onwasa.com
228 Georgetown Rd
Jacksonville, NC 28540

REQUEST FOR BID
TITLE:

Hubert Well 2 Generator Improvement Project
INFORMAL RFB

Date of Issue: July 22, 2021
Bids Due: August 11, 2021

For more information contact:
Robin King
Finance and Purchasing Supervisor

E-mail: rking@onwasa.com

Onslow Water & Sewer Authority
Hubert Well 2 Generator Improvement Project
INSTRUCTIONS FOR BIDDERS

Bids will be received by the Onslow Water & Sewer Authority (hereinafter referred to as ONWASA) until **2:00 pm on August 11, 2021,** to provide all labor, equipment, and materials necessary to permanently install existing portable generator and a new fuel supply tank on a concrete pad at Hubert Well 2 in Onslow County, NC as specified in this Request for Bids (hereinafter referred to as RFB). This is an informal request for bids and the bids received will not be public until the contract is awarded.

Bids must be submitted on the Bid Pricing Sheet (Exhibit 2) which is included as part of this RFB Package and must be completed in its' entirety. All bids shall be submitted to the ONSWASA Finance Office at the address listed in the *Information for Bidders* section of the RFB by the specified due date.

Quoted price should not include any sales or use taxes but should only reflect the actual bid price of the service and materials.

All bids shall be valid for a period of 60 days pending award of contract or ONWASA Board of Director's approval.

ONWASA reserves the right to reject any or all bids, to waive informalities, and to accept any bid which, in the opinion of ONWASA, appears to be in its best interest, or to award this contract in part or in total.

Bids will be evaluated by determining the lowest responsive, responsible bidder considering:

- Bidder ability and capacity to provide the designate materials.
- Bidders price for services.
- Character, integrity, reputation, judgment, experience, and efficiency of bidder.

Bidders responding to this RFB are hereby notified that North Carolina General Statutes relating to licensing of contractors will be observed in receiving bids and awarding contracts.

This RFB and all Bidder responses are considered public information after the contract is awarded, except for trade secrets specifically identified in writing by the Bidder, which will be handled according to North Carolina State Statute or other laws. Any section of the Bidder's response package that is deemed to be a trade secret by the Bidder shall be submitted in a separate envelope clearly marked "TRADE SECRET INFORMATION- DO NOT DISCLOSE."

INFORMATION FOR BIDDERS

1. BID INFORMATION

GENERAL

The Bidder shall provide all labor, equipment, and materials necessary to permanently install existing portable generator and a new fuel supply tank on a concrete pad located at 266 Riggs Road, Hubert, NC 28539.

SITE INSPECTION

It is mandatory for Bidders to physically inspect the work location prior to submitting a proposal. ONWASA staff will conduct a pre-bid tour of Hubert Well 2 August 3, 2021; beginning at 10:00 AM at Hubert Well 1, located at 110 Old Hwy 172, Hubert, NC 28539. There will be no other site visits scheduled for this project.

2. SUBMITTAL OF BIDS

Bids must be written legibly on the Bid Pricing Sheet (Exhibit 2) and addressed to:

Onslow Water & Sewer Authority
Hubert Well 2 Generator Improvement Project
Finance Office
228 Georgetown Road
Jacksonville NC 28540

Or if emailed:

rking@onwasa.com
Subject line to read: Hubert Well 2 Generator Improvement Project

Bids may be received prior to the date and time of the bid opening. It is the Bidder's responsibility to ensure that the bid is received by ONWASA prior to the hour and date specified in this RFB. Any bids received after that hour and date will be returned unopened.

3. PRICE FOR SERVICES

Bids must be submitted using the Bid Pricing Sheet (Exhibit 2) provided in the RFB. The Bidder shall provide a lump sum price to complete all work at Hubert Well 2, and the contract will be awarded to the apparent low bidder.

4. INTERPRETATION OF DOCUMENTS

If any Bidder submitting a bid is in doubt as to the true meaning of any part of this RFB or finds discrepancies or omissions in the RFB, he may submit a request for an interpretation or correction to ONWASA's Finance and Purchasing Supervisor, Robin King via e-mail rking@onwasa.com. Any interpretation or correction of the documents will be made only by addendum duly issued and a copy of such addendum will be posted on ONWASA's website. ONWASA will not be responsible for any other explanations or interpretations of the documents. Receipt of addenda should be noted on the Bid Pricing Sheet (Exhibit 2).

Any questions pertaining to the Scope of Work or the ONWASA Specifications should go to Robin King, Finance and Purchasing Supervisor, via email at rking@onwasa.com.

5. ADDENDA

Any addendum issued prior to the date set forth for bid submittal shall be covered in the bid and shall be made a part of the contract. It is the responsibility of the Bidder to be aware of information issued in the form of addendum. Receipt of any and all addenda issued shall be acknowledged by Bidder in the space provided on the Bid Pricing Sheet.

6. WITHDRAWAL OF BID

Any Bidder may withdraw their bid, either personally or by written request, at any time prior to the scheduled closing time for receipt of bids. Bids shall remain valid for a period of sixty (60) days after submittal.

7. AWARD OR REJECTION OF BIDS

If a contract is awarded, ONWASA will award to the lowest, responsive, responsible Bidder whose bid, in ONWASA's opinion, best complies with the criteria outlined in this RFB taking into consideration price, methodology, quality, performance and the time specified in the bids for the performance of the contract.

ONWASA reserves the right to accept or reject any or all bids if it is deemed best for the public good, and to waive any informality in the bids received.

8. ISSUANCE OF CONTRACT

A contract will be issued to the selected Bidder. ONWASA's terms and conditions for this type of work are provided in ONWASA's Standard Service Contract Language (Exhibit 3).

9. MINORITY BUSINESS PARTICIPATION AND NON-DISCRIMINATION

The successful Bidder, and any subcontractor under him, shall be required to ensure that minority and women owned business enterprises will be provided equal opportunity to submit bids for subcontracts to the maximum extent feasible. Further, there shall be no discrimination in employment practices on the basis of race, religious creed, color, national origin, ancestry, age, physical handicap, medical condition, marital status, or sex.

10. INSURANCE

Bidder must include with their bid a Certificate of Insurance showing coverage limits as outlined in ONWASA's Standard Service Contract Language (Exhibit 3).

11. VENDOR FORM

The Bidder shall complete the Onslow Water and Sewer Authority Vendor Form (Exhibit 5) and include it with submission of the Bid.

12. E-VERIFY/ IRAN DIVESTMENT

The Bidder shall comply with the requirements of Article 2 of Chapter 64 of the North Carolina General Statutes by filling out the E-Verify Affidavit (Exhibit 4). By acceptance of this contract, the Contractor affirms they are not listed on the Final Divestment List created by the North Carolina State Treasurer pursuant to N.C.G.S. 143-6A-4, Iran Divestment Act Certification.

13. CONTRACT ADMINISTRATION

COORDINATION

The selected Bidder (the Contractor) will coordinate all activities with James Arnold, Hubert Water Treatment Plant Supervisor, via email at jarnold@onwasa.com. The selected Bidder shall receive approval from ONWASA prior to performing work at any site.

WARRANTIES

The Contractor shall warranty all workmanship for twelve (12) months, and for the full manufacturer's warranty period on materials.

ERRORS/DEFICIENCIES

The Contractor shall immediately, without additional compensation, make any corrections regarding inferior or incomplete work or materials furnished under any contract issued as a result of this solicitation, if it is determined by ONWASA that the Contractor is responsible for the errors or deficiencies.

ADDITIONAL WORK

The Contractor shall not perform any work beyond that described in the Scope of Work for that site (Exhibit 1) without prior written authorization from ONWASA.

TIME OF PERFORMANCE

As time is of the essence in completing this project, after receiving a written Notice to Proceed from ONWASA all work on the project shall be completed within one hundred twenty (120) consecutive calendar days following the issuance of a written notice to proceed. The Contractor shall at all times during the Contract period perform the work with such resources as are necessary to complete the project within the time specified.

Exhibit 1
SCOPE OF WORK
Hubert Well 2

The Contractor shall provide all labor, equipment, and materials necessary to permanently install an existing portable (trailer-mounted) generator on a concrete pad and install a new pad-mounted fuel tank at ONWASA's Hubert Well 2.

