REQEUST FOR PROPOSALS

COV RFP # 2025-13

PURCHASE OF NEW POWER TRANSFORMER FOR WEST SUBSTATION

DUE DATE: WEDNESDAY, MAY 14, 2025
BY 1:00 P.M.

SEND RESPONSES TO:

JEANINE N. MENEGHETTI, QPA
PURCHASING AGENT
640 E. WOOD STREET
P.O. BOX 1508
VINELAND, NJ 08360

GENERAL REQUIREMENTS/INSTRUCTIONS

Proposal Submission Information

Submission Date and Time:
Wednesday, May 14, 2025 by 1:00 P.M.

Submission Office:
City of Vineland Purchasing Department
5th Floor
City Hall
640 E. Wood Street
Vineland, NJ 08360

Respondents shall clearly mark their submittal package with the title of this RFP and the name of the responding firm, addressed to the Purchasing Agent. The original proposal shall be marked to distinguish it from the copies.

Respondents are required to submit their expressions of interest, qualifications and experience. **One (1) original and Three (3) copies** of the Proposal, INCLUSIVE OF ALL information must be provided to the City's Purchasing Agent. Proposals are scheduled to be opened **1:00 PM on Wednesday, May 14, 2025.** Any proposals received after said opening whether by mail or otherwise, will be returned unopened. The City assumes no responsibility for delays in any form of carrier, mail, or delivery service causing the proposal to be received after the above-referenced due date and time. Submission by fax, e-mail or telephone is NOT PERMITTED. Delivery of a proposal to any other City of Vineland Department or office is not acceptable and may result in your bid arriving late in the Purchasing Department. It is the bidder's responsibility to make sure the proposal is delivered to the proper office as listed above.

Only those RFP responses received prior to or on the submission date & time will be considered. Responses delivered before the submission date and time specified above may be withdrawn upon written application of the respondent who shall be required to produce evidence showing that the individual is or represents the principal or principals involved in the proposal. After the submission date and time specified above, responses must remain firm for a period of sixty (60) days.

City Representative for this Solicitation

Please direct all questions in writing to:

Jeanine N. Meneghetti, QPA
Purchasing Agent

Voice: (856) 794-4040
Fax: (856) 794-4327
Email: PurchasingOffice@vinelandcity.org

NOTE: Questions must be submitted in writing no later than noon on Tuesday, April 29, 2025. Questions received after this day and time will not be accepted.

Interpretations and Addenda

Respondents are expected to examine the RFP with care and observe all its requirements. All questions about the meaning or intent of this RFP, all interpretations and clarifications considered necessary by the owner's representative in response to such comments and questions will be issued by Addenda mailed or delivered to all parties recorded as having received the RFP package. Only comments and questions responded to by formal written Addenda will be binding. Oral interpretations, statements or clarifications are without legal effect.

Cost Liability and Additional Costs

The owner assumes no responsibility and liability for costs incurred by the respondents prior to the issuance of an agreement. The liability of the owner shall be limited to the terms and conditions of the contract.

Respondents will assume responsibility for all costs not stated in their proposals. All unit rates either stated in the proposal or used as a basis for its pricing are required to be all-inclusive. Additional charges, unless incurred for additional work performed by request of the owner, are not to be billed and will not be paid.

Statutory and Other Requirements

Compliance with Laws

Any contract entered into between the contractor and the owner must be in accordance with and subject to compliance by both parties with the New Jersey Local Public Contracts Law. The contractor must agree to comply with the non-discrimination provisions and all other laws and regulations applicable to the performance of services there under. The respondent shall sign and acknowledge such forms and certificates as may be required by this section.

Mandatory Affirmative Action Compliance

No firm may be issued a contract unless it complies with the Affirmative Action requirements of N.J.S.A. 10:5-31 et seq. and N.J.A.C. 17:27 as identified in the documents attached hereto. The form enclosed herein shall be properly executed.

Americans with Disabilities Act of 1990

Discrimination on the basis of disability in contracting for the delivery of services is prohibited. Respondents are required to read American with Disabilities language that is part of the documents attached hereto and agree that the provisions of Title II of the Act are made part of the contract. The contractor is obligated to comply with the Act and hold the owner harmless.

Stockholder Disclosure

No corporation or partnership shall be awarded any contract for the performance of any work or the furnishing of any goods, unless, with receipt of the proposal of said corporation or partnership, there is submitted a statement setting forth the names and addresses of all stockholders in the corporation or partnership who own ten (10) percent or greater interest therein. Respondents shall complete and submit the form of statement included herein.

N.J. Business Registration Certificate

Pursuant to C57, PL2004, all New Jersey and out of state business organizations must obtain a Business Registration Certificate from the New Jersey Department of the Treasury, Division of Revenue, prior to conducting business in the State of New Jersey. Respondents shall be required to submit proof of their valid Business Registration prior to contract award. Questions regarding Business Registration may be directed to the Division of Revenue at (609) 292-1730. Online filing is available at www.state.nj.us/treasury/revenue/taxreg.htm.

Insurance and Indemnification

If it becomes necessary for the contractor, either as principal or by agent or employee, to enter upon the premises or property of the owner in order to construct, erect, inspect, make delivery or remove property hereunder, the contractor hereby covenants and agrees to take use, provide and make all proper, necessary and sufficient precautions, safeguards, and protection against the occurrence of happenings of any accident, injuries, damages, or hurt to person or property during the course of the work herein covered and his/her sole responsibility.

The contractor further covenants and agrees to indemnify and save harmless the owner from the payment of all sums of money or any other consideration(s) by reason of any, or all, such accidents, injuries, damages, or hurt that may happen or occur upon or about such work and all fines, penalties and loss incurred for or by reason of the violation of any owner regulation, ordinance or the laws of the State, or the United States while said work is in progress.

The contractor shall purchase and maintain during the entire period of this contract, professional liability insurance which shall protect the contractor and the City from any and all claims that may arise out of or result from the contractor's performance of this contract. A Certificate of Insurance in the amount of one million ($1,000,000.00) dollars per occurrence/three million ($3,000,000.00) annual aggregate shall be provided to the City prior to contract award.

Multiple Proposals Not Accepted

More than one proposal from an individual, a firm or partnership, a corporation or association under the same or different names, shall not be considered.

Failure to Enter Contract

Should the respondent, to whom the contract is awarded, fail to enter into a contract within ten (10) days, Sundays and holidays excepted, the owner may then, at its option, accept the proposal of another respondent.

Termination of Contract

If, through any cause, the contractor shall fail to fulfill in a timely and proper manner obligations under the contract or if the contractor violates any requirements of the contract, the owner shall thereupon have the right to terminate the contract by giving written notice to the contractor of such termination at least thirty (30) days prior to the proposed effective date of the termination. Such termination shall relieve the owner of any obligation for the balances to the contractor of any sum or sums set forth in the contract.

The contractor agrees to indemnify and hold the owner harmless from any liability to subcontractors/suppliers concerning payment for work performed or goods supplied arising out of the lawful termination of the contract by the owner under this provision. In case of default by the contractor, the owner may procure the articles or services from other sources and hold the contractor responsible for any excess cost occasioned thereby.

Challenge of Specifications

Any respondent who wishes to challenge a specification shall file such challenge in writing with the Director of Purchasing no less than three (3) business days prior to the opening of the RFP's. Challenges filed after that time shall be considered void and having no impact on the owner or the award of contract.

Payment

Invoices shall specify, in detail, the period for which payment is claimed, the services performed during the prescribed period, the amount claimed and correlation between the services claimed and the Proposal Document.

The City may withhold all or partial payments on account of subsequently discovered evidence including but not limited to the contractor not complying with the terms of the contract.

When the above grounds are removed, payment shall be made for amounts withheld because of them.

Contractors shall be required to sign a City voucher for payment.

Ownership of Material

The owner shall retain all of its rights and interest in any and all documents and property both hard copy and digital furnished by the owner to the contractor for the purpose of assisting the contractor in the performance of this contract. All such items shall be returned immediately to the owner at the expiration or termination of the contract or completion of any related services, pursuant thereto, whichever comes first. None of the documents and/or property shall, without the written consent of the owner, be disclosed to others or used by the contractor or permitted by the contractor to be used by their parties at any time except in the performance of the resulting contract.

Ownership of all data, materials and documentation originated and prepared for the owner pursuant to this contract shall belong exclusively to the owner. All data, reports, computerized information, programs and materials related to this project shall be delivered to and become the property of the owner upon completion of the project. The contractor shall not have the right to use, sell, or disclose the total of the interim or final work products, or make available to third parties, without the prior written consent of the owner. All information supplied to the owner may be required to be supplied on CD-ROM media compatible with the owner's computer operating system, MS Windows based, Lotus Suite.

Annual Disclosure Statement on Political Contributions

The contractor is hereby advised of the responsibility to file an annual disclosure statement on political contributions with the New Jersey Election Law Enforcement Commission pursuant to N.J.S.A. 19:44A-20.13 (P.L. 2005, c. 271, s.3) if the contractor receives contracts in excess of $50,000.00 from public entities in a calendar year. It is

the contractor's responsibility to determine if filing is necessary. Additional information on this requirement is available from ELEC at (888) 313-3532 or at www.elec.state.nj.us.

Proposal Forms

The following forms are contained in the attachments. All forms are required and shall be completed and made part of the proposal submitted.

Stockholder Disclosure
Affirmative Action Statement
Acknowledgment of Receipt of Addenda, if any.
Disclosure of Investment Activities in Iran
Prohibited Activities in Russia or Belarus

Proposals to Remain Subject to Acceptance

RFP responses shall remain open for a period of sixty (60) calendar days from the stated submittal date. The owner will either award the Contract within the applicable time period or reject all proposals. The owner may extend the decision to award or reject all proposals beyond the sixty (60) calendar days when the proposals of any respondents who consent thereto may, at the request of the owner, be held for consideration for such longer period as may be agreed.

Rejection of Proposals

The owner reserves the right to reject any or all proposals, or to reject any proposals if the evidence submitted by, or investigation of such respondent fails to satisfy the owner that such respondent is properly qualified to carry out the obligations of the RFP and to complete the work contemplated therein. The owner reserves the right to waive any minor informality in the RFP.

Evaluation Process

An evaluation team will review all proposals to determine if they satisfy the Proposal Requirements, determine if a proposal should be rejected and evaluate the proposals based upon the Evaluation Criteria. The highest-ranking respondent will then be recommended to the governing body for award of contract, based on price and other factors.

Evaluation Criteria

The criteria considered in the evaluation of this proposal shall be as follows. The arrangement of the criteria is not meant to imply order of importance in the selection process. All criteria will be used to select the successful respondent or respondents.

Understanding of the Requested Work

The proposals will be evaluated for general compliance with instructions and requests issued in the RFP. Non-compliance with significant instructions shall be grounds for disqualification of proposals.

Knowledge and Technical Competence

This includes the ability of the respondent to perform all of the tasks and adequately fulfill the requirements specified herein.

Management, Experience and Personnel Qualifications

Expertise of the firm shall be demonstrated by past contract successes providing government agencies with similar services.

The respondent will be evaluated on knowledge, experience, prior collaboration and successful completion of projects/services similar to that requested in this RFP. In addition to relevant experience, respondents shall provide personnel qualifications in the Proposal.

Ability to Complete the Services in a Timely Manner

This is based on the estimated duration of the tasks and the respondent's ability to accomplish these tasks as stated.

Cost to Provide Services

Provide your costs for the services requested on the Cost Proposal page provided in RFP.

Notice of Award

The successful respondent will be notified of the award of contract upon a favorable decision by the governing body at which time the respondent shall be required to execute a Vineland City contract.

Choice of Law

The agreement with the successful bidder shall be construed in accordance with the laws of the State of New Jersey. In the event of litigation or other legal proceedings commenced to enforce the terms of the agreement, the venue of such litigation shall be the Superior Court of New Jersey, Cumberland County.

Contract Records

As per N.J.A.C. 17:44-2.2 Vendor shall maintain all documentation related to products, transactions or services under this contract for a period of five years from the date of final payment. Such records shall be made available to the New Jersey Office of the State Comptroller upon request.

