrate the durability of the flexible connection.

E. All valves are built for horizontal installation. However, all valves operate equally well in the vertical installations.

F. Combination Air Release and Vacuum Valve shall be Cla-Val Series 36 or equal. The Combination Air Release and Vacuum Valve shall conform to all standard set forth in ANSI-AWWA C512-92 standards.
PART 8 - SERVICE AND WARRANTY

8.01 SERVICE

A. The pump manufacturer shall have an authorized factory service center capable of completely servicing the proposed pumps within 100 miles of the project site. The pump manufacturer shall have a factory direct service center/stocking facility capable of completely servicing, and which stocks identical complete drive units, and spare parts for, the proposed pumps within 100 miles of the project site.

8.02 PUMP WARRANTY

A. The pump manufacturer shall provide prorated warranty for the units supplied to the Owner against defects in material and workmanship for a period of at least five (5) years or 10,000 operating hours in writing under the operating conditions presented by this project. Pump manufacturer shall demonstrate ability to support claimed warranty coverage by meeting all requirements of Section 4.01 of this specification.

B. The manufacturer guarantees the installation to be free from clogging when pumping sewage and wastewater containing solids and debris normally found in domestic wastewater. This guarantee is extended to the original owner for a period of 24-months from the date of start - up of the equipment by the local authorized distributor. Should the pump impeller clog with typical solids and/or debris normally found in domestic wastewater during this period, the manufacturer shall reimburse the owner for reasonable cost to remove the pump, clear the obstruction and reinstall the affected pump unit. The manufacturer reserves the right to inspect the pump station, pump units and possibly modify the pump unit, if deemed necessary, to mitigate any further occurrence of pump clogging at no cost to the owner.

END OF SECTION
PART 1.00 NOTICE

The General Conditions, Special Conditions and all other herein bound and accompanying documents are part of these specifications and of the Contract. Submission of proposal implies that the Bidder is fully conversant with all requirements of all above mentioned documents.

PART 2.00 DUCTILE IRON PIPE

2.01 All mechanical joint ductile iron pipe for force mains shall conform to Standards of AWWA/ANSI A21.5 and A21.51, latest revision.

2.02 All ductile iron pipe shall be at least 18-feet long with wall thickness as determined by ANSI A21.50 using 150 psi working pressure, 3-foot earth cover over pipe, standard allowances for water hammer. In no case shall length of pipe be less than 3-feet for any size pipe. Pipe wall thickness shall in no case be less than the following:

<table>
<thead>
<tr>
<th>NOMINAL PIPE DIAMETER</th>
<th>THICKNESS</th>
</tr>
</thead>
<tbody>
<tr>
<td>INCHES</td>
<td>CLASS</td>
</tr>
<tr>
<td>3 - 12</td>
<td>50</td>
</tr>
<tr>
<td>14 - 48</td>
<td>50</td>
</tr>
</tbody>
</table>

2.03 Provide manufacturer's certificate of compliance with specification for each shipment of pipe.

2.04 The Contractor shall purchase all ductile iron pipe from approved, reputable, responsible manufacturers. Furnish to the Engineer duplicate copies of orders for pipes under this contract.

2.05 All ductile iron pipe shall be lined with cement mortar as per ANSI A21.4, latest revision.

2.06 See drawings for locations and extent.

PART 3.00 SPECIAL FITTINGS

Mega Lug

3.01 ANSI A21.10 – Fittings three-inches (3") to forty-eight inches (48").

3.02 ANSI A21.11 – Rubber gasket joints for ductile iron pressure pipe and fittings.

3.03 All ductile iron pipe and ductile iron fittings will be mechanical joint, cement-lined, domestic made ANSI-AWWA C151, without gaskets, glands and tee head bolt. Retainer
glands shall be Mega Lug, Series 1000 or Uni-Flange Series 1400 mechanical joint, thrust restraint, breakaway, torque heads, domestic brand or equal.

3.04 Weights for mechanical joint fittings will be based on those published by Tyler Pipe for mechanical joint short body, Class 350 fittings. Concrete blocking for fittings shall be included in the unit price bid per foot of water main.

PART 4.00 JOINTS AND COUPLINGS

4.01 Mechanical joints shall be stuffing box type, with gasket, cast iron gland and cast iron bolts as per ANSI A21.11. Complete joints as per manufacturer's recommendations and with all applicable sections of this specification.

A. Before installation, clean spigot and opposing socket free of foreign matter and loose rust with a wire brush to insure proper seating of gasket. Immediately prior to installation, brush said spigot, opposing socket, and gasket with clean soapy water for final cleaning and lubricate gasket as it is forced into its retaining space.

B. After inserting bolts through flange and gland, tighten same uniformly until torque on each bolt is within the following range:

<table>
<thead>
<tr>
<th>BOLT SIZE</th>
<th>RANGE OF TORQUE</th>
<th>BOLT SIZE</th>
<th>RANGE OF TORQUE</th>
</tr>
</thead>
<tbody>
<tr>
<td>INCHES</td>
<td>FEET - POUNDS</td>
<td>INCHES</td>
<td>FEET - POUNDS</td>
</tr>
<tr>
<td>5/8</td>
<td>45-60</td>
<td>1</td>
<td>100-200</td>
</tr>
<tr>
<td>3/4</td>
<td>75-90</td>
<td>1 ¼</td>
<td>120-150</td>
</tr>
</tbody>
</table>

C. As bolts are tightened, bring gland up toward flange evenly and maintain approximately same distance between gland and face of flange at all points around socket. Accomplish this by partially tightening bottom bolt first, then the top bolts, next cycle until all bolts are within above specified range to torques. If effective sealing is not obtained at maximum torque indicated above, disassemble joint, clean same thoroughly and reassemble. Over-stressing bolts to force tight seal is prohibited.

END OF SECTION