For the purpose of preparing a proposal, the existing generator at this location is a Trade Winds Model TP80-11 rated at 75kW and is currently mounted on a trailer. Purchase of a new generator is **NOT** part of this Scope of Work and should not be included in the Contractor's cost proposal. The Contractor shall also utilize the existing automatic transfer switch at this location.

All materials and work on this project shall conform to the relevant sections of ONWASA Standard Specifications, 03 11 13 *Cast-In-Place Concrete* (Exhibit 6) and 26 32 13 *Packaged Engine-Generator Systems* (Exhibit 7), along with the following requirements:

1. GENERAL REQUIREMENTS

a. Work shall be performed in accordance with all applicable State and Local Codes and regulations governing this project.
b. Contractor will be responsible for securing and paying for all regulatory permits and/or inspections required.
c. Entrance to the installation site is restricted; work schedules must be coordinated with ONWASA to ensure access.
d. Contractor must coordinate with and receive approval prior to any work activity that impacts the ability of the booster station to run on commercial or emergency power services. Any such downtime shall be minimized as much as possible to avoid impacts to ONWASA system operations.

2. CONSTRUCT NEW GENERATOR/FUEL TANK MOUNTING PADS

a. Provide a steel-reinforced, cast-in-place concrete pad; dimensions shall be based on the footprint and weight of the generator and the fuel tank when fully fueled.
b. Proposed pad location shall be marked in the field for review/approval by ONWASA prior to construction.
c. The proposed location shall allow a four-foot (4') minimum clearance between the existing fence and the generator/ fuel tank installation site.

3. INSTALL NEW FUEL SUPPLY TANK

a. Contractor shall furnish and install a new 500-gallon double wall fuel tank on the concrete mounting pad.
b. Tank exterior shall be fully coated to prohibit corrosion and include three-inch (3") high lettering labeled COMBUSTIBLE-KEEP FIRE AWAY.
c. Tank shall be fitted with a two-inch (2") diameter filler neck with lockable screw-on cap.
d. Tank shall include a visible float type fuel level indicator gauge.
e. Fuel lines (pick up and return) shall be double walled, rated for diesel fuel use and include threaded connections as necessary to allow disconnection for servicing. Threaded connections shall be non-corrosive and approved for this application.

f. Manufacturer's specifications (cut sheets) for the proposed unit shall be submitted to ONWASA for review and approval prior to purchase.
g. Mounting to the concrete pad shall be performed in accordance with the tank manufacturer's requirements.
h. ONWASA will fill tank with fuel once installed for acceptance testing (see Item 6).

4. MOUNT EXISTING GENERATOR TO CONCRETE PAD

a. Contractor shall remove the existing generator from trailer: trailer shall remain the property of ONWASA.
b. Contractor shall properly secure all the fuel lines and holes that are on the existing fuel tank/trailer.
c. Mount generator to the concrete pad in accordance with the manufacturer's recommendations and provide vibration isolation pads.
d. Battery shall be mounted to genset with an approved tray that keeps the battery free of standing water. Mounting the battery to the fuel tank will not be permitted.

5. CONNECT GENERATOR TO EXISTING ELECTRICAL SERVICE AND ATS

a. Provide all labor and materials necessary to connect the generator and the fuel tank to the existing electrical service, existing ATS and control systems, in accordance with the current edition of the NC Electrical Code and all other applicable regulatory requirements.
b. The wiring to the existing transfer switch shall be in accordance with manufacturer's recommendations, NC Electrical Code, and site conditions.
c. The existing Appleton receptacle shall remain operational in the event the pad mounted generator fails, and a mobile generator needs to be used.
d. The existing commercial power disconnect switch shall be wired to allow the ATS to transfer to generator power when switched to the off position.
e. Work shall include connection of block heater and battery charger wiring, termination of wiring for generator run status at the existing SCADA control panel, installation of conduit, buried conduit, junction boxes and all other connections necessary to make a fully operational emergency power system.
e. Contractor shall provide and install a buried 120V circuit for the block heater and onboard battery charger. Contractor will tie into the existing breaker panel that is in the pump room. This circuit shall include a circuit breaker that is rated for the load.
f. Provide all labor and materials necessary to connect generator run status wiring to analog input inside RTU panel. Wiring termination locations and SCADA programing for generator run signal will be provided ONWASA.

6. CONDUCT GENERATOR START-UP /TESTING

a. Contractor shall conduct start-up demonstration/training for ONWASA staff prior to final acceptance of the work, including verification that the automatic transfer switch operates correctly under loss of commercial power supply and the connection to the ONWASA SCADA system is functioning properly.

END OF SCOPE OF WORK

Exhibit 2
HUBERT WELL 2 GENERATOR IMPROVEMENT PROJECT
BID PRICING SHEET

_____(Bidder) will permanently install an existing portable generator and a new fuel supply tank on concrete pad as listed in the Scope of Work (Exhibit 1) and any Addenda, including all permits, parts, labor, restoration of area and any other cost below.

In submitting this Bid, Bidder represents that all copies of the Contract Documents and the following addenda have been examined:

Date	Number
_____	_____
_____	_____
_____	_____

Total bid for all work, completed and fully operational, as described in the Scope of Work for

$_____

Bid in words: _____

By signing this Hubert Well 2 Generator Improvement Bid Pricing Sheet the Bidder, if selected, agrees to perform the services listed in the Scope of Work (Exhibit 1) and any Addenda, using the rates quoted on this Bid Pricing Sheet. Bidder hereby acknowledges that he has read, understands, and agrees to the conditions stated in ONWASA Standard Service Contract language (Exhibit 3).

_____ _____
Signature Company Name

_____ (SEAL)
Title

EXHIBIT 3
ONWASA STANDARD SERVICE CONTRACT
HUBERT WELL 2 GENERATOR IMPROVEMENT PROJECT

THIS CONTRACT is made and entered into this the _____ day of _____, 20_____, by and between the **ONSLOW WATER & SEWER AUTHORITY**, a political subdivision of the State of North Carolina (hereinafter referred to as "ONWASA") and _____, a corporation duly authorized to do business in the State of North Carolina, (hereinafter referred to as "Contractor").

ONWASA and Contractor agree as set forth below:

Request for Bids for **Hubert Well 2 Generator Improvement Project, permanent installation of the existing generator with a new fuel supply tanks and a concrete pad,** dated July 22, 2021; is attached to, and hereby incorporated into, and made part of this Contract by reference (hereinafter referred to as "the work"). Each reference to this Contract shall be deemed to include all Exhibits and Addenda. Any conflict between language in an Exhibit or Appendix and language in the main body of this Contract shall be resolved in favor of the main body of this Contract.

ARTICLE 1
GENERAL

1.1 Contractor represents and maintains that it has the necessary qualifications and expertise to assume the responsibilities and render the services described herein and has the requisite corporate authority and licenses required by law.

1.2 The Contractor, Contractor's employees and subcontractors shall provide all labor and materials needed to perform and execute the work as set forth in the Scope of Work outlined in the RFB in accordance with Articles 2 and 3 of this Contract. Any work initiated by the Contractor prior to the execution of a Contract for Services will be at the Contractor's sole risk.

1.3 Contractor shall exercise reasonable care and skill as might be expected from similarly situated professionals performing services of the kind required under this Contract at the time and the place where the services are rendered. The staff of and subcontracted professionals engaged by the Contractor shall possess the experience, knowledge, and character necessary to qualify them to perform the particular duties to which they are assigned.

1.4 Contractor's services shall be performed as expeditiously as necessary for the orderly progress of the work.

1.5 Contractor and ONWASA acknowledge that the Scope of Work described within the Request for Bids may not delineate every detail and minor work task required to be performed by the Contractor to complete the work authorized by the Scope of Work. If during the course of the performance of the work authorized by this Contract, the Contractor determines that services outside the level of those originally anticipated are required, the Contractor shall notify ONWASA's designated representative in writing and obtain ONWASA approval before proceeding with the work. Any such additional work performed without obtaining prior approval from ONWASA's designated representative is at the Contractor's sole risk.

1.6 Upon mutual written agreement, the work described in the Scope of Work may be modified upon negotiated additional scopes of service, compensation, time of performance and other matters related to the work. If ONWASA and Contractor cannot contractually agree, ONWASA shall have the right to immediately terminate negotiations at no cost to ONWASA and to procure services from another source.

1.7 The Contractor shall coordinate with the ONWASA's designated representative prior to and during the duration of the Contract.