City of Vineland

Revised Contract Language for BRC Compliance

Good and Services Contracts (including purchase orders)

*Construction Contracts (including public works related purchase orders)

N.J.S.A 52:32-44 imposes the following requirements on contractors and all subcontractors that knowingly provide goods or perform services for a contractor fulfilling this contract:

1. the contractor shall provide written notice to its subcontractors and suppliers to submit proof of business registration to the contractor;
2. subcontractors through all tiers of a project must provide written notice to their subcontractors and suppliers to submit proof of business registration and subcontractors shall collect such proofs of business registration and maintain them on file;
3. prior to receipt of final payment from a contracting agency, a contractor must submit to the contacting agency an accurate list of all subcontractors and suppliers* or attest that none was used;
4. during the term of this contract, the contractor and its affiliates shall collect and remit, and shall notify all subcontractors and their affiliates that they must collect and remit to the Director, New Jersey Division of Taxation, the use tax due pursuant to the Sales and Use Tax Act, (N.J.S.A> 54:32B-1 et seq.) on all sales of tangible personal property delivered into this State.

Pursuant to N.J.S.A. 54:49-4.1, a business organization that fails to provide a copy of a business registration as required, or that provides false business registration information, shall be liable for a penalty of $25 for each day of violation, not to exceed $50,000, for each proof of business registration not properly provided under a contract with a contracting agency. Information on the law and its requirements is available by calling (609) 292-9292.

{This space intentionally left blank}

NEW JERSEY BUSINESS REGISTRATION

Pursuant to P.L. 2004, c.57, all consultants (both in-state and out-of-state) must obtain a Business Registration Certificate (BRC) from the New Jersey Department of the Treasury, Division of Revenue prior to conducting business with the NJTPA. A consultant or sub-consultant who fails to submit a copy of a valid BRC in accordance with the statue will be held liable for monetary penalties in accordance with N.J.S.A. 54-49-4.1. Questions regarding how to obtain a BRC can be directed to the New Jersey Division of Revenue at (609) 292-1730. The business registration form (Form NJ-REG) can be found online at:

http://www.state.nj.us/treasury/revenue/busregcert.shtml, or

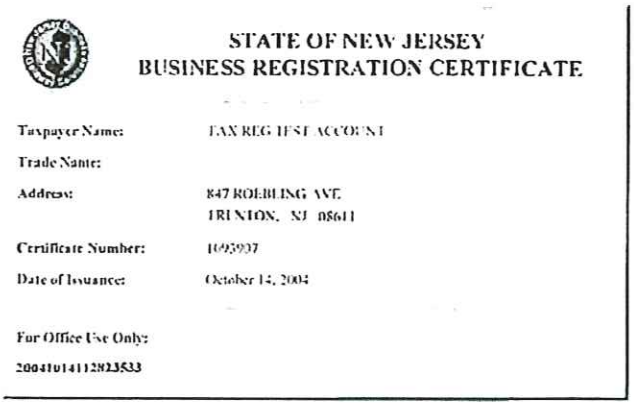
http://www.state.nj.us/treasury/revenue/gettingregistered.shtml.

Sample New Jersey Business Registration Certificates:


STATE OF NEW JERSEY
BUSINESS REGISTRATION CERTIFICATE
FOR STATE AGENCY AND CASINO SERVICE CONTRACTOR

TAXPAYER NAME
TAX REGISTRATION TEST ACCOUNT
TAXPAYER IDENTIFICATION
ISSUANCE DATE
07/14/04

SAMPLE


STATE OF NEW JERSEY
BUSINESS REGISTRATION CERTIFICATE

Taxpayer Name: TAX REG TEST ACCOUNT
Trade Name:
Address: 847 ROEBLING AVE
TRENTON, NJ 08611
Certificate Number: 1093937
Date of Issuance: October 14, 2004

For Office Use Only:
20041014112823533

(REVISED 4/10)

EXHIBIT A

MANDATORY EQUAL EMPLOYMENT OPPURTUNITY LANGUAGE

N.J.S.A. 10:5-31 et seq. (P.L. 1975, C.127)

N.J.A.C.17:27

During the performance of this contract, the contractor agrees as follows:

The contractor or subcontractor, where applicable, will not discriminate against any employee or applicant for employment because of age, race, creed, color, national origin, ancestry, marital status, affectional or sexual orientation, gender identity or expression, disability, nationality or sex. Except with respect to affectional or sexual orientation and gender identity or expression, the contractor will ensure that equal employment opportunity is afforded to such applicants in recruitment and employment, and that employees are treated during employment, without regard to their age, race, creed, color, national origin, ancestry, marital status, affectional or sexual orientation, gender identity or expression, disability, nationality or sex. Such equal employment opportunity shall include, but not be limited to the following: employment, upgrading, demotion, or transfer; recruitment or recruitment advertising; layoff or termination; rates of pay or other forms of compensation; and selection for training, including apprenticeship. The contractor agrees to post in conspicuous places, available to employees and applicants for employment, notices to be provided by the Public Agency Compliance Officer setting forth provisions of this nondiscrimination clause.

The contractor or subcontractor, where applicable will, in all solicitations or advertisements for employees placed by or on behalf of the contractor, state that all qualified applicants will receive consideration for employment without regard to age, race, creed, color, national origin, ancestry, marital status, affectional or sexual orientation, gender identity or expression, disability, nationality or sex.

The contractor or subcontractor will send to each labor union, with which it has a collective bargaining agreement, a notice, to be provided by the agency contracting officer, advising the labor union of the contractor's commitments under this chapter and shall post copies of the notice in conspicuous places available to employees and applicants for employment.

The contractor or subcontractor, where applicable, agrees to comply with any regulations promulgated by the Treasurer pursuant to N.J.S.A. 10:5-31 et seq., as amended and supplemented from time to time and the Americans with Disabilities Act.

The contractor or subcontractor agrees to make good faith efforts to meet targeted county employment goals established in accordance with N.J.A.C. 17:27-5.2.

The contractor or subcontractor agrees to inform in writing its appropriate recruitment agencies including, but not limited to, employment agencies, placement bureaus, colleges, universities, and labor unions, that it does not discriminate on the basis of age, race, creed, color, national origin, ancestry, marital status, affectional or sexual orientation, gender identity or expression, disability, nationality or sex, and that it will discontinue the use of any recruitment agency which engages in direct or indirect discriminatory practices.

The contractor or subcontractor agrees to revise any of its testing procedures, if necessary, to assure that all personnel testing conforms with the principles of job-related testing, as established by the statutes and court decisions of the State of New Jersey and as established by applicable Federal law and applicable Federal court decisions.

In conforming with the targeted employment goals, the contractor or subcontractor agrees to review all procedures relating to transfer, upgrading, downgrading and layoff to ensure that all such actions are taken without regard to age, race, creed, color, national origin, ancestry, marital status, affectional or sexual orientation, gender identity or expression, disability, nationality or sex, consistent with the statutes and court decisions of the State of New Jersey, and applicable Federal law and applicable Federal court decisions.

The contractor shall submit to the public agency, after notification of award but prior to execution of a goods and services contract, one of the following three documents:

1. Letter of Federal Affirmative Action Plan Approval
2. Certificate of Employee Information Report
3. Employee Information Report Form AA302 (electronically provided by the Division and distributed to the public agency through the Division's website at: www.state.nj.us/treasury/contract_compliance

The contractor and its subcontractors shall furnish such reports or other documents to the Division of Public Contracts Equal Employment Opportunity Compliance as may be requested by the office from time to time in order to carry out the purposes of these regulations, and public agencies shall furnish such information as may be requested by the Division of Public Contracts Equal Employment Opportunity Compliance for conducting a compliance investigation pursuant to **Subchapter 10 of the Administrative Code at N.J.A.C. 17:27.**

{This space intentionally left blank}

AMERICANS WITH DISABILITIES ACT OF 1990
Equal Opportunity for Individuals with Disability

The contractor and the City of Vineland, (hereafter "City") do hereby agree that the provisions of title 11of the Americans With Disabilities Act of 1990 (the "Act") (42 U.S.C. S121 01 et seq.), which prohibits discrimination on the basis of disability by public entities in all services, programs, and activities provided or made available by public entities, and the rules and regulations promulgated pursuant there unto, are made a part of this contract. In providing any aid, benefit, or service on behalf of the City of Vineland pursuant to this contract, the contractor agrees that the performance shall be in strict compliance with the Act. In the event that the contractor, its agents, servants, employees, or subcontractors violate or are alleged to have violated the Act during the performance of this contract, the contractor shall defend the City in any action or administrative proceeding commenced pursuant to this Act The contractor shall indemnity, protect, and save harmless the City, its agents, servants, and employees from and against any and all suits, claims, losses, or damages, of whatever kind or nature arising out of or claimed to arise out of the alleged violation. The contractor shall, at its own expense, appear, defend, and pay any and all charges for legal services and any all costs and other expenses arising from such action or administrative proceeding or incurred in connection therewith. In any and all complaints brought pursuant to the City's grievance procedure, the contractor agrees to abide by any decision of the City which is rendered pursuant to said grievance procedure. If any action or administrative proceeding results in an award of damages against the City of Vineland or if the City of Vineland incurs any expense to cure a violation of the ADA which has been brought pursuant to its grievance procedure, the contractor shall satisfy and discharge the same at its own expense.

The City shall, as soon as practicable after a claim bas been made against it, give written notice thereof to the contractor along with full and complete particulars of the claim. If any action or administrative proceedings is brought against the City of Vineland, or any of its agents, servants, and employees, the City shall expeditiously forward or have forwarded to the contractor every demand, complaint, notice, summons, pleading, or other process received by the City or its representatives.

It is expressly agreed and understood that any approval by the City of the services provided by the contractor pursuant to this contract will not relieve the contractor of the obligation to comply with the Act and to defend, indemnify, protect, and save harmless the City pursuant to this paragraph.

It is further agreed and understood that the City of Vineland assumes no obligation to indemnify or save harmless the contractor, its agents, servants, employees and servants, employees and subcontractors for any claim which may arise out of their performance of this Agreement. Furthermore, the contractor expressly understands and agrees that the provisions of this indemnification clause shall in no way limit the contractors obligations assumed in this Agreement, nor shall they be construed to relieve the contractor from any liability, nor preclude the City from taking any other actions available to it under any other provisions of the Agreement or otherwise at law.

NEW JERSEY ANTI-DISCRIMINATION PROVISIONS
NJ.S.A.10:2-1 ET SEQ.

Pursuant to NJ.S.A. 10:2-1, if awarded a contract, the contractor agrees that:

a. In the hiring of persons for the performance of work under this contract or any subcontract hereunder, or for the procurement, manufacture, assembling or furnishing of any such materials, equipment, supplies or services to be acquired under this contract, no contractor, nor any person acting on behalf of such contractor or subcontractor, shall, by reason of race, creed, color, national origin, ancestry, marital status, gender identity or expression, affectional or sexual orientation or sex, discriminate against any person who is qualified and available to perform the work to which the employment relates;

b. No contractor, subcontractor, nor any person on his behalf shall, in any manner, discriminate against or intimidate any employee engaged in the performance of work under this contract or any subcontract hereunder, or engaged in the procurement, manufacture, assembling or furnishing of any such materials, equipment, supplies or services to be acquired under such contract, on account of race, creed, color, national origin, ancestry, marital status, gender identity or expression, affectional or sexual orientation or sex;

c. There may be deducted from the amount payable to the contractor by the contracting public agency, under this contract, a penalty of $50.00 for each person for each calendar day during which such person is discriminated against or intimidated in violation of the provisions of the contract; and

d. This contract may be canceled or terminated by the contracting public agency, and all money due or to become due hereunder may be forfeited, for any violation of this section of the contract occurring after notice to the contractor from the contracting public agency of any prior violation of this section of the contract.

{This space intentionally left blank}

PROPOSAL CHECKLIST

The following checklist is provided as assistance to the development of the RFP response. It in no way supersedes or replaces the requirements of the RFP. Please initial on the lines below for each document/section attesting to the fact that you have read and/or included the documents with your RFP.

General Requirements/Instructions _____

Scope of Work _____

Proposal requirements _____

Evaluation Criteria _____

Acknowledgment of Receipt of Addenda _____

Statement of Ownership Disclosure _____

Statement of Authority _____

EEO/Affirmative Action Compliance Notice _____

Affirmative Action Mandatory Language _____

Americans with Disabilities Act Mandatory Language _____

Disclosure of Investment Activities in Iran _____

Prohibited Activities in Russia or Belarus _____

THE FOLLOWING DOCUMENTS TO BE SUBMITTED WITH YOUR PROPOSAL

STATEMENT OF AUTHORITY

RFP SUBMITTED FOR:

COMPANY: _____

ADDRESS: _____

_____

RFP SUBMITTED BY: _____
(Print Name of Company Officer)

SIGNATURE: _____
(Signature of Company Officer)***

TITLE: _____ DATE: _____

TELEPHONE: _____ EXT:_____

FACSIMILE: _____

EMAIL ADDRESS: _____

TAXPAYER IDENTIFICATION NUMBER: _____

***** The RFP must be signed by a Company Officer in order to be accepted by the City as a valid RFP. Failure to sign the RFP shall cause the RFP submission to be rejected as non-responsive.**

STATEMENT OF OWNERSHIP DISCLOSURE

N.J.S.A. 52:25-24.2 (P.L. 1977, c.33, as amended by P.L. 2016, c.43)

This statement shall be completed, certified to, and included with all bid and proposal submissions. Failure to submit the required information is cause for automatic rejection of the bid or proposal.

Name of Organization: _____

Organization Address: _____

Part I:

Check the box that represents the type of business organization:

- ☐ Sole Proprietorship (skip Parts II and III, execute certification in Part IV)
- ☐ Non-Profit Corporation (skip Parts II and III, execute certification in Part IV)
- ☐ For-Profit Corporation (any type)
- ☐ Limited Liability Company (LLC)
- ☐ Limited Partnership
- ☐ Limited Liability Partnership (LLP)
- ☐ Other (be specific):

Part II:

The list below contains the names and addresses of all stockholders in the corporation who own 10 percent or more of its stock, of any class, or of all individual partners in the partnership who own a 10 percent or greater interest therein, or of all members in the limited liability company who own a 10 percent or greater interest therein, as the case may be. **(COMPLETE THE LIST BELOW IN THIS SECTION)**

OR

No one stockholder in the corporation owns 10 percent or more of its stock, of any class, or no individual partner in the partnership owns a 10 percent or greater interest therein, or no member in the limited liability company owns a 10 percent or greater interest therein, as the case may be. **(SKIP TO PART IV)**

(Please attach additional sheets if more space is needed):

Name of Individual or Business Entity	Address

Part III **DISCLOSURE OF 10% OR GREATER OWNERSHIP IN THE STOCKHOLDERS, PARTNERS OR LLC MEMBERS LISTED IN PART II**

If a bidder has a direct or indirect parent entity which is publicly traded, and any person holds a 10 percent or greater beneficial interest in the publicly traded parent entity as of the last annual federal Security and Exchange Commission (SEC) or foreign equivalent filing, ownership disclosure can be met by providing links to the website(s) containing the last annual filing(s) with the federal Securities and Exchange Commission (or foreign equivalent) that contain the name and address of each person holding a 10% or greater beneficial interest in the publicly traded parent entity, along with the relevant page numbers of the filing(s) that contain the information on each such person. **Attach additional sheets if more space is needed.**

Website (URL) containing the last annual SEC (or foreign equivalent) filing	Page #'s

Please list the names and addresses of each stockholder, partner or member owning a 10 percent or greater interest in any corresponding corporation, partnership and/or limited liability company (LLC) listed in Part II **other than for any publicly traded parent entities referenced above.** The disclosure shall be continued until names and addresses of every non-corporate stockholder, and individual partner, and member exceeding the 10 percent ownership criteria established pursuant to N.J.S.A. 52:25-24.2 has been listed. **Attach additional sheets if more space is needed.**

Stockholder/Partner/Member and Corresponding Entity Listed in Part II	Address

Part IV **Certification**

I, being duly sworn upon my oath, hereby represent that the foregoing information and any attachments thereto to the best of my knowledge are true and complete. I acknowledge: that I am authorized to execute this certification on behalf of the bidder/proposer; that the **<name of contracting unit>** is relying on the information contained herein and that I am under a continuing obligation from the date of this certification through the completion of any contracts with **<type of contracting unit>** to notify the **<type of contracting unit>** in writing of any changes to the information contained herein; that I am aware that it is a criminal offense to make a false statement or misrepresentation in this certification, and if I do so, I am subject to criminal prosecution under the law and that it will constitute a material breach of my agreement(s) with the, permitting the **<type of contracting unit>** to declare any contract(s) resulting from this certification void and unenforceable.

Full Name (Print) :		Title :
Signature :		Date :

AFFIRMATIVE ACTION COMPLIANCE NOTICE

N.J.S.A. 10:5-31 and N.J.A.C. 17:27

GOODS AND SERVICES CONTRACTS

(INCLUDING PROFESSIONAL SERVICES)

This form is a summary of the successful bidder's requirement to comply with the requirements of N.J.S.A. 10:5-31 and N.J.A.C. 17:27-1 et seq.

The successful bidder shall submit to the public agency, after notification of award but prior to execution of this contract, one of the following three documents as forms of evidence:

(a) A photocopy of a valid letter that the contractor is operating under an existing Federally approved or sanctioned affirmative action program (good for one year from the date of the letter);

OR

(b) A photocopy of a Certificate of Employee Information Report approval, issued in accordance with N.J.A.C. 17:27-4;

OR

(c) A photocopy of an Employee Information Report (Form AA302) provided by the Division and distributed to the public agency to be completed by the contractor in accordance with N.J.A.C. 17:27-4.

The successful vendor may obtain the Affirmative Action Employee Information Report (AA302) from the contracting unit during normal business hours.

The successful vendor(s) must submit the copies of the AA302 Report to the Division of Contract Compliance and Equal Employment Opportunity in Public Contracts (Division). The Public Agency copy is submitted to the public agency, and the vendor copy is retained by the vendor.

The undersigned vendor certifies that he/she is aware of the commitment to comply with the requirements of N.J.S.A. 10:5-31 and N.J.A.C. 17:27.1 et seq. and agrees to furnish the required forms of evidence.

The undersigned vendor further understands that his/her bid shall be rejected as non-responsive if said contractor fails to comply with the requirements of N.J.S.A. 10:5-31 and N.J.A.C. 17:27-1 et seq.

COMPANY: _____ SIGNATURE: _____

PRINT NAME: _____ TITLE: _____

DATE: _____

FAILURE BY THE BIDDER TO COMPLETE AND RETURN THIS NOTICE WITH THEIR BID SUBMISSION SHALL BE CAUSE FOR THEIR BID TO BE REJECTED AS NON-RESPONSIVE

CITY OF VINELAND
ACKNOWLEDGMENT OF RECEIPT OF ADDENDA

Pursuant to N.J.S.A. 40A:11-23.1a, the undersigned bidder hereby acknowledges receipt of the following notices, revisions, or addenda to the bid advertisement, specifications or bid documents. By indicating date of receipt, bidder acknowledges the submitted bid takes into account the provisions of the notice, revision or addendum. Note that the local unit's record of notice to bidders shall take precedence and that failure to include provisions of changes in a bid proposal may be subject for rejection of the bid.

Addendum Number	Dated	Acknowledge Receipt (Initial)
_____	_____	_____
_____	_____	_____
_____	_____	_____

_____No addenda received.

Acknowledged for: _____
(Name of Bidder)

By: _____
(Signature of Authorized Representative)

Name: _____
(Please type or Print)

Title: _____

Date: _____

City of Vineland - Division of Purchasing
DISCLOSURE OF INVESTMENT ACTIVITIES IN IRAN FORM

STATE OF NEW JERSEY
DEPARTMENT OF THE TREASURY - DIVISION OF PURCHASE AND PROPERTY 33 WEST STATE STREET, P.O. BOX 230 TRENTON, NEW JERSEY 08625-0230

BID SOLICITATION # AND TITLE: _____

VENDOR NAME: _____

Pursuant to N.J.S.A. 52:32-57, et seq. (P.L. 2012, c.25 and P.L. 2021, c.4) any person or entity that submits a bid or proposal or otherwise proposes to enter into or renew a contract must certify that neither the person nor entity, nor any of its parents, subsidiaries, or affiliates, is identified on the New Jersey Department of the Treasury's Chapter 25 List as a person or entity engaged in investment activities in Iran. The Chapter 25 list is found on the Division's website at: https://www.state.nj.us/treasury/purchase/pdf/Chapter25List.pdf.

Vendors/Bidders must review this list prior to completing the below certification. If the Director of the Division of Purchase and Property finds a person or entity to be in violation of the law, s/he shall take action as may be appropriate and provided by law, rule or contract, including but not limited to, imposing sanctions, seeking compliance, recovering damages, declaring the party in default and seeking debarment or suspension of the party.

CHECK THE APPROPRIATE BOX

☐ I certify, pursuant to N.J.S.A. 52:32-57, et seq. (P.L. 2012, c.25 and P.L. 2021, c.4), that neither the Vendor/Bidder listed above nor any of its parents, subsidiaries, or affiliates is listed on the New Jersey Department of the Treasury's Chapter 25 List of entities determined to be engaged in prohibited activities in Iran.

OR

☐ I am unable to certify as above because the Vendor/Bidder and/or one or more of its parents, subsidiaries, or affiliates is listed on the New Jersey Department of the Treasury's Chapter 25 List. I will provide a detailed, accurate and precise description of the activities of the Vendor/Bidder, or one of its parents, subsidiaries or affiliates, has engaged in regarding investment activities in Iran by completing the information requested below.

Entity Engaged in Investment Activities _____

Relationship to Vendor/ Bidder _____

Description of Activities _____

_____

_____

Duration of Engagement _____

Anticipated Cessation Date _____

**Attach Additional Sheets If Necessary.*

CERTIFICATION

I, the undersigned, certify that I am authorized to execute this certification on behalf of the Vendor, that the foregoing information and any attachments hereto, to the best of my knowledge are true and complete. I acknowledge that the City of Vineland is relying on the information contained herein, and that the Vendor is under a continuing obligation from the date of this certification through the completion of any contract(s) with the City to notify the City in writing of any changes to the information contained herein; that I am aware that it is a criminal offense to make a false statement or misrepresentation in this certification. If I do so, I may be subject to criminal prosecution under the law, and it will constitute a material breach of my contract(s) with the City, permitting the City to declare any contract(s) resulting from this certification void and unenforceable.

_____ _____

Signature Date

_____

Full Name (Print) and Title

CERTIFICATION OF NON-INVOLVEMENT IN PROHIBITED ACTIVITIES IN RUSSIA OR BELARUS

Pursuant to N.J.S.A. 52:32-60.1, et seq. (L. 2022, c. 3) any person or entity (hereinafter "Vendor[i]") that seeks to enter into or renew a contract with a State agency for the provision of goods or services, or the purchase of bonds or other obligations, must complete the certification below indicating whether or not the Vendor is identified on the Office of Foreign Assets Control (OFAC) Specially Designated Nationals and Blocked Persons list, available here: https://sanctionssearch.ofac.treas.gov/. If the Department of the Treasury finds that a Vendor has made a certification in violation of the law, it shall take any action as may be appropriate and provided by law, rule or contract, including but not limited to, imposing sanctions, seeking compliance, recovering damages, declaring the party in default and seeking debarment or suspension of the party.

I, the undersigned, certify that I have read the definition of "Vendor" below, and have reviewed the Office of Foreign Assets Control (OFAC) Specially Designated Nationals and Blocked Persons list, and having done so certify:

(Check the Appropriate Box)

○ A. That the Vendor is not identified on the OFAC Specially Designated Nationals and Blocked Persons list on account of activity related to Russia and/or Belarus.

OR

○ B. That I am unable to certify as to "A" above, because the Vendor is identified on the OFAC Specially Designated Nationals and Blocked Persons list on account of activity related to Russia and/or Belarus.

OR

○ C. That I am unable to certify as to "A" above, because the Vendor is identified on the OFAC Specially Designated Nationals and Blocked Persons list. However, the Vendor is engaged in activity related to Russia and/or Belarus consistent with federal law, regulation, license or exemption. A detailed description of how the Vendor's activity related to Russia and/or Belarus is consistent with federal law is set forth below.

_____

_____

_____

_____

_____

_____

(Attach Additional Sheets If Necessary.)

Signature of Vendor's Authorized Representative	Date
Print Name and Title of Vendor's Authorized Representative	Vendor's FEIN
Vendor's Name	Vendor's Phone Number
Vendor's Address (Street Address)	Vendor's Fax Number
Vendor's Address (City/State/Zip Code)	Vendor's Email Address

[i] Vendor means: (1) A natural person, corporation, company, limited partnership, limited liability partnership, limited liability company, business association, sole proprietorship, joint venture, partnership, society, trust, or any other nongovernmental entity, organization, or group; (2) Any governmental entity or instrumentality of a government, including a multilateral development institution, as defined in Section 1701(c)(3) of the International Financial Institutions Act, 22 U.S.C. 262r(c)(3); or (3) Any parent, successor, subunit, direct or indirect subsidiary, or any entity under common ownership or control with, any entity described in paragraph (1) or (2).