ARTICLE 2
CONTRACTOR'S RESPONSIBILITIES

2.1 The Contractor shall supply all labor and materials as needed to perform and execute the work described in the Scope of Work. In the event of incomplete, inaccurate, or defective work the Contractor agrees to immediately correct incomplete, inaccurate, or defective work at no further cost to ONWASA.

2.2 The Contractor agrees that it shall be responsible for the proper custody and care of any property furnished for use in connection with the performance of the work and will reimburse ONWASA for loss or damage to such property.

2.3 The Contractor shall be solely responsible for initiating, supervising, and maintaining all safety precautions in connection with the work provided under this Contract. The Contractor shall comply with all applicable laws and regulations relating to the safety of persons or property, or to the protection of persons or property from damage, injury, or loss; and shall erect and maintain all necessary safeguards for such safety and protection. All damage, injury, or loss to any property caused, directly or indirectly, in whole or in part, by the Contractor, any subcontractor, supplier, or any other individual or entity directly or indirectly employed by any of them to perform any of the work, or anyone for whose acts any of them may be liable, shall be remedied by the Contractor.

2.4 Except as otherwise required for the safety or protection of persons or property at the site or adjacent thereto all work shall be performed during regular working hours.

2.5 The Contractor shall give all notices required by and shall comply with all Laws and Regulations applicable to the performance of the Contract. If the Contractor performs any work knowing or having reason to know that it is contrary to laws or regulations, the Contractor shall bear all claims, costs, losses, and damages (including but not limited to all fees and charges of contractors, architects, attorneys, and other professionals and all court or arbitration or other dispute resolution costs) arising out of or relating to such work.

2.6 ONWASA will provide the Contractor with such permissions as required for access to the sites where the work shall be performed in a good and workmanlike manner and the work sites maintained free of trash and waste materials and left in same or better condition than before the work commenced. The Contractor shall supervise and direct the work and shall be solely responsible for and in control of the means, methods, procedures, techniques, and sequences of doing the work.

2.7 The Contractor shall maintain all records, documents, notes, and financial information related to performance of the work in accordance with Generally Accepted Accounting Principles and Practices and shall provide ONWASA with copies of such information. Any information, data, instruments, documents, studies, or reports given to or prepared or assembled by the Contractor under this Contract shall be kept as confidential and not divulged or made available to any individual or organization without the prior written approval of ONWASA.

ARTICLE 3
ONWASA'S RESPONSIBILITIES

3.1 ONWASA shall provide the Contractor with all criteria and full information as to ONWASA's requirements for the work, including objectives and constraints.

3.2 The timely provision of all available information, data, reports, and records to which ONWASA has access and which are needed by the Contractor for the performance of the work.

3.3 Advise the Contractor of the identity and Scope of Work of any other service providers employed by ONWASA to perform or furnish services related to or affecting the work.

3.4 ONWASA will respond within a reasonable time to the Contractor's requests for written decisions or determinations pertaining to the subject of the Contractor's services.

3.5 ONWASA will give prompt written notice to the Contractor whenever ONWASA becomes aware of any event, occurrence, condition, or circumstance which may substantially affect the Contractor's performance of the work under this Contract.

3.6 ONWASA shall designate a representative authorized to act on its behalf with respect to the work. The authorized representative shall communicate decisions pertaining to documents submitted by the Contractor in order to avoid unreasonable delay in the orderly and sequential progress of the work.

3.7 Prompt notice shall be given by ONWASA to the Contractor if ONWASA becomes aware of any fault or defect in the work or nonconformance with the Contract.

ARTICLE 4
INSURANCE

4.1 During the performance of the work under this Contract, the Contractor shall maintain the minimum levels of insurance shown below and is responsible for ensuring original certificates of such coverage are submitted to ONWASA directly from the insurance provider prior to performance. Policies shall list ONWASA as additional insured on all applicable policies. All policies shall be obtained from insurance companies that are duly licensed in the State of North Carolina to issue insurance policies for the limits and coverages so required, must cover the term of the Contract, and provide thirty (30) days advance written notice to ONWASA in the event of cancellation, expiration, or alteration.

1. General Liability Insurance, with a combined single limit of $1,000,000 for each occurrence and $2,000,000 in the aggregate or as otherwise specified in addendum, whichever is greater.

2. Automobile Liability Insurance, with a combined single limit of $1,000,000 for each person and $1,000,000 for each accident.

3. Workers' Compensation Insurance in accordance with statutory requirements and Employers Liability Insurance, with a limit of $500,000 for each occurrence.

4. Excess Liability/Umbrella Insurance, with a limit of $1,000,000 per occurrence

In the event the Contractor is excluded from the requirements of the North Carolina Workers Compensation Act and does not voluntarily carry workers compensation coverage, the Contractor shall carry or cause its employees to carry adequate medical/accident insurance to cover any injuries sustained by its employees or agents during the performance of service.

4.2 The provisions of this Article shall survive the expiration or termination of this Contract.

ARTICLE 5
PAYMENTS TO THE CONTRACTOR

5.1 ONWASA hereby agrees to pay to the Contractor in lawful money of the United States for the faithful performance of the work in accordance with the Scope of Work and quoted prices as set forth in the Bid Pricing on a per invoice basis within 30 days of receipt of the Contractors invoice, subject to additions and deductions as provided in the Contract.

5.2 The Contractor shall invoice for work satisfactorily completed each month. Invoices shall include all sales taxes paid relative to the work, Purchase Order number, description of item(s), quantities, unit price, extended price, freight, state and local taxes, and date of delivery.

5.3 ONWASA may withhold payments if ONWASA has received claims of lien by subcontractors for unpaid labor or materials, if the work of the Contractor is defective, if the Contractor fails to diligently pursue the work with reasonable dispatch, or if the amount requested is not consistent with the level of work actually performed.

5.4 In the event of a disputed or contested invoice, only that portion so contested will be withheld from payment, and the undisputed portion will be paid. Service charges and/or interest will not be accrued to any outstanding or overdue amounts.

5.5 Unless otherwise stated herein, payments are due and payable thirty (30) days from the date of the Contractor's invoice.

ARTICLE 6
TERMINATION, SUSPENSION OR ABANDONMENT

6.1 The Contractor acknowledges that ONWASA is a governmental entity, and the Contract's validity is based upon the availability of public funding under the authority of its statutory mandate. In the event that public funds are not appropriated for the performance of ONWASA's obligations under this Contract, then this Contract shall automatically expire without penalty to ONWASA thirty (30) days after written notice to Contractor of the unavailability and non-appropriation of public funds.

6.2 This Contract may be terminated by either party upon not less than seven days written notice should the other party fail substantially to perform in accordance with the terms of this Contract through no fault of the party initiating the termination.

6.3 In the event of termination that is not the fault of the Contractor, the Contractor shall be compensated for services performed prior to termination, together with reimbursable expenses then due. This shall be the exclusive remedy for termination.

6.4 ONWASA shall have no liability to the Contractor for any delay or damage caused the Contractor due to suspension of the work, or due to any other delay, interruption, hindrance, or interference.

6.5 If termination or suspension occurs, the Contractor shall terminate or suspend performance of the work on a schedule acceptable to ONWASA.

6.6 In the event of noncompliance of any term or terms of this Contract by the Contractor, ONWASA may, at its sole option, declare the Contractor in default and terminate this Contract with not less than seven days written notice. Should ONWASA terminate this Contract due to the default of the Contractor, ONWASA may in addition to its other rights contract with any other party to fulfill the Contractor's obligations hereunder. The Contractor shall be liable for any increase in cost borne by ONWASA due to the default. This shall in no way limit ONWASA's right to collect any other damages, whether legal or equitable, due to the default of the Contractor.

6.7 Force Majeure. In the event that either party is unable to perform any of its obligations under this Contract, or to enjoy any of its benefits because of any event which is unavoidable and beyond the control of the defaulting party, including, but not restricted to, a labor stoppage, strike action or unrest, a judicial or governmental decree, regulation or other direction not the fault of the party who has been affected, the threat or initiation of any legal action, communication line failure, power failure and any natural disaster or Act of God, the party who has been so affected shall immediately give notice to the other party and shall do everything possible to resume performance. Upon receipt of such notice, this Contract shall be immediately suspended. If the period of non-performance exceeds fifteen (15) days from the receipt of notice of the Force Majeure Event, ONWASA may, by giving written notice, terminate this Contract.

ARTICLE 7
OTHER CONDITIONS OR SERVICES

7.1 The terms of this Contract shall control over any conflicting terms in any referenced document.

7.2 If any provision of the Contract shall be held illegal, invalid, or unenforceable, in whole or in part, such provision shall be modified to the minimum extent necessary to make it legal, valid, and enforceable and the remaining provisions shall not be affected.

7.3 To the fullest extent permitted by Laws and Regulations, the Contractor shall indemnify and hold harmless ONWASA and the officers, directors, partners, employees, agents, consultants and subcontractors from and against all claims, costs, losses, and damages (including but not limited to all fees and charges of the Contractors, architects, attorneys, and other professionals and all court or arbitration or other dispute resolution costs) arising out of or relating to the Contract or the work, including the loss of use resulting therefrom and breach of any of the successful Contractor's warranties, but only to the extent caused by any negligent, reckless or intentional act or omission of the Contractor, any subcontractor, any supplier, or any individual or entity directly or indirectly employed by any of them to perform any of the work or anyone for whose acts any of them may be liable or arising out of the Contractor's breach of this Contract. Indemnification responsibilities created by this section shall survive and be enforceable after the Contract between ONWASA and the successful Contractor terminates or expires. The Contractor shall defend any and all suits and assume all liability for any and all claims made against ONWASA or any of its officials or agents for the use of any patented process, device or article forming a part of the articles, equipment or services furnished under this Contract.

7.4 This Contract shall be governed by the law of the State of North Carolina. All actions relating in any way to this Contract shall be brought in the General Court of Justice in the County of Onslow and the State of North Carolina.

7.5 ONWASA and the Contractor, respectively, bind themselves, their partners, successors, assigns and legal representatives to the other party to this Contract and to the partners, successors, assigns and legal representatives of such other party with respect to all covenants of this Contract. Neither ONWASA nor the Contractor shall assign this Contract without the written consent of the other.

7.6 This Contract represents the entire and integrated agreement between ONWASA and the Contractor and supersedes all prior negotiations, representations, or agreements, either written or oral. This Contract may be amended only by written instrument signed by both ONWASA and the Contractor.

7.7 The subject headings of the paragraphs are included for purposes of convenience only and shall not affect the construction or interpretation of any of its provisions. This Contract shall be deemed to have been drafted by both parties and no purposes of interpretation shall be made to the contrary.

7.8 Nondiscrimination Clause: No person in the United States shall on the grounds of age, race, color, national origin, gender, or disability be excluded from participation in, be denied the benefits of, or be subjected to discrimination under any program or activity funded in whole or in part with funds available under this project.

7.9 Minority and Female Business Enterprise: ONWASA encourages participation from Minority and Women Business Enterprise (MWBE).

7.10 Except as otherwise required or provided in the Scope of Work, the Contractor will not meet or confer with any member of any federal, state, or local regulatory agency concerning the services without obtaining the prior consent of ONWASA.

7.11 All notices which may be required by this Contract, or any rule of law shall be effective when received by certified mail sent to the following addresses:

ONSLOW WATER AND SEWER AUTHORITY
Attn: Finance and Purchasing Supervisor
228 Georgetown Road
Jacksonville, NC 28540

IN TESTIMONY WHEREOF, the parties have made and executed this Contract by authorized representatives, acting under and by virtue of the authority in them vested, and have hereunto set their hands and seals, the day and year first written above.

CONTRACTOR ATTEST:

By: _____ _____
Secretary

Print Name/Title: _____

(SEAL)

ONSLOW WATER & SEWER AUTHORITY ATTEST:

By_____ _____
ONWASA CEO Executive Assistant

(SEAL)

This instrument has been pre-audited in the manner required by the Local Government Budget and Fiscal Control Act.

_____
Finance Officer

Exhibit 4
E-VERIFY AFFIDAVIT

I, _____ (the individual attesting below), being duly authorized by and on behalf of_____(the entity identified as the "Employer") after first being duly sworn hereby swears or affirms as follows:

1. Employer understands that E-Verify is the federal E-Verify program operated by the United States Department of Homeland Security and other federal agencies, or any successor or equivalent program used to verify the work authorization of newly hired employees pursuant to federal law in accordance with NCGS §64-25(5).

2. Employer understands that Employers Must Use E-Verify. Each employer, after hiring an employee to work in the United States, shall verify the work authorization of the employee through E-Verify in accordance with NCGS§64-26(a).

3. Employer is a person, business entity, or other organization that transacts business in this State and that employs 25 or more employees in this State.

Employer employs the following number of employees in this State (check which is applicable):

a. Less than 25 _____ b. Between 25 and 100 _____

c. Between 100 and 500 _____ d. 500 or more _____

4. Employer will ensure compliance with E-Verify by any subcontractors subsequently hired by Employer for specified contracts subject to E-Verify entered into with the Onslow Water & Sewer Authority Employer.

This _____ day of _____, _____.

_____
Signature of Affiant

Print or Type Name: _____

State of _____ County of _____

Signed and sworn to (or affirmed) before me, this the _____

day of _____, _____.

My Commission Expires:

_____ _____
Notary Public

(Affix Official/Notarial Seal)

Exhibit 5

Onslow Water and Sewer Authority

Finance Office
228 Georgetown Road
Jacksonville, NC 28540
Fax (910) 455-2504

Vendor Form

Name (as reported on your income tax return) _____
Business Name _____
Federal ID# _____ or SS# _____
Check one of the following:
____ Corporation ____ Sole Proprietorship ____ Partnership ____ Other _____

Order Address	Payment Address
Street _____	Street _____
PO Box _____	PO Box _____
City _____	City _____
State _____	State _____
Zip Code _____	Zip Code _____
Contact Person _____	Contact Person _____
Phone Number _____	Phone Number _____
Fax Number _____	Fax Number _____
E-Mail Address _____	E-Mail Address _____
Terms _____	Discount _____

Are you related to or have a professional relationship with any ONWASA employee? ____ Yes ____ No
(If you answered yes, a Relationship Vendor Form will have to be completed before any payments can be made.)
Are you a minority business enterprise? ____ Yes ____ No
If you answered yes, please check the appropriate box:

- ____ African American
- ____ Hispanic
- ____ Female
- ____ American Indian
- ____ Asian American
- ____ Socially and economically, disadvantaged as defined in 15 U.S.C. 637

Product(s) and/or Service(s) – Please list the type of product(s) and/or service(s) that your company can provide:
_____

Signature: _____

Title: _____

Onslow Water and Sewer Authority
Finance Office
228 Georgetown Road
Jacksonville, NC 28540
Fax (910) 455-2504
Relationship Vendor Form

If you are related to or have a professional relationship with any employee of Onslow Water and Sewer Authority, this form must be completed and returned to the finance office before any payments will be made.

Vendor Information:

Name: _____

Address: _____

Related ONWASA employee: _____

Relationship to employee: _____

We agree that our relationship will not hinder or corrupt our professional relationship with Onslow Water and Sewer Authority.

_____ _____
Vendor Signature Date

_____ _____
ONWASA Employee Signature Date

Onslow Water and Sewer Authority is aware and understands these parties have a relationship with each other. The decision to authorize the use of this vendor was not influenced in any manner by the relationship referenced above.

_____ _____
Department Head Date

_____ _____
Finance Officer Date

Exhibit 6

SECTION 03 11 13 CAST-IN-PLACE CONCRETE

PART 1 GENERAL

1.1 SUMMARY

A. Section Includes:

1. Formwork for cast-in-place concrete.
2. Openings for other work.
3. Form accessories.
4. Reinforcing steel bars, wire fabric and accessories for cast-in-place concrete.
5. Cast-in-place concrete.
6. Finishing and curing of horizontal and vertical concrete surfaces.

1.2 QUALITY ASSURANCE

A. Comply with ACI 301-99 unless specifically noted otherwise.

1.3 DEFINITIONS

A. Exposed: Exposed to view by persons responsible for operation or maintenance of the structure.

PART 2 PRODUCTS

2.1 FORM MATERIALS

A. Forms for Exposed Finish Concrete: Plywood, metal, metal-framed plywood faced, or other acceptablepanel-type materials, to provide continuous, straight, smooth, exposed surfaces. Furnish in largest practicable sizes to minimize number of form marks.

1. Plywood: U.S. Product Standard PS-1 "B-B (Concrete Form) Plywood", Class I, Exterior Grade or better, mill-oiled, and edge-sealed, with each piece bearing legible inspection trademark.