56MVA Power Transformer
Request for Proposals

Vineland Municipal Electric Utility

SECTION 337313

VMEU Project Code: 24-035

Revision 0

March 27, 2025

Prepared By: *Sargent & Lundy, William Burns* Date: 03/31/2025

Team Lead: *Thomas Dunmore* Date: 03/31/2025

TABLE OF CONTENTS

PART 1 - General / Terms & Conditions 3
1.1. Scope & Background 3
1.2. Contract Documents 3
1.3. Definitions 3
1.4. Codes and Standards 5
1.5. Materials and Equipment 7
1.6. Repairs and Replacements 7
1.7. Ownership 7
1.8. Service Conditions 7
1.9. Spare Parts 8
1.10. Warranty 8
1.11. Equipment Delivery 9
1.12. Submittals 9
1.13. Shop Drawings 9
1.14. Instruction Books 10
1.15. Execution of Contract 11
1.16. Legal Addresses 11
1.17. Governing Law 11
1.18. Scope and Intent of Contract Documents 11
1.19. Independent Contractor 11
1.20. Assignment and Subcontracting 11
1.21. Oral Statements 12
1.22. No Waiver of Rights 12
1.23. Authority of the Engineer 12
1.24. Engineering Inspection 12
1.25. Contractor Default 13
1.26. Hindrances and Delays 13
1.27. Suspension of Work 13
1.28. Delayed Shipment 14
1.29. Cancellation of Work 14
1.30. Modifications 14
1.31. Changes to the Contract 14

1.32. Arbitration 17
1.33. Laws and Regulations 17
1.34. Taxes, Permits, and Licenses 17
1.35. Patents 18
1.36. Guarantee 18
1.37. Insurance 18
1.38. Indemnification 21
1.39. Release of Liability 22
1.40. Breakdown of Charges and Allocation of Owner's Cost 22
1.41. Time and Material Payment 22
1.42. Release of Liens 24
1.43. Hazardous Substances 24
1.44. Limitation of liability 25
1.45. Consequential Damages 25
PART 2 – Technical Specifications 26
2.1. Power Transformer Rating Data 26
2.2. Material to be Provided 30
PART 3 – EXECUTION 48
3.1. Tests, Evaluations, and Guarantees 48
3.2. Shipping 57
3.3. Design Review and Inspections 58
3.4. Chemical and Hazardous Substance Control 59
3.5. Delivery 59
3.6. Production Schedule 59
3.7. Proposal Evaluation Criteria 60
3.8. Manufacturer Data 60
3.9. Drawings and Transmittals 61
3.10. Field Assembly & Testing 62
PART 4 – Attachments 62
4.1. List of Attachements 62

SECTION 337313 – LIQUID-FILLED UTILITY TRANSFORMERS

PART 1 - General / Terms & Conditions

1.1. Scope & Background

A. The Vineland Municipal Electric Utility is issuing this Request for Proposal ("RFP") to solicit proposals from manufacturers ("MANUFACTURER") to supply one substation transformer. The substation transformer is to meet the requirements as identified in Section 2 – "Technical Specifications." Any and all exceptions to the requirements identified in Section 2 – "Technical Specifications" must be documented in the Proposal. This Request for Proposals intends to describe in complete detail all material provided, as a guideline. It does not relieve the Supplier of his responsibility to provide a complete and reliable product.

B. The Request for Proposals includes specifications describing the general and detailed requirements for a 69/15 kV Delta-Zig Zag power transformer for use on Vineland Municipal Electric Utility (VMEU) systems. Materials will be awarded in whole or in part, as best suits VMEU. The Seller shall provide only new equipment that conforms to all VMEU Standards and Technical Specifications.

C. VMEU, or its delegate, will be responsible for the installation, operation, and regular maintenance of all the supplied products.

1.2. Contract Documents

A. It is understood and agreed that the Notice to Bidders, General Instructions, Proposal, Proposal Data, Check List, Affirmative Action Regulations, Corporate Disclosure Statement, Surety Form, Contract Agreement, Performance Bond, Payment Bond, General Conditions, Release of Mechanics' Liens, Equal Employment Opportunity Requirements, Special Conditions, Contractor's Report of Property Damage, Specifications, Drawings, Addenda, and Change Orders issued by the Owner or the Engineer, and specifications and engineering data furnished by the Contractor and accepted by the Owner, wherever included in this Contract shall be adhered to by the Contractor and the work shall be done in accordance therewith.

B. It shall be each prospective Bidder's responsibility to read and understand the requirements as outlined and set forth in the document entitled "General Requirements/Instructions" that precedes this Request for Proposals.

C. The general conditions outlined in this Request for Proposals are not intended to duplicate or amend those instructions.

D. Any questions or requests for interpretation or clarification of meanings SHALL go through the City of Vineland's Purchasing Department.

1.3. Definitions

Words, phrases, or other expressions used in these contract documents shall be defined as follows.

i. "Contract" or "contract documents" shall include the items enumerated above under CONTRACT DOCUMENTS.

ii. "Owner" or "City" shall mean the City of Vineland, New Jersey, acting through its City Council and their duly authorized agents. All notices, letters, and other communication directed to the Owner shall be addressed and delivered to the City

of Vineland Electric Utility, Engineering Division, 57 West Park Avenue, Suite A, PO Box 1508, Vineland, New Jersey, 08362-1508, Attention: William Burns

iii. "Contractor" shall mean the corporation, company, partnership, firm, or individual who has entered into this Contract for the performance of the work covered thereby, and its, his, or their duly authorized representatives.

iv. "Subcontractor" shall mean and refer only to a corporation, partnership, or individual having a direct contract with the Contractor for performing work covered by these contract documents.

v. "Engineer" shall mean the City of Vineland, New Jersey, or their duly authorized agent.

vi. "Field Construction Manager" shall mean the Owner's representative resident at the site of the work and designated by the Owner to be in charge of the project administration and field management of the work under this Contract.

vii. "Date of Contract," or equivalent words, shall mean the date of Contract Agreement is signed by the Contractor.

viii. "Day" or "days" unless herein otherwise expressly defined, shall mean a calendar day or days of 24 hours each.

ix. "The work" shall mean the equipment, supplies, materials, labor, and services to be furnished under the contract and the carrying out of all obligations imposed by the contract documents.

x. "System" shall mean complete equipment and auxiliary systems associated with "the work".

xi. "Drawings" or "plans" shall mean all (a) drawings wherever furnished by the Owner as a basis for proposals, (b)supplementary drawings wherever furnished by the owner to clarify and to define in greater detail the intent of the contract drawings and specification, (c) drawings submitted by the successful bidder with his proposal, provided such drawings are acceptable to the Owner, (d) drawings furnished by the Owner to the Contractor during the progress of the work, and (e) engineering data and drawings submitted by the Contractor during the progress of the work, provided such drawings are acceptable to the Engineer.

xii. Whenever in these contract documents the words "as order," "as directed," "as required," "as permitted," "as allowed," or words or phrases of like import are used, it shall be understood that the order, direction, requirement, permission, or allowance of the Owner or Engineer is intended only to the extent of judging compliance with the terms of the contract; none of these terms shall imply that the Owner or the Engineer has any authority or responsibility for supervision of the Contractor's forces or operations, such supervision and the sole responsibility therefore Being strictly reserved for the Contractor.

xiii. Similarly the words "approved," "reasonable," "suitable," "acceptable," "proper," "satisfactory," or words of like effect and import, unless otherwise specified herein, shall mean approved, reasonable, suitable, acceptable, proper, or satisfactory in the judgment of the Owner or Engineer, to the extent provided in "L" above.

xiv. Whenever in these contract documents the expression "it is understood and agreed" or an expression of like import is used, such expression means the mutual understanding and agreement of the parties executing the Contract Agreement.

xv. "Official acceptance" shall mean the Owner's written acceptance of all work performed under this Contract, based on the Owner's final inspection.

xvi. "Start-up" shall mean the time period required to bring the system from an inactive condition, when construction is essentially complete, to the state ready for commercial operation. The start-up period shall include preliminary inspection and checkout of equipment and subsystems; initial operation of the complete system; operation of the complete unit to obtain data, perform calibration and corrective work; and shutdown, inspection and adjustment prior to obtaining commercial operating status.

xvii. "Initial operation" shall mean the first integral operation of the complete system subsystems and supporting equipment in service or available for service.

xviii. "Commercial operation" shall mean the condition of operation in which the complete system is officially declared by the Owner to be available for continuous operation at variable loads up to the including rated capacity.

xix. The additional terminology given in the latest revisions of IEEE C57.12.00 "IEEE Standard for General Requirements for Liquid-Immersed Distribution, Power, and Regulating Transformers" and IEEE C57.12.80 "IEEE Standard Terminology for Power and Distribution Transformers" shall apply:

i. BC: Bolt circle (of post insulators).
ii. BIL: Basic insulation level.
iii. BSL: Basic switching impulse insulation level.
iv. ETM: Electronic temperature monitor.
v. GIC: Geomagnetically induced current.
vi. ODAF: Oil directed air forced.
vii. ONAN: Oil natural air natural.
viii. ONAF: Oil natural air forced.
ix. TR#: Technical reference number (for insulators).
x. N/O: Normally open.
xi. N/C: Normally closed.
xii. RIV: Radio interference voltage.

1.4. Codes and Standards

i. Any references to standards or codes of local or state authorities shall be references to the latest approved versions as published at the date of taking bids, unless specifically stated otherwise.

ii. The equipment covered by specifications within this request for proposals shall be designed, tested, and assembled in accordance with the latest applicable standards as prepared by but not limited to:

a. American National Standards Institute (ANSI)

i. ANSI/NETA ATS: Standard for Acceptance Testing Specifications for Electrical Power Equipment and Systems
ii. ANSI B1.20.1: Pipe Threads, General Purpose (Inch).

b. American Society of Civil Engineers (ASCE)

c. American Society for Testing and Materials (ASTM International)

i. ASTM B62: Standard Specification for Composition Bronze or Ounce Metals Castings.
ii. ASTM B584: Standard Specification for Copper Alloy Sand Castings for General Applications.
iii. ASTM D6871-17: Standard Specification for Natural (Vegetable Oil) Ester Fluids Used in Electrical Apparatus

d. Institute of Electrical and Electronic Engineers (IEEE) including:

i. IEEE 100: The IEEE Standard Dictionary of Electrical and Electronic Terms.
ii. IEEE 693: IEEE Recommended Practice for Seismic Design of Substations.
iii. IEEE C57.12.00: IEEE Standard for General Requirements for Liquid-Immersed Distribution, Power, and Regulating Transformers.
iv. IEEE C57.12.10: IEEE Standard Requirements for Liquid-Immersed Power Transformers.
v. IEEE C57.12.28: IEEE Standard for Pad-Mounted Equipment – Enclosure Integrity.
vi. IEEE C57.12.70: IEEE Standard for Standard Terminal Markings and Connections for Distribution and Power Transformers.
vii. IEEE C57.12.80: IEEE Standard Terminology for Power and Distribution Transformers.
viii. IEEE C57.12.90: IEEE Standard Test Code for Liquid-Immersed Distribution, Power, and Regulating Transformers.
ix. IEEE C57.13: IEEE Standard Requirements for Instrument Transformers (ANSI).
x. IEEE C57.19.01: IEEE Standard for Performance Characteristics.
xi. IEEE C57.19.100: IEEE Guide for Application of Power Apparatus Bushings.
xii. IEEE C57.147-2018: IEEE Guide for Acceptance and Maintenance of Natural Ester Insulating Liquid in Transformers
xiii. IEEE C57.123: IEEE Guide for Transformer Loss Measurement.
xiv. IEEE C62.11: IEEE Standard for Metal-Oxide Surge Arresters for AC Power Circuits (>1kV)

e. National Electrical Manufacturers Association (NEMA) including:

i. NEMA 250 Enclosures for Electrical Equipment (1000V Maximum).
ii. NEMA CC 1: Electric Power Connectors for Substations
iii. NEMA WC 70/ ICEA S-95-658: Power Cables Rated 2000 Volts or Less for the Distribution of Electrical Energy

f. National Fire Protection Association (NFPA)

g. Occupational Safety and Health Administration (OSHA)

i. OSHA Rule 1910.269-1994, Electric Power Generation, Transmission, and Distribution: Electrical Protective Equipment

iii. Any necessary tests, in addition to those herein specified, to determine the strength, tightness, suitability or adequacy of any parts of the construction shall be made in accordance with the direction of VMEU. The expense of such additional tests shall be paid for by the Contractor when the tests show that materials or construction furnished by them are defective or not up to the requirements of the specifications, otherwise by the City.

iv. Guarantees, when requested, shall be furnished by the Contractor on forms provided or approved by VMEU and shall be signed by the Contractor.

1.5. Materials and Equipment

Unless specifically provided otherwise in each case, all materials and equipment furnished for permanent installation in the work shall conform to applicable standard specifications and shall be new, unused, and undamaged when installed or otherwise incorporated in the work. Proposed materials shall be of the type and manufacturer as specified or an approved equal which meets or exceeds the specified material requirements. Full documentation shall be provided with the proposal for any proposed equals.