B. Forms for Unexposed Finish Concrete: Plywood, lumber, metal, or other acceptable material. Provide lumber dressed on at least two edges and one side for tight fit.

C. Earth Forms: Subject to ONWASA's approval.

D. Form Ties: Factory-fabricated removable or snap-off metal type designed to prevent form deflection and to prevent spalling concrete upon removal. Units to leave no metal closer than 1 inch to surface.

E. Form Release Agent: Colorless mineral oil which will not stain concrete or absorb moisture or impair natural bonding or color characteristics of coating intended for use on concrete including curing compound, sealer, or waterproofing.

2.2 REINFORCEMENT

A. Reinforcing Steel:

1. ASTM A615, 60 ksi yield grade, deformed billet steel bars, unfinished; or ASTM A616, 60 ksi yield grade, deformed rail steel bars, unfinished, or

2. Depending on the location and type of Project, ONWASA reserves the right to require epoxy- coated reinforcing steel per ASTM A 775, with less than 2 percent damaged coating in each 12- inch (300-mm) bar length.

B. Welded Wire Fabric:

1. ASTM A185, plain wire, sheet form. Rolled fabric not permitted, or

2. If epoxy-coated reinforcing steel is required as specified above, ASTM A 884/A 884M, Class A, Type 1 coated, as-drawn-steel wire, with less than 2 percent damaged coating in each 12-inch (300-mm) wire length.

2.3 CONCRETE MATERIALS AND ADMIXTURES

A. Cement: ASTM C150, Type I - Normal Portland type.

1. Fly Ash: ASTM C618 Class For C; loss on ignition less than 3 percent.

B. Fine and Coarse Aggregates: ASTM C33 (normal weight aggregate); materials containing deleterious substances (spalling causing) are not acceptable.

C. Water: Clean and not detrimental to concrete.

D. Air Entrainment: ASTM C260

E. Chemical Admixtures: Provide admixtures certified by manufacturer to be compatible with other admixtures and that will not contribute water-soluble chloride ions exceeding those permitted in hardened concrete. Do not use calcium chloride or admixtures containing calcium chloride.

1. ASTM C494 Type A - Water-Reducing,

2.4 Type F - Water-Reducing, High Range, containing no chlorides CURING MATERIALS

A. Membrane Curing Compound: ASTM C309, Type I-D, Class B, clear with fugitive dye which disappears approximately 24 hours after exposure to sunlight. Curing compound shall be compatible with coatings which are to be applied to the concrete surface.

B. Absorptive Mats: Burlap-polyethylene, minimum 8 ounces per square yard bonded to prevent separation during handling and placing.

C. Water: Potable, not detrimental to concrete.

2.5 ACCESSORIES

A. Epoxy Repair Coating: If epoxy-coated reinforcement is required, the CONTRACTOR shall have a supply of liquid, two-part, epoxy repair coating; compatible with epoxy coating on reinforcement and complying with ASTM A 775 onsite. The repair coating shall be applied to any area(s) on the reinforcement where the coating is damaged, and allowed to cure, in strict accordance with the manufacturer's recommendations

B. Non-Shrink Grout: Pre-mixed compound consisting of non-metallic aggregate, cement, water reducing and plasticizing agents; capable of developing minimum compressive strength of 5,000 psi in 28 days; Master Builders Masterflow 713, or as approved.

C. Epoxy Grout (concrete adhesive): Two component, epoxy resin bonding system capable of developing a minimum bond strength of 1,100 psi in 48 hours; ASTM C881 Type IV, Grade 3, Class B and C

D. Bonding Agent: ASTM C 1059, Type 11, non-re-dispersible, acrylic emulsion, or styrene butadiene.

E. Joint Filler Type A: ASTM 0994; asphalt-impregnated fiberboard or felt; W.R. Meadows Asphalt Joint, or as approved.

F. Joint Filler Type B: ASTM D1752, pre-molded sponge rubber fully compressible with recovery rate of minimum 95 percent; W.R. Meadows Sponge Rubber, or as approved.

G. Bar Supports: Bolsters, chairs, spacers, and other devices for spacing, supporting, and fastening reinforcing bars and welded wire reinforcement in place. Manufacture bar supports from steel wire, plastic, or precast concrete according to CRSI's "Manual of Standard Practice," of greater compressive

strength than concrete and as follows:

1. For epoxy-coated reinforcement, use epoxy-coated or other dielectric-polymer-coated wire bar supports.
2. For concrete surfaces exposed to view where legs of wire bar support contact forms, use CRSIClass 1 plastic-protected steel wire or CRSI Class 2 stainless-steel bar supports.

2.6 CONCRETE MIX (UNLESS SPECIFIED OTHERWISE)

A. Concrete Proportions: Comply with ACI 301, 4.2.

B. Class I Concrete: Provide concrete to the following criteria:

1. Compressive Strength (7 Day): 3,200 psi.
2. Compressive Strength (28 Day): 4,000 psi.
3. Water/Cement Ratio (Maximum): 0.50 by weight.
4. Air Entrained: 6 percent, ±1 percent.
5. Fly Ash Content: Maximum 25 percent of cement content.
6. Slump (Maximum): 3 inches (due to water).
7. Mid or High Range Water Reducer: Add at Site to increase slump to 6 inches, ±1-1/2 inches.

C. Class II Concrete: Provide concrete to the following criteria:

1. Compressive Strength (28 Day): 2,500 psi.
2. Fly Ash Content: Maximum 25 percent of cement content.
3. Slump (Maximum): 6 inches.

D. Mud Mat Concrete: Provide concrete to the following criteria:

1. Compressive Strength (28 Day): 1,000 psi.

PART 3 EXECUTION

3.1 SAFETY: Entire Project site shall be kept in strict accordance with OSHA Regulations.

3.2 GENERAL

A. Use Class I concrete for structural concrete, and concrete for pavements, sidewalks, and equipment bases; use Class II concrete for fillets and fills, and where indicated.

3.3 PLACING CONCRETE

A. When Class I concrete arrives at the Project with slump below 3 inches, water may be added only if neither the maximum permissible water-cement ratio nor the maximum slump is exceeded. Slump adjustment, with water, shall be made only one time. The addition of water shall only be done with the approval, and under the supervision of, the independent testing service representative.

B. Placement of concrete under water is not permitted.

C. Advise the designated testing agency not less than 72 hours before operations to allow for completion of quality tests.

D. TEMPERATURE REQUIREMENTS

1. The concrete temperature at the time of placing in the forms shall be not less than 50°F, or more than 95°F.
2. No concrete shall be placed when the air temperature, measured at the location of the concreting operation in the shade away from artificial heat, is below 35°F, without approval from ONWASA. When such permission is granted, the aggregates and/or water shall be uniformly heated to a temperature not higher than 150°F. The temperature of the heated concrete shall not be less than 55°F and not more

than 80°F at the time it is placed in the forms.

3. The aggregates shall be free of ice, frost, and frozen particles, and concrete shall not be placed on frozen foundation material.

4. The Contractor shall assume all risks connected with the placing of concrete under the cold weather conditions referred to herein. Permission given by ONWASA to place concrete when the temperature is below 35°F and the subsequent protection of the concrete as required, shall not relieve the Contractor in any way of the responsibility for obtaining the required results.

E. ELAPSED TIME FOR PLACING CONCRETE

1. Deliver concrete to any monolithic unit of a structure at a rate which will permit proper handling, placing, and finishing of the concrete; and have it so regulated that the maximum interval between the placing of batches at the work site does not exceed 20 minutes.
2. Place concrete before the elapsed time between adding the mixing water to the mix and placing the concrete in the forms exceeds the maximum elapsed times listed in the following table. Retarding admixtures may only be used if approved by ONWASA, if retarding admixtures are approved for use, an additional 45 minutes will be permitted.

Air or Concrete Temperature, whichever is Higher	Maximum Elapsed Time (min.)
90°F (32°C) or above	30
80°F (27°C) through 89°F (32°C)	45
79°F (32°C) or below	60

3.4 CONCRETE FINISHING

A. Exterior Traffic Surfaces: ACI 301, 5.3.4.2.d, broom finish.

3.5 CURING

A. Horizontal Surfaces: Cure floor surfaces in accordance with ACI 301 using any of the following accepted procedures.

1. Spraying: Spray water over floor slab areas and maintain wet for 7 days.
2. Membrane Curing Compound: Pavement, walks, and curbs only.

3.6 FIELD QUALITY CONTROL

A. Concrete Testing Service: When structures (i.e., manholes, footings, etc.) are being constructed, unless otherwise approved by ONWASA, the CONTRACTOR shall employ an independent testing agency to perform material evaluation tests, design concrete mixtures, observe the entire pour(s), and also conduct slump, air content, and strength testing of the concrete to ensure compliance with applicable ACI Codes and these Specifications. Samples for air content and strength should be taken as near as practical to the point of placement into the formwork or at a location which closely matches the handling conditions when the concrete is placed in the forms. Prior to the addition of a mid or high range water reducer, a slump test may be made from a sample taken from the very first concrete out of the load.

B. Reinforcement Inspection: Unless otherwise approved by ONWASA, the CONTRACTOR shall employ an independent testing agency to inspect, and approve, the reinforcement placement prior to placing concrete.

END OF SECTION

Exhibit 7

SECTION 26 32 13
PACKAGED ENGINE-GENERATOR SYSTEM

PART 1 GENERAL

1.1 SUMMARY

A. SECTION INCLUDES

1. Packaged engine-generator system.
2. Engine.
3. Generator.
4. Coolant system.
5. Exhaust system.
6. Fuel supply system.
7. Batteries and charging system.
8. Line circuit breaker.
9. Engine-generator control panel.
10. Weather-protective enclosure.
11. Automatic Transfer Switch (ATS)

B. Related Documents

1. *Section 03 11 13 – Cast-in-Place Concrete*
2. *Section – Submersible Pumps43 25 00*
3. *Section – Self-Priming Centrifugal Pumps43 23 00*

1.2 SHOP DRAWINGS

A. Provide engine-generator set dimensions, weights, design weight of vibration isolators being supplied, ventilation and combustion air requirements, and fuel consumption rate curves at various loads.

B. Provide layout drawing of the engine-generator, showing location of the circuit breaker, control panel, battery/charger, and conduit entrance locations. Include dimensions of concrete pad.

C. Provide layout drawing of fuel supply system, including sub-based or skid-mounted fuel tank dimensions, fuel inlet cap location, fuel supply piping location, fuel return piping location, location of fuel level sensor and low fuel level float, and location of leak detection unit. Show location of wiring terminal strip associated with remote monitoring of the fuel system. Show coordination between tanklocation within the skids and conduit entrances into the engine-generator set.

D. Provide electrical characteristics and connection requirements of generator, including sub-transient reactance of the generator unit.

E. Generator sizing documentation based on the starting load schedule, showing expected maximumvoltage drop when starting listed step loads.

F. Provide electrical diagrams, including schematics and interconnection diagrams for the control paneland all electrical components provided with the engine-generator set. Identify terminals utilized for auxiliary monitoring of generator status and alarm contacts.

G. Provide ATS catalog sheets showing voltage, switch size, ratings, and size of switching and overcurrent protective devices, operating logic, short circuit ratings, dimensions, and enclosure details;indicate application conditions and limitations of use stipulated by testing agency specified under Regulatory Requirements.

H. Prototype test certification and specification sheets showing all standard and optional accessories to be supplied, schematic wiring diagrams, dimensional drawings, and interconnection diagrams identifying by terminal number, each required interconnection between the generator set, the transfer switch, and the remote monitoring/control devices if included elsewhere in these Contract Documents.

I. Contact information for the 24-hour parts and service organization. Generator shop-drawings without this information will be rejected.

1.3 CERTIFICATES

A. Manufacturer's Certificate: Certify that products meet or exceed specified requirements based upon testing performed at the factory.

1.4 OPERATION AND MAINTENANCE DATA

A. Operation Data: Include instructions for normal operation of equipment and for operating equipment under emergency conditions.

B. Maintenance Data: Include instructions for routine maintenance, service manuals for engine, oil sampling and analysis for engine wear, and emergency maintenance procedures.

1.5 QUALITY ASSURANCE

A. Any and all exceptions to the published Specifications shall be subject to the approval of the ENGINEERING DIRECTOR.

B. Perform Work in accordance with NFPA 110.

C. Perform an aerostatics leakage test at the factory of the skid-mounted fuel tank by applying pressure maintained at 5 psi for 24 hours with all fittings soaped. Correct any leaks detected.

1.6 QUALIFICATIONS

A. Manufacturer: Domestic manufacturer currently engaged in the production of such equipment with service facilities within 100 miles of the Project.

B. Supplier: Factory-authorized supplier of specified manufacturer with complete parts and service department. It is the intent of these Specifications that the entire packaged engine-generator system be supplied by the same supplier; dealer-assembled units are not acceptable.

1.7 GENERAL REQUIREMENTS

A. It is the intent of this Specification to secure an electrical power system that has been tested during design verification, production and at the final job site. All finished equipment shall be of the lasted commercial design and will be complete with all of the necessary accessories for complete installation as shown on the Drawings and specifications herein. The equipment supplied and installed shall meet the requirements of the National Electrical Code, along with all applicable local codes and regulations. All equipment shall be new and of current production of a national firm that manufactures generator sets and controls, automatic transfer switches, switchgear, and assembles them as a complete and coordinated system. There will be one source responsibility for warranty, parts, and service through a local representative with factory-trained servicemen.

1.8 REGULATORY REQUIREMENTS

A. Conform to requirements of NFPA 30, NFPA 70, NFPA 110, and NFPA 101.

B. Furnish products listed and classified by UL as suitable for purpose specified and indicated.

C. Conform to requirements of NFPA 70.

1.9 DELIVERY, STORAGE, AND HANDLING

A. Accept unit at Site and inspect for damage.

B. Store in a clean, dry space. Maintain factory wrapping or provide an additional heavy canvas or heavy plastic cover to protect units from dirt, water, construction debris, and traffic.

C. Handle in accordance with manufacturer's written instructions. Lift only with lugs provided for purpose.Handle carefully to avoid damage to internal components, enclosure, and finish.

1.10 MANUFACTURER WARRANTY

A. Provide a minimum 5-year manufacturer's warranty against defects in material and factory workmanship; effective immediately after manufacturer start-up services are completed. Warranty shall provide full coverage on all costs associated with the repair or replacement of defective parts,including material and labor costs.

1.11 MAINTENANCE MATERIALS

A. Furnish one set of any unique tools required for preventive maintenance of the engine-generatorsystem.

1.12 SPARE PARTS

A. Provide two spare fuel, oil, and air filters.

B. Four keys for weatherproof enclosure doors and removable panels.

C. One can of touch-up paint for engine-generator.

PART 2 PRODUCTS

2.1 GENERATOR MANUFACTURERS

A. Kohler.

B. Caterpillar.

C. Cummins/Onan.

D. MTU Onsite Energy (Detroit Diesel)

2.2 PACKAGED ENGINE-GENERATOR SYSTEM

A. Description: NFPA 110, engine-generator system to provide source of power for Level 2 applications.

B. System Capacity: As indicated on schedule for, standby rating using engine-mounted radiator.

C. Factory-assembled.

D. Finish: Power Armor paint process or approved equal.

E. Include lifting eyes on unit.

F. Include factory-installed battery charger and receptacle.

2.3 ENGINE

A. Type: Stationary, water-cooled, in-line, or V-type, four-stroke cycle, diesel ignition, internal combustionengine.

B. Rating: Sufficient to operate under 10 percent overload for 1 hour in an ambient of 104 degrees F.

C. Fuel System:

1. Type: No. 2 fuel oil (diesel) with sulfur content (by weight) of no more than 0.5 percent.
2. Fuel Injection Pumps: Constant stroke pumps actuated by a cam driven by gears from the engine crankshaft.
3. Fuel Filter: Replaceable without breaking any fuel line connections. Locate ahead of injectionpumps.

D. Air Cleaner: Panel-type, dry, single-stage air cleaner.

E. Engine Speed: 1800 rpm.

F. Governor: Isochronous type to maintain engine speed within 0.5 percent, steady state.

G. Engine Starting: DC starting system with positive engagement. Limit number and time duration of starts for over crank protection. Include remote starting control circuit, with AUTO-MANUAL- OFF/RESET-REMOTE selector switch on engine-generator control panel.

The kW rating of jacket water heaters depends on the coldest ambient temperature expected. For outdoor units in the northern states, you can expect around 4 or 5 watts per generator kW rating. It may be necessary to use 240 VAC or higher to support jacket water heaters on generators larger than 400 kW.