1.6. Repairs and Replacements

A. The Contractor shall make good any defects that may develop in his work or in any materials, parts, or equipment furnished by them for a period of one year from the date of final acceptance. Their obligation shall include any and all expenses that may be involved in the rectification of such defects. They shall, however, not be required to make repairs or replacements that may be necessary as a result of negligence or improper care or operation on the part of the City or the City's employees, or of ordinary wear and tear.

B. Neither the final payment, nor any other provision of the contract, nor partial or entire use of the equipment as intended, shall relieve the Contractor of liability with respect to the guarantees and warranties referred to in these specifications or any other warranties expressed or implied.

1.7. Ownership

Ownership of all materials shall remain vested in the manufacturer or Contractor until such materials are received and accepted in good condition by VMEU.

Acceptance by VMEU shall in no way relieve the Contractor of its responsibilities as defined under this request of proposals and specifications described within.

Guarantees, when requested, shall be furnished by the Contractor on forms provided or approved by VMEU and shall be signed by the Contractor.

1.8. Service Conditions

A. All transformers shall be suitable for operation at rated MVA based on an ambient temperature not to exceed 40 °C and a 24-hour average temperature not exceeding 30 °C. Transformers shall be suitable for operation in a minimum ambient temperature of -20 °C.

B. Transformers shall be capable of step-up and step-down operation so that power may

flow in either direction between primary and secondary windings, unless specified otherwise.

C. Nominal system voltages are +/-5%. All transformers shall be capable of continuous operation at maximum rated kVA/MVA without exceeding 65 °C temperature rise.

D. The transformers shall be designed to comply with the latest revisions of all standards as detailed in this request for proposals, as well as any and all other standards or regulations applicable.

E. The transformers shall be capable of maintaining structural integrity and performing as intended both during and after a seismic event per IEEE 693 "IEEE Recommended Practice for Seismic Design of Substations."

F. The Manufacturer shall include the loads for seismic qualification levels on the outline drawing.

G. The transformers shall be suitable for "light" or "heavy" contamination levels as defined by the most recent revision of IEEE C57.19.100 "IEEE Guide for Application of Power Apparatus Bushings."

H. The transformers shall be capable of maintaining structural integrity and performing as intended with a wind velocity of 120mph.

1.9. Spare Parts

A. This request for proposals covers the offering, by the Manufacturer, of supplying a complete set of spare and maintenance parts, which in the opinion of the manufacturer, would be prudent for a customer utilizing equipment of the types and quantities proposed to have on hand for future need rather than ordering on an "as needed" basis. This offering shall be itemized in the proposal response.

B. The intent is to obtain parts and material quantity recommendation and pricing for specialty parts that would be unique to the Power Transformers proposed. This may include such materials as pumps, fan motors, bushings, contacts, auxiliary relays, gaskets, and other such items where experience has shown the manufacturer that the stocking of such items would expedite future maintenance.

C. It is not intended to include such items that would be common to the testing of Power Transformers in general such as test leads, travel analyzers, meters, hand tools (unless specially fabricated for the equipment proposed), general lubricants and other such items.

D. Nothing herein shall be construed as a commitment by the Owner to purchase all or any of the spare and maintenance parts recommended by the Manufacturer. The Owner reserves the right to evaluate the offering as spare and maintenance parts and to determine the type and quantities of such parts to be supplied (if any) as a portion of the overall materials Purchase Order.

1.10. Warranty

A. Transformers and all associated equipment furnished by the Manufacturer shall be subject to inspection, tests, and approval by VMEU. In the event of a defective product due to manufacturer issues, the seller will provide VMEU with a suitable replacement that will be installed by VMEU. This warranty shall apply for five (5) years after

acceptance of ownership by VMEU, or for the period which the equipment is guaranteed, whichever is longer.

B. The nameplate shall state the warranty period of the transformer.

C. Neither the final payment, nor any other provision of the contract, nor partial or entire use of the equipment as intended, shall relieve the Contractor of liability with respect to the guarantees and warranties referred to in this request for proposals or any other warranties expressed or implied.

1.11. Equipment Delivery

A. All base proposal items as specified for guaranteed purchase ordered upon award of the purchase order contract. Availability (delivery) of materials is an important factor in the evaluation of proposals.

B. Materials and or equipment, shall be delivered Freight Prepaid and Allowed.

C. Ownership of all materials and equipment shall remain vested with the manufacturer or Contractor until acceptance by VMEU. All claims for recovery of damages shall be the responsibility of the successful Bidder/Contractor.

D. Acceptance of ownership by the City shall in no way relieve the Contractor of its responsibilities under this contract.

E. Contractor shall require shipper to provide VMEU with a minimum of 24-hour notice of delivery so arrangements for lifting equipment can be made. The Shipper may be responsible for unloading material in the event such notice is not received.

F. All customs fees, fares, and arrangements are the responsibility of the contractor.

1.12. Submittals

A. Submit With Proposal

i. Itemized Equipment Pricing
ii. Shipping Costs
iii. Lead Time
iv. Dimensional Drawings – Plan View, Front and Side Elevations
v. All equipment manufactures
vi. Technical Specifications (Including "cut-sheets," installation & maintenance manuals, etc.)

B. After Award

i. All submittals to be provided electronically. Invoices shall be provided in duplicate via email and/or by postal service.

1.13. Shop Drawings

A. Before proceeding with fabrication, approval of shop drawings will be required six weeks after award. The Manufacturer shall supply two (2) copies to VMEU of all shop drawings and email a PDF set, so it may be ascertained that all equipment being furnished meets the specifications. The drawings shall include copies of each of the outline, nameplate, elementary and control wiring drawings.

B. The outline drawing shall show dimensions of equipment, including bushings, cabinet

housing, supporting frame and all other important external features. These drawings shall show weights, centers of gravity, bushing catalog numbers and ampere ratings, description of top bushing terminals and arrangement of all external accessory devices.

C. Each drawing submitted shall be clearly marked with the name of the project, the request for proposals title, the RFP number, the equipment nomenclature and the Manufacturer's name. If standard drawings are submitted, the applicable equipment and devices furnished shall be clearly marked.

D. Approval of drawings shall not be held to relieve the Manufacturer of obligations to meet all requirements of the Specifications listed in Section 2, of responsibility for correctness of the drawings, or of responsibility to meet original shipping promise on basis of Owner being allowed one week for approval.

E. VMEU shall return any changes to the shop drawings and the Manufacturer shall include all such changes on the final drawings. VMEU may require a second submittal of shop drawings. If any extension of time is required due to a protracted drawing approval process, the price shall remain as quoted.

F. Receipt of Approval Drawings by the Manufacturer constitutes authorization for manufacture only, based upon the corrections found thereon.

G. Shop drawings are to be furnished to VMEU by the Manufacturer before shipment. The drawings shall be provided in both AutoCAD DWG format and PDF format, on a USB drive. Among the drawings to be furnished:

i. Outline and assembly, showing foundation bolt size and locations and all other principal dimensions.

ii. Control and relay panel front and rear views.

iii. Nameplate(s).

iv. Details of bushing and bushing terminal connectors.

v. Diagram of bushing current transformers, connection, and number of turns, polarity marking and ratios.

vi. Details of mechanism housing.

vii. Wiring control and schematic diagrams.

viii. Panel Connection Diagram showing exact connection for all components furnished.

1.14. Instruction Books

The Manufacturer shall furnish two (2) hard copies to VMEU of applicable instruction books and one softcopy PDF Instructions book on a USB drive with each binder with each transformer. One (1) book shall be shipped prior to delivery of the transformer and one (1) book with the transformer. These books shall provide detailed operation and maintenance instructions and troubleshooting procedure on control and other subsystems for all equipment furnished. These books shall be enclosed in a moisture resistant envelope and a suitable place for storage shall be provided in each transformer such that the instruction book may remain with the transformer at all times. Instruction books are to include one (1) drawing each of the outline, nameplate, bushing, accessory schematics, and all other drawings as listed under Final Drawings.

1.15. Execution of Contract

The original and two copies of the contract documents will be prepared by the Owner. All Copies will be submitted to the Contractor and the Contractor shall execute the Contract Agreement, along with executed copies of the required bonds and power of attorney, and submit the two copies to the Owner. The original contract documents are for the Contractor's records.

1.16. Legal Addresses

The business address of the Contractor listed in the Proposal is hereby designated as the place to which all notices, letters, and other communication to the Contractor will be mailed or delivered. The address of the Owner appearing on Page 1 of the "General Instructions" is hereby designated as the place to which all notices, letters, and other communication to the Owner shall be mailed or delivered. Either party may change his address at any time by an instrument in writing delivered to the Engineer and to the other party.

1.17. Governing Law

This Contract shall be governed by the laws of the State of New Jersey. Any action, legal or equitable, relating to this Contract shall be filed in the State of New Jersey.

All parties to this Contract are bound by the appropriate provisions of the New Jersey Local Public Contract Laws which is a prerequisite to any payment by the City. This law is applicable to this Contract in total and in particular to change orders which must be pre-approved by the City pursuant to law.

1.18. Scope and Intent of Contract Documents

The various parts of the contract documents are intended to supplement but not necessarily duplicate each other. Any work exhibited in one part and not in another shall be executed as if it had been set forth in all parts, so that the work will be performed as determined by the Engineer.

Should anything necessary for a clear understanding of the work be omitted from the contract documents, or should the requirements appear to be in conflict, the Contractor shall secure written instructions from the Engineer before proceeding with the work affected thereby. It is understood and agreed that the work shall be performed according to the true intent of the contract documents.

1.19. Independent Contractor

The relationship of the Contractor to the Owner shall be that of an independent contractor.

1.20. Assignment and Subcontracting

The Contractor shall not assign or subcontract the work, or any part thereof, without the previous written consent of the Owner, nor shall he assign, by power of attorney or otherwise, any of the money payable under this Contract unless written consent of the Owner has been obtained. No right under this Contract, nor claim for any money due or to become due here under shall be asserted against the Owner, or persons acting for the Owner, by reason of any so-called assignment of this Contract or any part thereof, unless such assignment has been authorized by the written consent of the Owner. In case the Contractor is permitted to assign Monies due or to become due under this Contract, the instrument of assignment shall contain a clause subordinating the claim of the assignee to all prior liens for services rendered or materials

supplied for the performance of the work.

Should any subcontractor fail to perform in a satisfactory manner the work undertaken by him, his subcontract shall be immediately terminated by the Contractor upon notice from the Owner. The Contractor shall be as fully responsible and accountable to the Owner for the acts and omissions of his subcontractors, and of persons either directly or indirectly employed by them, as he is for the acts and omissions of persons directly employed by him. Nothing contained in this Contract shall create any contractual relationship between any subcontractor and the Owner.

1.21. Oral Statements

It is understood and agreed that the written terms and provisions of this agreement shall supersede all oral statements of representatives of the Owner, and oral statements shall not be effective or be construed as being a part of this Contract.

1.22. No Waiver of Rights

Neither the inspection by the Owner or Engineer or any of their officials, employees, or agents, nor any order by the Owner or Engineer for payment of money, or any payment for, or acceptance of, the whole or any part of the work by the Owner or Engineer, nor any extension of time, nor any possession taken by the Owner or its employees, shall operate as a waiver of any provision of this Contract, or of any power herein reserved to the Owner, or any right to damages herein provided, nor shall any waiver of any breach in this Contract be held to be a waiver of any other or subsequent breach.

1.23. Authority of the Engineer

To prevent delays and disputes, and to discourage litigation, it is agreed by the parties to this Contract that the Engineer shall determine all questions in relation to the work.

If in the opinion of the Contractor or the Owner a decision made by the Engineer is not in accordance with the meaning and intent of the contract, either party may file with the Engineer and the other party to the contract, within 30 days after receipt of the decision, a written objection to the decision. Failure to file an objection within the allotted time will be considered acceptance of the Engineer's decision and the decision shall become final and conclusive.

The Engineer's decision and the filing of the written objection thereto shall be a condition precedent to the right to request arbitration or to start action in court.

It is the intent of this agreement that there shall be no delay in the execution of the work and the decision of the Engineer as rendered shall be promptly observed.

1.24. Engineering Inspection

The Owner may appoint (either directly or through the Engineer) such inspectors as the Owner deems proper to inspect the work for compliance with the contract documents. The Contractor shall furnish all reasonable assistance required by the Engineer, or inspectors, for the proper inspection of the work. Should the Contractor object to any interpretation of the contract by an inspector, the Contractor may make written appeal to the Engineer for a decision.