H. Engine Jacket Heater: Thermal circulation type water heater with integral thermostatic control, sized to maintain engine jacket water at 70 degrees F, and suitable for operation on 120 volts AC.
I. Radiator: Radiator using 50 percent solution of ethylene glycol coolant with propeller type fan, sized to maintain safe engine temperature in ambient temperature of 110 degrees F.

Select single or dual fuel filters; use dual fuel filters for units 200 kW and larger.

J. Engine Accessories: Fuel filter, Dual fuel filters, lube oil filter, intake air filter, lube oil cooler, crankcase breather, fuel transfer pump, fuel priming pump, oil filler in valve cover, dip stick, thermostat and housing, proportional vibration dampener, and gear-driven water pump. Include fuel pressure gage, water temperature gage, and lube oil pressure gage on engine-generator control panel.

2.4 GENERATOR

A. Type: NEMA MG1, three-phase, four-wire, four-pole, twelve-lead, reconnectable, brushless, synchronous generator with permanent magnetic excitation. Include field excitation circuit breaker for inherent overload/short circuit protection.
B. Rating: Minimum ratings as indicated in the schedule, at 0.8 power factor, volts, 60 Hz at 1800 rpm. Capable of starting the motor loads listed in the starting load schedule without exceeding 20 percent calculated voltage dip on starting of any load step. Increase generator kVA rating above the scheduled kVA rating if the voltage dip requirement cannot be met.
C. Insulation Class: Class F or H.
D. Temperature Rise: 130 degrees C.
E. Enclosure: NEMA MG1, open drip-proof.
F. Voltage Regulation: Include generator-mounted volts per Hz exciter-regulator to match engine and generator characteristics, with voltage regulation +1 percent from no load to full load. Include manual controls to adjust voltage drop, voltage level (+5 percent) and voltage gain.

2.5 COOLANT SYSTEM

A. Unit-mounted radiator with expansion tank of type and capacity as instructed by engine manufacturer.
B. Circulate jacket water through the cooling system via an engine driven self-priming pump. Include solenoid shutoff valve for installation on the cooling water inlet and connected to open when engine runs.
C. Coolant: 50 percent solution of ethylene glycol.
D. For after-cooled engines, cool after-cooler with jacket water or provide a separate factory-mounted cooling circuit for the after-cooler and a split core radiator. After-cooler systems not suitable for 110 degrees F air cooling are not acceptable.

2.6 EXHAUST SYSTEM

A. Silencer: Stainless steel residential type critical silencer, with muffler companion flanges and flexible stainless steel exhaust fitting, sized in accordance with engine manufacturer's instructions.

B. Piping: Schedule 40 welded stainless-steel pipe suitable for temperatures up to 1200 degrees F. Size in accordance with generator manufacturer's instructions. Provide rain shield on exhaust pipe opening.
C. Condensation Trap: Provide condensation trap with manual drain valve at low point of exhaust piping.

2.7 FUEL SUPPLY SYSTEM

A. Skid or Base-Mounted Fuel Tank: Size for capacity to achieve 72 hours of continuous operation at 100-percent of rated load. Steel, double-wall fuel tank constructed per UL 142, with fuel supply, fuelreturn, fuel inlet cap, leak detection, level detection, and containment fittings.

1. Provide containment of inner shell leak.
2. Provide free flow of liquid between surfaces of both steel walls to ensure leak detection.
3. Provide threaded plugs for all openings.
4. Provide all required fuel piping for fill, supply, return, vent, and liquid level controls.
5. Provide 3-inch high lettering on tank exterior, labeled "Combustible – Keep Fire Away".
6. Coat bottom of tank with a corrosion-resistant mastic coating.
7. Vibration Isolator Pads

B. Piping: Schedule 40 steel or Type K copper.

C. Liquid Level Indicator: Float type, to include tank fittings and accessories. Provide electric fuel panelgage mounted on the engine control panel.

D. Leak Detection: Provide sensors between the two tank walls for detection of an inner shell leak.

1. Activate "Fuel Leak" alarm lamp on generator control panel upon detection of leak.
2. Provide normally open auxiliary dry contact for remote monitoring of fuel leak. Wire contact to terminal strip for field connection.

E. Low Fuel Level Alarm: Provide a sensing system to activate an alarm upon detection of a low fuellevel.

1. Activate "Low Fuel Level" alarm lamp on generator control panel upon detection of a low fuel level.
2. Provide normally open auxiliary dry contact for remote monitoring of low fuel level. Wire contact toterminal strip for field connection.

2.8 BATTERIES AND CHARGING SYSTEM

A. Batteries: Heavy duty, diesel-starting type lead-acid storage batteries, sized to start engine-generatorset after completing four successive over crank alarm conditions. Match battery voltage to starting system. Include necessary cables and clamps.

B. Battery Tray: Treated for electrolyte resistance; constructed to contain spillage.

C. Battery Charger: (Factory-mount inside weather-proof enclosure):

1. Type: Float type charger; current-limiting design.
2. Power Requirements: 120 VAC.
3. Output Power: 12 or 24 VDC, dependent upon starting voltage required by engine-generator set.
4. Indicators: DC ammeter, DC voltmeter.
5. Alarm Contacts: Undervoltage dry contact.
6. Automatic load regulation and DC voltage regulation.
7. Protection: Automatic overload protection; fusing for AC input and DC output.

2.9 LINE CIRCUIT BREAKER

A. NEMA AB 1, molded case circuit breaker on generator output with integral thermal and instantaneous magnetic trip in each pole, sized for 125 percent of the generator's full load current rating.

2.10 ENGINE-GENERATOR CONTROL PANEL

A. NEMA 250, Type 1 generator-mounted control panel enclosure with engine and generator controlsand indicators. Include provisions for padlock and the following equipment and features:

1. Frequency Meter: 45-65 Hz range.
2. AC Output Voltmeter: 2 percent accuracy with phase selector switch.
3. AC Output Ammeter: 2 percent accuracy with phase selector switch.
4. Output voltage adjustment.
5. Indicator Lamps for the Following:
   a. Low oil pressure.
   b. High water temperature.
   c. Overspeed.
   d. Over crank.
   e. Low coolant level.
   f. Low fuel level.
   g. Fuel leak detected.
   h. “Not In Auto”.
6. Engine “Auto-Manual-Off/Reset-Stop” selector switch.
7. Engine running time meter.
8. Oil pressure gage.
9. Water temperature gage.
10. Additional visual indicators and alarms as required by NFPA 110.
11. Safety Devices: Engine shutdown on high water temperature, low oil pressure, overspeed, andengine over crank. Limits as selected by manufacturer.
12. Engine to start upon “loss of utility power” signal from the automatic transfer switch.
13. Remote Status and Alarm Contacts: Pre-wire SPDT dry contacts to terminal strip for each ofthe following status and alarm functions:
    a. Generator Running (Provide three SPDT dry contacts).
    b. Generator Trouble.
    c. Fuel Leak.
    d. Low Fuel.
    e. Low Battery (from battery charger).

2.11 WEATHER-PROTECTIVE ENCLOSURE

A. Reinforced steel or aluminum housing mounted on a channel iron skid base, allowing access to controlpanel and service points with lockable doors and panels.

1. Ventilation: Fixed louvers to allow adequate ventilation with all doors and panels closed.
2. Key all doors alike.
3. Provide means for external draining of oil and water.
4. Finish: Power Armor paint process or approved equal.

2.12 AUTOMATIC TRANSFER SWITCH

A. Manufacturers:

1. Kohler
2. Cummins/Onan.
3. ASCO
4. Russ Electric.

Edit the following descriptive Specifications to identify Project requirements and to eliminate any conflict with manufacturers’ productsspecified above.

B. Description: NEMA ICS 10-1993, automatic transfer switch. Automatic transfer switches not intendedfor continuous duty or repetitive load switching are not acceptable.

C. Configuration: Electrically operated, mechanically held in both positions.

D. Service Conditions:

1. Service Conditions: NEMA ICS 1.
2. Altitude: 500 feet.

E. Ratings:

1. Voltage:_____volts, three-phase, three four-wire, 60 Hz.
2. Switched Poles: Three Four.
3. Load In-Rush Rating: Combination Tungsten lamp Electric discharge lamp Resistive load.
4. Continuous Rating:_____amperes.
5. Interrupting Capacity:_____percent of continuous rating.