Inspectors shall have the authority to reject work which is unsatisfactory, faulty, or defective or does not conform to the requirements of the contract documents. Inspection shall not relieve the Contractor from any obligation to perform the work strictly in accordance with the contract documents.

All materials supplied by the Contractor shall be subject to the inspection of VMEU, who shall have the authority to reject any materials which in their judgment, do not conform with the requirements of the specifications (described in Section 2), or which in the opinion of VMEU may be unsuitable or unsafe for the purpose for which it is intended.

1.25. Contractor Default

If the work to be done under this Contract is abandoned by the Contractor; or if this Contract is assigned by him without the written consent of the Owner; or if the Contractor is adjudged bankrupt; or if a general assignment of his assets is made for the benefit of his creditors; or if a receiver is appointed for the Contractor or any of his property; or if at any time the Engineer certifies in writing to the Owner that the performance of the work under this Contract is being unnecessarily delayed, that the Contractor is violating any of the conditions of this Contract, or that he is executing the same in bad faith or otherwise not in accordance with the terms of said contract; or if the work is not substantially completed within the time named for its completion or within the time to which such completion date may be extended; then the Owner may serve written notice upon the Contractor and his surety of the Owner's intention to terminate this Contract. Unless within 5 days after the serving of such notice, a satisfactory arrangement is made for continuance, this Contract shall terminate. In the event of such termination, the surety shall have the right to take over and complete the work, provided that if the surety does not commence performance within 30 days, the Owner may take over and prosecute the work to completion, by contract or otherwise. The Contractor and his surety shall be liable to the Owner for all excess cost sustained by the Owner by reason of such prosecution and completion. The Owner may take possession of, and utilize in completing the work, all materials, equipment, tools, and plant on the site of the work.

1.26. Hindrances and Delays

The Contractor expressly agrees that in undertaking to complete the work within the time specified, he has made allowances for all hindrances and delays which might usually be expected to occur in performing the work. No claims shall be made by the Contractor for such hindrances and delays.

If the Contractor is delayed at any time in the progress of the work by any act or neglect of the Owner or of any employee of the Owner, or by any separate contractor employed by the Owner, or by changes ordered in the work, or by strikes, lockouts, fire, unusual delay in transportation, unavoidable casualties or any causes beyond the Contractor's control, or by any cause which the Engineer shall decide justifies a delay, then the time of completion shall be extended for such reasonable time as the Engineer may decide. The Contractor may be entitled to compensation for additional work if Contractor is required to perform work beyond the scope of the initial contract work, and the work was not required because of Contractor's fault or the delay is caused solely by the Owner.

No such extension of time will be made for a delay occurring more than 7 days before claim therefore is made in writing to the Engineer. Such claims for extension of time will, in all cases, include a detailed critical path analysis illustrating the reason for the claims and firmly establishing the days in question. In the case of a continuing cause of delay, only one claim is necessary. The Contractor shall use all reasonable means to minimize the extent of the delay.

1.27. Suspension of Work

The Owner reserves the right to suspend and reinstate execution of the whole or any part of the

work without invalidating the provisions of the contract.

Suspension or reinstatement of the work will be by written notice to the Contractor from the Owner.

Suspension of work shall not automatically entitle the Contractor of additional compensation or a change in the contract time; however, the Contractor will be reimbursed for real and unavoidable direct costs incurred by him as a result of such suspension and/or the contract will be extended as required to compensate for any delay due to such suspension.

Claims by the Contractor for change of contract time due to work suspensions ordered by the Owner shall be made in accordance with the requirements of section 1.20, Changes to the Contract. The Contractor shall use all reasonable means to minimize the consequences of such suspension.

1.28. Delayed Shipment

The Owner reserves the right to order the Contractor to delay shipment of equipment and materials herein contracted. In the event such a delay is ordered by the Owner in writing, the Owner will pay the Contractor reasonable and proper extra charges incurred by the Contractor as a result of the delay. Such extra charges shall include storage charges, handling charges, insurance, interest on investment, and transportation charges to the storage facility.

1.29. Cancellation of Work

The Owner reserves the right to cancel work by giving written notice to the Contractor. In the event of cancellation, the Owner will pay the Contractor reasonable and proper cancellation costs. Cancellation of the work shall not constitute the basis for a claim for damages or loss of anticipated profits.

The Contractor shall, after consultation with the Owner, take all reasonable steps to minimize the costs related to cancellation. The Contractor shall provide the Owner with an accounting of costs claimed, including adequate supporting information, and the Owner may, at its expense, audit the claimed costs and supporting information.

1.30. Modifications

The Contractor shall modify the work whenever so ordered by the Owner and such modifications shall not affect the validity of the contract. Modifications may involve changes in the amount of the work to be performed or changes in the contract time for which appropriate changes to the contract will be made. Contract changes due to modifications shall be made in accordance with the requirements of Section 1.20, Changes to the Contract.

1.31. Changes to the Contract

The contract may be changed only by duly executed change orders issued by the Owner. If, in the opinion of the Owner or the Contractor, any event or action by the other party justifies a change in the contract, either party shall initiate with the other party, within 5 days after such event or action, a request for a change to the contract. All documentation required to substantiate the proposed change shall be submitted within a minimum reasonable time after initiating the request for change. Upon the parties reaching agreement regarding the proposed change, the Owner will issue a written change order therefor.

Notwithstanding the foregoing provisions requiring duly authorized change orders, in the event an agreement has been reached between authorized representatives of the parties regarding

the change in the contract pending processing of such change order, the Contractor shall proceed with the work on the basis of written interim authorization from the Owner.

If the Contractor claims that any instruction, request, drawing, specifications or other directive or action of the Owner or the Engineer constitutes a change in the contract, but has not been authorized as such by a change order in writing by the Owner, the Contractor shall immediately request a written interim authorization and proceed without delay to perform the work in accordance with such authorization. The Contractor shall provide written notice of the claim or dispute to the Owner within 5 days of the request for interim authorization. The Contractor's failure to give said written notice within the 5 day period shall constitute a waiver and relinquishment of any such claim or dispute The Owner's written interim authorization shall not constitute approval of the claim for increased or decreased work, but shall be a condition precedent to the Contractor's right to receive payment for such work and to the Contractor's right to prosecute or maintain any proceeding to recover for such work.

A. Contract Price Changes

The contract price may be changed due to modifications which involve extra work or decreased work.

B. Increased Price

If a change in the contract price is authorized, the contract price will be increased according to agreed lump sums, agreed acceleration costs, or other demonstrable costs submitted by the Contractor and substantiated to the satisfaction of the Owner.

Contract price changes for modifications involving extra work will be based on agreed lump sums or on agreed unit prices whenever the Owner and the Contractor agree upon such prices before the extra work is started; otherwise, payments for extra work will be based on actual direct cost plus the specified percentage allowance.

For the purpose of determining whether proposed extra work will be authorized, or for determining the payment method for extra work, the Contractor shall submit to the Owner, upon request, a detailed cost estimate for proposed extra work. The estimate shall indicate itemized quantities and charges for all elements of direct cost. Charges for the Contractor's and subcontractor's extra profit, extra general superintendence, extra field office expense, and extra overheads shall be indicated as a percentage addition to the total estimated direct cost. Unless otherwise agreed upon by the Contractor and the Owner, such percentage additions shall be 10 percent for the extra work performed by the Contractor's own forces or 15 percent for extra work performed by a subcontractor.

When payment for extra work is based on actual direct cost, the Contractor will be paid the actual direct cost plus an allowance of 10 percent if the extra work is performed by the Contractor's own forces or 15 percent if the extra work is performed by a subcontractor. The allowance will be paid as full compensation for the Contractor's and subcontractor's extra profit, extra general superintendence, extra field office expense, extra overheads, and all other elements of extra cost not defined herein as actual direct cost.

The actual direct cost shall include only those extra costs for labor and material

expended in direct performance of the extra work and may include the following:

i. The actual payroll costs of all workmen such as laborers, mechanics, craftsmen, and foremen.

ii. The Contractor's or subcontractor's net cost for materials and supplies.

iii. The rental charge for vehicles and construction equipment.

iv. The transportation charges for equipment.

v. The charges for extra power, fuel, lubricants, water, and special services.

vi. The charges for extra payroll taxes, bond premiums, and insurance premiums.

The form in which actual direct cost records are kept, the construction methods, and the type and quantity of equipment used shall be acceptable to the Owner.

Equipment which the Contractor has on the job site and which is of a type and size suitable for use in performing the extra work shall be used. The hourly rental charges for equipment shall not exceed one half of one percent of the latest applicable monthly rental rates as published by Dataquest Incorporated in its "Rental Rate Blue Book" and shall apply to only the actual time the equipment is used in performing the extra work.

When extra work requires the use of equipment which the Contractor does not have on the job site, the Contractor shall obtain the concurrence of the Owner before renting or otherwise acquiring additional equipment. The rental charges for the additional equipment shall not exceed the latest applicable "Rental Rate Blue Book" published rental rates.

C. Decreased Price

If a change in the contract price is required due to a modification which decreases the amount of work, such decrease shall not constitute the basis for a claim for damages or anticipated profits on work affected by such decrease. Where the value of omitted work is not covered by applicable unit prices, the parties shall determine on an equitable basis the amount of (a) credit due the Owner for contract work deleted as a result of an authorized change, (b) allowance to the Contractor for any actual loss incurred in connection with the purchase, delivery, and subsequent disposal of materials or equipment required for use on the work as planned and which could not be used in any part of the work as actually built, and (c) any other adjustment of the contract amount where the method to be used in making such adjustment is not clearly defined in the contract documents.

D. Contract Time Changes

The contract time may be changed due to work modifications, hindrances and delays, and work suspensions over which the Contractor has no control.

Contract time will not be changed for delays caused by unfavorable weather or unsuitable ground conditions normally incident to the work, inadequate construction force, on site labor disputes, failure to place timely orders for equipment and materials, or other causes within the control of the Contractor.

1.32. Arbitration

Before bringing any action in court pertaining to a decision of the Engineer, or claim, dispute, or other matter in question between the Owner and Contractor arising out of, or relating to the contract documents or the breach thereof, the objector (hereinafter referred to as Party A) to the contract (hereinafter referred to as Party B) by notifying him in writing and setting forth in such notice the question to be arbitrated.

Party B can elect to arbitrate or not. If Party B agrees to arbitrate, he shall so advise Party A in writing within 10 days after receipt of Party A's notice. Notice by Party B that he does not wish to arbitrate, or failure of Party B to notify Party A with the 10 day period, will give Party A the right to start action in court.

If Party B agrees to arbitrate, the arbitration proceeding shall be governed by the Construction Industry Arbitration Rules or Commercial Arbitration Rules of the American Arbitration Association as appropriate for the matter to be arbitrated. The award rendered by the arbitrators shall be final, and judgment may be entered upon it in any court having jurisdiction.

The Contractor shall not cause a delay of the work during any arbitration proceedings, except by agreement with the Owner. It is understood and agreed by the parties to the contract that no requirement or statement therein shall be interpreted as curtailing the power of the Engineer to determine the amount, quality, and acceptability of work.

1.33. Laws and Regulations

The Contractor shall observe and comply with all Federal, state and local ordinances, laws, codes, and regulations and all other applicable requirements of authorities having jurisdiction over the work, including the Federal "Safety and Health Regulations for Construction" and the New Jersey Public Employees Occupational Safety and Health Act (N.J.A.C. 34:6A-25 et seq.), and shall protect and indemnify the Owner and the Owner's officers and agents, including the Engineer, against any claim or liability arising from or based upon any failure or alleged failure of the Contractor to comply with the same.

The provisions of Chapter 150 of the Laws of 1963 as amended by Chapter 64 of the Laws of 1974, New Jersey Statutes, Prevailing Wage Rates on Public Contracts, as determined by the Department of Labor and Industry, are applicable to this Contract.

1.34. Taxes, Permits, and Licenses

Unless otherwise specified in these contract documents, the Contractor shall pay all sales, use, and other taxes that are lawfully assessed against the Owner or Contractor in connection with the work and shall obtain and pay for all required licenses, permits, and inspections.

The City is exempt from New Jersey Sales and use taxes. New Jersey sales use taxes shall not be included in the contract prices.

The Contractor will be compensated for any increases in tax rates, license fees, and permit fees or any new taxes, licenses, or permits imposed after the date of the Proposal; provided however that this provision shall be limited to sales, use, and excise taxes assessed against the completed work and to licenses and permits required specifically for proposed work.

The Contractor shall be responsible for obtaining the necessary construction permits from the City Of Vineland's Department of Licenses and Inspection before any work is to begin. N0 fee is required, however, failure to obtain the required permits may result in fines and/or penalties

which shall be paid by the contractor.

1.35. Patents

Royalties and fees for patents covering materials, articles, apparatus, devices, equipment, or processes used in the work shall be included in the contract amount. The Contractor shall satisfy all demands that may be made at any time for such royalties or fees and he shall be liable for any damages or claims for patent infringements. The Contractor shall, at his own cost and expense, defend all suits or proceedings that may be instituted against the Owner for alleged infringement of any patents involved in the work and, in case of an award of damages, the Contractor shall pay such award. Final payment to the Contractor by the Owner will not be made while any such suit or claim remains unsettled.

1.36. Guarantee

The Contractor guarantees that the work herein contracted will be as specified and will be free from defects in design, workmanship, and materials. If within the guarantee period the work fails to meet the provisions of this guarantee, the Contractor shall promptly correct any defects, including nonconformance with the contract documents by adjustment, repair, or replacement of all defective parts or materials.

The Contractor shall pay all costs for correction of defects, including shop and field labor and supervision, transportation, materials, parts, supplies, and special tools; provided upon notification and substantiation that the equipment has been maintained and operated in accordance with the manufacturer's recommendations and standard industry practice.

This guarantee shall be extended to cover all repairs and replacements furnished under the guarantee and the period of the guarantee for each such repair or replacement shall be 2 year after installation or completion.

The Contractor will be given an opportunity to confirm the existence of the defect but he shall not delay the correction while making such determination.

If within 10 days after the Owner has notified the Contractor of a defect, failure, or abnormality in the work, the Contractor has not started to make the necessary repairs or adjustments, the Owner is hereby authorized to make the repairs or adjustments or to order the work to be done by a third party, the cost of the work to be paid by the Contractor.

In the event of an emergency where, in the judgment of the Owner, delay would cause serious loss or damage, repairs or adjustments may be made by the Owner or a third party chosen by the Owner without advance notice to the Contractor and the cost of the work shall be paid by the Contractor or by the surety.

The foregoing, are in lieu of all other warranties, including the implied warranties of merchantability and fitness for a particular purpose.

1.37. Insurance

Except as otherwise specified on this Contract, the Contractor and his subcontractors of any tier will be required at their own expense to maintain in effect at all times during the performance of the work insurance coverage's with limits not less than those set forth below with insurers and under forms of policies satisfactory to the Owner. It shall be the responsibility of the Contractor to maintain adequate insurance coverage and to assure that subcontractors are adequately insured at all times. Failure of the Contractor to maintain adequate coverage shall

not relieve him of any contractual responsibility or obligation

The requirements specified herein as to types, limits, and Owner's approval of insurance coverage to be maintained by the Contractor and his subcontractors are not intended to and shall not in any manner limit or qualify the liabilities and obligations assumed by the Contractor and his subcontractors under this Contract.

Any insurance carried by the Owner or the Engineer which may be applicable shall be deemed to be excess insurance and the Contractor's insurance primary for all purposed despite any conflicting provision in the Contractor's policies to the contrary.

The workmen's compensation and employer's liability, automobile liability, general liability, and umbrella liability insurance specified shall apply only to field erection and field services such as manufacturer's technical direction, field testing, and similar work not included as part of the normal manufacturing process.

For insurance purposes, the title of ownership of equipment and materials furnished under this Contract shall remain with the Contractor until official acceptance of the work by the Owner, or until the Owner has secured insurance coverage of the equipment and materials, whichever first may occur.

A. Certificates of Insureds

The Contractor and his subcontractors shall furnish the Owner with certificates of insurance as evidence that policies providing the required coverage's and limits of insurance are in full force and effect. The certificates shall provide that any company issuing an insurance policy for the work under this Contract shall provide not less than 30 days advance notice in writing to the Owner and the Engineer prior to cancellation, termination, or material change of any policy of insurance. In addition, the Contractor shall immediately provide written notice to the Owner and Engineer upon receipt of notice of cancellation of an insurance policy or a decision to terminate or alter an insurance policy. All certificates of insurance shall clearly state that all applicable requirements have been satisfied, including certification that the policies are of the "occurrence" type.

Certificates of insurance for Contractor- and subcontractor-furnished insurance and notices of any cancellations, terminations, or alterations of such policies shall be mailed to the Owner and the Engineer at the addresses listed in Section 1.2.B.

Each certificate shall quote the insuring agreement and all exclusions and additions as they appear in the policy; or in lieu of certificates, copies of the complete policy may be submitted.

Certificates of insurance covering physical loss or damage to equipment and materials shall be submitted at least 30 days before the first shipment of the equipment and materials. A certificate for each of the other insurance policies shall be submitted at least 30 days prior to the expected arrival of the Contractor's personnel at the site of installation.

B. Additional Insureds

All insurance coverage's furnished under this Contract shall include the Owner, the Engineer, and their officials, partners, directors, officers, agents, and employees as additional Insureds with respect to the activities of the Contractor and his

subcontractors.

These policies shall contain a "cross liability" or "severability of interest" clause or endorsement. Notwithstanding any other provision of these policies, the insurance afforded shall apply separately to each insured, named insured, or additional insured with respect to any claim, suit, or judgment made or brought by or for any other insured, named insured, or additional insured as though a separate policy had been issued to each, except the insurer's liability shall not be increased beyond the amount or amounts for which the insurer would have been liable had only one insured been named.

The Owner or the Engineer shall not by reason of their inclusion under these policies incur liability to the insurance carrier for payment of premium for these policies.

C. Waiver of Subrogation

The Contractor and his subcontractors shall require their insurance carriers, with respect to all insurance policies, to waive all rights of subrogation against the Owner and the Engineer, their partners, directors, officers, agents, and employees and against other contractors and subcontractors.

D. Workmen's Compensation and Employer's Liability

This insurance shall protect the Contractor and the additional Insureds against all claims under applicable state workmen's compensation laws. The Insureds shall also be protected against claims for injury, disease, or death of employees which, for any reason, may not fall within the provisions of a workmen's compensation law. This policy shall include an "all states" endorsements.

The liability limits shall not be less than:

Workmen's compensation statutory

Employer's liability $100,000 each occurrence

E. Comprehensive Automobile Liability

This insurance shall be written in comprehensive form and shall protect the Contractor and the additional Insureds against all claims for injuries to members of the public and damage to property of others arising from the use of motor vehicles, and shall cover operation on or off the site of all motor vehicles licensed for highway use, whether they are owned, non-owned, or hired.

The liability limits shall not be less than:

Bodily injury and	$500,000 combined single
property damage	limit each occurrence

F. Comprehensive General Liability

This insurance shall be an "occurrence" type policy in written in comprehensive form and shall protect the Contractor and the additional Insureds against all claims arising from bodily injury, sickness, disease, or death of any person other than the Contractor's employee's or damage to property of the Owner or others arising out of any act or omission of the Contractor or his agents, employees, or subcontractors. This policy shall also include protection against claims insured by usual personal injury liability coverage,

a "protective liability" endorsement to insure the contractual liability assumed by the Contractor under the article entitled INDEMNIFICATION, and "Completed Operations and Products Liability" coverage (to remain in force for 2 years after final payment).

The liability limits shall not be less than:

Personal injury and	$1,000,000 combined single
Property damage	limit each occurrence and $1,000,000 aggregate

If the Contractor's work, or work under his direction, requires blasting, explosive conditions, or underground operations, the comprehensive general liability coverage shall contain no exclusion relative to blasting, explosion, collapse of structures, or damage to underground property.

G. Umbrella Liability Policy

This insurance shall protect the Contractor and the additional Insureds against all claims in excess of the limits provided under the employer's liability, comprehensive automobile liability, and comprehensive general liability policies. The liability limits of the umbrella liability policy shall not be less than $1,000,000. The policy shall be an "occurrence" type policy.

H. Installation Floater/Builder's Risk

This insurance shall protect the Contractor and the additional Insureds from all insurable risks of physical loss or damage to buildings and structures and to materials and equipment while at the site or in transit to the site, while in warehouses or storage areas, during installation, during testing, and after the work is completed. This insurance shall include coverages for flood and earthquake.

The amount of the installation floater/builder's risk insurance shall be not less than the insurable value of the work at completion and shall include the aggregate value of Owner-furnished equipment and materials to be erected or installed under this Contract.

Installation floater/builder's risk insurance shall provide for losses to be payable to the Contractor and the additional Insureds as their interest may appear.

If the work does not include the construction of building structures, builder's risk insurance may be omitted providing the installation floater insurance fully covers all work.

1.38. Indemnification

To the fullest extent permitted by laws and regulations, the Contractor shall defend, indemnify, and hold harmless the Owner and Engineer and their officials, officers, directors, partners, consultants, agents, and employees from and against all claims, damages, losses, and expenses, (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 by the 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, to the extent such injury or damage is due to the error, omission, or negligent act of the Contractor, his subcontractor, employees, or agents

In any and all claims against the Owner, the Engineer, or any of their officials, officers, directors,

partners, consultants, agents, or employees by any employee of the 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, this indemnification obligation shall not be limited in any way by any limitation on the amount or type of damages, compensation, or benefits payable by or for the Contractor or any such subcontractor or other person or organization under workers' or workmen's compensation acts, disability benefits acts, or other employee benefit acts, nor shall this indemnification obligation be limited in any way by any limitation on the amount or type of insurance coverage provided by the Owner, the Contractor, or any of his subcontractors.

1.39. Release of Liability

Acceptance by the Contractor of the last payment shall be a release to the Owner and every officer and agent thereof, from all claims and liability here under for anything done or furnished for, or relating to the work, or for any act or neglect of the Owner or of any person relating to or affecting the work.

1.40. Breakdown of Charges and Allocation of Owner's Cost

Prior to the first payment here under, the Contractor shall submit to the Owner a breakdown of charges for the several divisions and subdivisions of the work to be used as the basis for payments. The breakdown shall be in such detail as the Owner may require in order to enable the Owner to allocate the various items of cost to individual buildings and other structures and installations. The charges listed in the schedule shall be segregated by material costs and labor costs and the aggregate shall be the total contract price.

The Owner reserves the right to review with the Contractor the individual charges for individual items listed in the breakdown and the Contractor shall correct any errors.

The Contractor shall, without additional charge, furnish from time to time, as requested, such additional segregation's of charges as may be required by the Owner or the Engineer for the purpose of allocating costs of various individual buildings, structures, and each equipment installation therein or connected therewith.

Acceptance by the Owner of the cost breakdown shall only indicate consent to the breakdown as a basis for preparation of partial payment estimates and shall not constitute an agreement as to the value of each indicated item.

The sum of the items listed in the cost breakdown shall equal the contract lump sum price or prices. Overhead and profit shall not be listed as separate items.

1.41. Time and Material Payment

A. If certain work authorized by the Owner is to be done on a time and material basis, such as for a change order, payment vouchers shall be accompanied by a statement from the Contractor, made under oath, setting forth the number and names of every subcontractor or laborer in his employ, and of every person furnishing materials, giving the amount, if anything, which is due or to become due them, for work done or materials furnished. Regardless of any other provisions of this Contract, the Owner shall, as required by law, retain sufficient Moines to pay all subcontractors, material, and men in accordance with statement provided by the Contractor.

B. Certificates of Payment

If the Contractor has made application as specified above, the Owner will, not later than the date when each payment falls due, issue to the Contractor a certificate for such amount as the Owner determines to be properly due.
No certificate issued nor payment made to the Contractor, nor partial or entire use or occupancy of the work by the Owner, shall be an acceptance of any work or materials not in accordance with this Contract. The making and acceptance of the final payment shall constitute a waiver of all claims by the Owner, other than those arising from unsettled liens or from faulty work appearing after final payment or from requirements of the specifications, and shall be a waiver of all claims by the Contractor, except those previously made and still unsettled.

Payment of Bills and Demands shall be in the manner as prescribed in Ordinance No 1048, an Ordinance entitled "AN ORDINANCE PRESCRIBING THE MANNER IN WHICH CLAIMS SHALL BE APPROVED OR DISAPPROVED AS REQUIRED BY N.J.S 40A:5-17." Only claims which have been incurred for materials, services, and supplies acquired in accordance with the Local Public Contract Laws of the State of New Jersey will be eligible for processing under Ordinance No. 1048. This law applies to all contract commodities as well as amendatory change orders.

If certain work authorized by the Owner is to be done on a time and material basis, such as for a change order, payment vouchers shall be accompanied by a statement from the Contractor, made under oath, setting forth the number and names of every subcontractor or laborer in his employ, and of every person furnishing materials, giving the amount, if anything, which is due or to become due them, for work done or materials furnished. Regardless of any other provisions of this Contract, the Owner shall, as required by law, retain sufficient Moines to pay all subcontractors, material, and men in accordance with statement provided by the Contractor.