6. Withstand Current Rating:_____amperes RMS symmetrical, when used with Class [J] [K1] [L] current-limiting fuse, molded case circuit breaker.

2.13 ATS PRODUCT OPTIONS AND FEATURES

A. Indicating Lights: Mount in cover of enclosure to indicate:

1. NORMAL SOURCE AVAILABLE.
2. ALTERNATE SOURCE AVAILABLE.
3. SWITCH POSITION.

B. Test Switch: Mount in cover of enclosure to simulate failure of normal source.

C. Return to Normal Switch: Mount in cover of enclosure to initiate manual transfer from alternate tonormal source.

D. Transfer Switch Auxiliary Contacts: One normally open and one normally closed.

E. Normal Source Monitor: Monitor normal source voltage and frequency; initiate transfer when voltagedrops below 90 percent or frequency varies more than 3 percent Hz from rated nominal value.

F. Alternate Source Monitor: Monitor alternate source voltage and frequency; inhibit transfer when voltage is below 90 percent or frequency varies more than 3 percent Hz from rated nominal value.

G. Switched Neutral: Non-overlapping contact.

H. Actuated by a single or double electrical operator momentarily energized and connected to the transfer mechanism by a simple over-center type linkage.

I. Capable of transferring successfully in either direction with 70 percent of rated voltage applied to theswitch terminals.

J. Normal and emergency contacts positively interlocked mechanically and electrically to prevent simultaneous closing. Mechanical interlock separately from operating mechanism so as to provide positive interlock in the event of operator failure.

K. Main Contacts: Silver tungsten alloy protected by arcing contacts with magnetic blowouts on each pole. Mechanically locked in position in both the normal and emergency positions without the use ofhooks, latches, magnets, or springs.

L. Equip with a manual operator.

M. All relays, timers, and accessories front-mounted and accessible for ease of maintenance.

N. Control Wiring: Flame-retarding, 600-volt type SIS throughout with numbered sleeve type identification on each end, front-mounted and accessible.

O. Three close differential relays, factory-set at 90 percent pickup, 80 percent dropout, and field-adjustable.

P. Voltage balance/under-voltage relay, Basler BE4-47N27, or as approved.

Q. Breaker-Type ATS is not acceptable.

2.14 ATS ENCLOSURE

A. Enclosure: NEMA 4X, Stainless Steel.

2.15 AUTOMATIC SEQUENCE OF OPERATION

A. Initiate Time Delay to Start Alternate Source Engine-Generator: Upon initiation by normal source monitor.

B. Time Delay to Start Alternate Source Engine-Generator: 0 to 600 seconds, adjustable.

C. Initiate Transfer Load to Alternate Source: Upon initiation by normal source monitor and permissionby alternate source monitor.

D. Time Delay Before Transfer to Alternate Power Source: 0 to 30 seconds, adjustable.

E. Initiate Time Delay for Center Off: Upon reaching center off position.

F. Time Delay for Center Off: 0 to 5 seconds, adjustable.

G. Initiate Retransfer Load to Normal Source: Upon permission by normal source monitor.

H. Time Delay Before Transfer to Normal Power: 0 to 600 seconds, adjustable; bypass time delay inevent of alternate source failure.

I. Time Delay Before Engine Shutdown: 0 to 30 minutes, adjustable, of unloaded operation.

J. Engine Exerciser: Must be able to program day and time for exerciser; run for 30 minutes beforeshutting down. Bypass exerciser control if normal source fails during exercising periods.

K. Alternate System Exerciser: Transfer load to alternate source during engine exercising periods.

PART 3 EXECUTION

3.1 EXAMINATION

A. Verify that locations are suitable for installation.

B. Verify measurements in the field.

3.2 INSTALLATION

A. Install in accordance with manufacturer's instructions and recommendations, the Project Drawings,and all applicable codes.

B. Mounting: Provide unit with structural steel base and mount on suitable spring-type vibration isolators.

C. Concrete Pad:

1. Provide steel-reinforced concrete pad for engine-generator set.
2. Size pad based upon manufacturer's footprint of engine-generator set. Coordinate slab openingsfor conduit with actual equipment requirements.

D. Engine:

1. Provide initial fill of CD/SE classification lubrication oil as instructed by manufacturer.
2. Install all filters.

E. Fuel System: Provide initial fill of fuel tank with No. 2 diesel fuel delivered by a fuel distributorspreviously specified.

F. Cooling System:

1. Provide initial fill of coolant.
2. Install all interconnecting piping and supports necessary for completion the system installation.

G. Exhaust System:
1. Install condensation trap at low point of exhaust piping.
2. Install vibration isolators at all locations where the exhaust system is supported by a building wall or ceiling.

H. Provide engraved plastic name plates.
I. Repaint any portions of the finish damaged during installation.

3.3 ADJUSTING

A. Adjust generator output voltage and engine speed.

3.4 CLEANING

A. Clean engine and generator surfaces.

3.5 MANUFACTURER'S START-UP SERVICES

A. Prepare and start standby generator unit and ATS for testing and demonstration.
B. Provide the services of a qualified factory-trained manufacturer's representative to assist the Contractor in installation and start-up of the equipment specified under this section. The manufacturer's representative shall provide technical direction and assistance to the contractor in general assembly of the equipment, connections and adjustments, and testing of the assembly and components contained therein.
C. The manufacturer's representative shall provide inspection of the final installation. The manufacturer's representative shall perform site start-up and functional checkout of the Switchgear. Upon completion of the manufacturer's start-up and checkout, the manufacturer shall demonstrate to the customer all the automated sequences of operation as specified herein. Provide report indicating field test and inspection procedures and test results.
D. Coordinate with transfer switch operations for automatic starting and stopping of standby power system.
E. Program time delays and settings and make final adjustments for proper operation.

3.6 DEMONSTRATION

A. ONWASA shall be onsite to witness the demonstration. ONWASA shall be notified at least 2 weeks prior of the time and date of the site test.
B. Prepare and start systems in accordance with manufacturer's instructions.
C. Provide systems demonstration for a minimum of 2 hours.
D. Describe loads connected to standby system and restrictions for future load additions.
E. An installation check, start-up, and load bank test shall be performed by the manufacturer's local representative. The tests shall include:

1. Fuel, lubricating oil, and antifreeze shall be checked for conformity to the manufacturer's recommendations, under the environmental conditions present and expected.
2. Accessories that normally function while the set is standing by shall be checked prior to cranking the engine. These shall include: block heaters, battery charger, alternator strip heaters, remote annunciator, etc.
3. Start-up under test mode to check for exhaust leaks, path of exhaust gases outside the building,cooling air flow, movement during starting and stopping, vibration during running, normal and emergency line-to-line voltage and frequency, and phase rotation.

4. Automatic start-up by means of simulated power outage to test remote-automatic starting, transfer of the load, and automatic shutdown. Simulate power failure (two times) including operation of transfer switch, automatic starting cycle, and automatic shutdown and return tonormal. Prior to testing, all transfer switch timers shall be adjusted for proper system coordination. Engine coolant temperature, oil pressure, and battery charge level along with generator set voltage, amperes, and frequency shall be monitored throughout the test.
5. The generator shall be load tested by connecting it to a load bank to load the generator set to the nameplate kW rating. The generator shall be tested at full nameplate load for a minimum of two hours not counting start-up and cool-down time.
6. Contractor shall provide all fuel, lubricants, and engine fluids required and consumed for testing atno additional cost to ONWASA.
7. Test alarm and shutdown circuits by simulating conditions.

F. After testing is complete, and prior to final acceptance of the engine-generator system, the Contractorshall replenish fuel to maximum filled level at no cost to ONWASA.

Note: For the load schedule, variable torque loads consist of all centrifugal pump loads. Constant torque loads include mixers, clarifier drives, progressing cavity pumps, and positive displacement blowers

3.1 LOAD SCHEDULE

STEP	DESCRIPTION	LOAD	MOTOR STARTING CODE	STARTER TYPE (NOTE 1)	LOAD TORQUE (NOTE 2)

Note 1 Line: Across-the-line starter.
RV-Auto: Reduced Voltage Autotransformer with 60 percent starting voltage.
NL: Ramped load with variable frequency controller or soft-starter (non-linear load).

Note 2 VAR: Variable torque load.
CON: Constant torque load.

END OF SECTION