C. Time and Materials Payments

If certain work authorized by the Owner is to be done on a time and material basis, such as for a change order, payment vouchers shall be accompanied by a statement from the Contractor, made under oath, setting forth the number and names of every subcontractor or laborer in his employ, and of every person furnishing materials, giving the amount, if anything, which is due or to become due them, for work done or materials furnished. Regardless of any other provisions of this Contract, the Owner shall, as required by law, retain sufficient monies to pay all subcontractors and materialmen in accordance with statement provided by the Contractor.

D. Payment Withheld

The Owner may withhold or, on account of subsequently discovered evidence, nullify the whole or part of any payment certificate to such extent as may be necessary to protect the Owner from loss because of the following.

i. Defective work not remedied
ii. Claim filed or reasonable evidence indicating probable filing of claims
iii. Failure of the Contractor to make payments properly to subcontractors or for material or labor

iv. A reasonable doubt that the contract can be completed for the balance then unpaid
v. Damage to another contractor
vi. Work not completed

1.42. Release of Liens

Neither the final payment nor any part of the retained percentage will be paid to the Contractor until such time as the Contractor shall deliver to the Owner a statement, made under oath, that all amounts due, to become due or claimed by all subcontractors, materialmen, and laborers, have been paid in full. Where any subcontractor, materialman, or laborer has not been paid by the Contractor, the Owner will retain an amount sufficient to pay same unless such unpaid subcontractor, materialman, or laborer shall provide the Owner with a completed release of lien in the form bound herein at the end of these General Conditions.

Where an amount due, to become due, or claimed by a subcontractor, materialman, or laborer is unpaid and such subcontractor, materialman, or laborer refuses to provide the Owner with a release of lien, the Contractor may obtain final payment or payment of the retained percentage by furnishing the Owner with a bond, in such amount and with such sureties as shall be acceptable to the Owner and which will indemnify the Owner against any losses, costs, or expenses which may arise out of any claim or lien made or enforced by an unpaid subcontractor, materialman, or laborer.

1.43. Hazardous Substances

The manufacturer or supplier of a substance or mixture shall supply the Chemical Abstracts Service number of all the components of the mixture or substance and the chemical name to the City to assure that every container bears a proper label at a City facility. This complies with P.L. 1983, Chapter 315, "Worker and Community Right to Know Act, "subsection b, section 14. Further, all applicable Material Safety Data Sheets (MSDS), a/k/a hazardous substance fact sheet, must be furnished to the City of Vineland.

Should it be necessary for Contractor or those in his/her employ to enter upon the premises or property of the Owner in order to construct, repair, maintain or inspect equipment or buildings, make delivery of or remove property, or otherwise perform required services, Contractor will take all necessary precautions within his/her control to protect against accidents and damage or injury to persons or property, including the release of hazardous substances to the environment in violation of environmental regulations.

Prior to the commencement of work, Contractor shall demonstrate to Owner that all employees who will be handling or using hazardous materials, or will be working on or with equipment using or storing hazardous materials, have been adequately trained in the proper handling of such substances and the safety and discharge prevention measures associated with them. Such a demonstration should include a description of the contractor's employee training program and/or signed statements from the employees in question indicating the areas in which they have received training.

Although Contractor will be responsible for equipment which is directly under his/her control, the above-mentioned requirement for hazardous materials training does not imply

responsibility for control of owner's equipment in the event of an actual or potential discharge of hazardous substances. Contractor's employees will be expected to respond to any such occurrence by notifying the appropriate representative(s) of Owner only, unless further action is within the scope of services being provided by Contractor.

Owner will familiarize Contractor's employees, to the extent that Owner's knowledge augments Contractor's and/or is specific to Owner's site, with any of Owner's equipment with which Contractor's employees will have direct contact. Owner will also inform said employees of the notification procedures to be immediately followed in the event of a hazardous substance discharge and the procedures for emergency evacuation of personnel.

The Utility will review the demonstration of training provided by the Contractor prior to awarding contracts and will require any verification deemed necessary prior to the commencement of work.

1.44. Limitation of liability

Contractor's total aggregate liability for damages to the Owner for any cause whatsoever whether in contract or in tort, including negligence or strict liability shall be limited to 100 percent of the contract amount or the limit of insurance coverage, whichever is greater.

This Limitation of Liability will not apply to payment of cost and damage under patents, claims for personal injury or damage to real or tangible personal property caused by Contractor's negligence or to claims by third parties.

1.45. Consequential Damages

Notwithstanding any other provisions of the Contract Documents, in no event will the Contractor, his subcontractors, or his suppliers be liable in Contract, in tort (including negligence or strict liability) or otherwise for loss of anticipated profits, lost production, or cost of replacement power or temporary equipment (including additional expenses incurred in using existing facilities), damage to or loss of other property or equipment, claims of customers of the Owner, or for any special, indirect, incidental or consequential damages whatsoever, whether resulting from the performance, delay in performance, or nonperformance of the equipment supplied hereunder, and whether suffered by the Owner, its customers, or any third party.

PART 2 – Technical Specifications

2.1. Power Transformer Rating Data

A. Quantity, rating, and any other specific requirements shall be provided in the purchase order.

B. Cooling Class

i. All transformers are to be ONAN/ONAF/ONAF/KNAN/KNAF cooling class unless otherwise specified.

ii. All fan motors are to have separate grounding conductors.

iii. Vibration damping is to be provided between the fans and radiators.

iv. Fans are to be dynamically balanced to reduce vibration and motor bearing wear.

v. Fan motor leads shall be weatherproof. The connector, plug, and receptacle assemblies shall be of non-corrosive metal, weather tight, and have non-corrosive contact assemblies.

vi. Fan blades are to be aluminum alloy, stainless steel, or other corrosion resistant metal, and designed to minimize noise.

vii. Fan guards are to be metal and hot dipped galvanized, PVC coated, or stainless steel, and shall satisfy OSHA requirements.

viii. An ON-OFF-AUTO control switch shall be provided for independent control of each cooling stage. This control switch shall not have an "off" position.

ix. Fans shall be located such that the transformer does not need to be de-energized to repair or replace a fan.

x. Loss of cooling power supply alarms shall be provided.

xi. A contact that opens on the main tank low oil level must be provided.

xii. Valves to isolate coolers, pumps, and radiators are required.

xiii. Each radiator, cooler, or heat exchanger shall have a minimum of 1" vent plug and 1" drain plug.

xiv. All groups of cooling equipment shall operate in parallel from the same power source and must be capable of isolating and de-energizing in their individual groups.

C. Phases Rated kVA

i. The continuous maximum MVA rating shall be based on an average winding rise of 65 °C unless otherwise specified.

ii. The transformer shall have full capacity taps at all combinations of LTC positions unless otherwise specified.

D. Voltage Ratings and Taps

i. An on-load tap changer shall be provided by the Manufacturer, as specified in Section 2.2.Y.

ii. The LTC shall be capable of full capacity at all taps.

iii. Voltage ratings for the transformer shall be as specified in Attachment A-2 by VMEU.

E. Connections

i. High-voltage or primary side windings of the transformers shall be of delta connection.

ii. Low-voltage or secondary side windings of the transformers shall be of zig-zag connection.

F. Polarity, Angular Displacement, and Terminal Marking

i. Terminal marks are to conform to the latest revision of IEEE C57.12.70 "IEEE Standard for Standard Terminal Markings and Connections for Distribution and Power Transformers."

ii. Terminals are to be marked on the tank side wall directly below the respective bushing locations. Markings shall be permanently raised, black paint on a yellow background. The markings shall be clearly visible from the ground.

G. Impedance

i. The allowable transformer impedance and tolerance shall be as specified by VMEU in Attachment A-2. The Manufacturer must provide the specific impedances at the transformer extremes from full buck to full boost in Attachment A-1.

ii. The impedance shall be referred to a reference temperature of 85 °C.

H. Losses

i. An 85 °C reference temperature shall be used for load loss.

ii. The Manufacturer's proposal shall specify the measured loss error and detail the methods used to determine that loss error.

I. Insulation Levels

i. Transformers shall provide coordinated low-frequency and lightning impulse levels for all terminals.

ii. All equipment associated with the high voltage or primary side of the transformers shall be rated appropriately (arresters, bushings, etc.):

a. For 69 kV nominal primary voltage, equipment shall be 350 kV BIL.

iii. All equipment associated with the low voltage or secondary side of transformers (nominally 15 kV) shall be 150 kV BIL.

iv. Each neutral terminal shall have a BIL in compliance with the latest revision of IEEE C57.12.00 "IEEE Standard for General Requirements for Liquid-Immersed Distribution, Power, and Regulating Transformers" unless otherwise specified.

a. The Manufacturer's proposal shall state the neutral BIL in Attachment A-1.

v. All windings and leads shall have thermally upgraded insulating paper and suitable for a hot-spot temperature of up to 120 °C.

vi. Winding insulation chafing shall be prevented by Manufacturer's design and construction.

J. Temperature Rise

i. The transformers shall be suitable for continuous operation with:

a. A winding temperature rise by resistance of 65 °C.

b. A maximum hot spot temperature of 80 °C.

c. A top oil temperature of 105 °C.

ii. The following limitations shall apply to the transformer exterior during the temperature rise test assuming 40 °C ambient temperature:

a. All parts that shall be handled by an operator shall not exceed 50 °C.

b. The external surfaces of the transformers that shall be accessible to an operator shall not exceed a temperature of 70 °C.

c. Other surfaces not accessible to an operator shall not exceed a temperature of 110 °C.

iii. A 65 °C average winding rise rating shall be the basis for performance characteristics provided by the Manufacturer.

K. Loading Requirements

i. The 24-hour long time emergency loading rating shall comply with and be calculated per IEEE C57.147-2018: "IEEE Guide for Acceptance and Maintenance of Natural Ester Insulating Liquid in Transformers." This rating shall be based on a 35 °C ambient temperature. The transformer shall be capable of operating under these conditions without exceeding the below limits:

a. Winding hot spot temperature 90 °C.

b. Other metallic part hot spot temperature 120 °C.

c. Top oil temperature 110 °C.

d. Loss of life 1.5% per event.

e. Tank wall temperature 110 °C.

ii. Tap changers, bushings, and all other equipment shall be sized by the Manufacturer so that they do not restrict the long-time emergency rating or loading levels below 150% of nominal rating (ONAF Stage 2) of the transformer at 65°C with operating parameters as specified.

iii. Transformers shall be capable of operating at the long-time emergency rating with the same means of cooling as when operating at the continuous rating.

iv. The LTC shall be capable of changing taps under all specified rating conditions.

L. Short-Circuit Strength Verification

i. The ability of the transformers core and coil to withstand short circuit forces will be verified on transformer design(s) by the appropriate calculations.

ii. Calculations of leakage flux at all positions in the transformer windings shall be made by finite-element or equivalent, thorough methods to determine the short-circuit forces and temperatures present at each turn of the transformer windings of the individual design.

iii. All short-circuit calculations shall assume an infinite bus capacity. The transformer shall be designed to be protected by its internal impedance alone.

M. Nameplate

i. A stainless-steel nameplate shall be provided with the transformer and located on its control cabinet exterior.

ii. All nameplates shall be permanently affixed with stainless steel self-tapping screws or stainless-steel rivets.

iii. The nameplate shall include all information specified in the latest revision of IEEE C57.12.00 "IEEE Standard for General Requirements for Liquid-Immersed Distribution, Power, and Regulating Transformers."

iv. The nameplate shall also include the following:

a. Manufacturer's name and address.

b. Serial number.

c. Date and location of manufacture.

d. Operating voltages for equipment.

e. CT ratios and connections.

f. Drawing numbers of CT saturation, phase angle, and ratio correction factor curves.

g. Type of LTC, manufacturer, and model number.

h. Sound level at cooling ratings.

i. The following quantities and weights of oil, in gallons and pounds, respectively:

i. To fill the main tank without radiators/coolers.
ii. To cover core and coils without radiators/coolers.
iii. To fill coolers.
iv. To fill cooler piping (if piping is connected to cooler at remote location).
v. To fill LTC.
vi. To fill Conservator if equipped.
vii. Total transformer.

j. The length of the warranty period.

k. Ratings at 65 °C temperature rise.

l. Rated frequency.

v. Nameplate or nameplate drawings must be available during final inspections performed by VMEU.

vi. The nameplate shall indicate the type of oil as "FR3 Oil".

vii. A preliminary nameplate drawing shall be provided to VMEU within four (4) weeks after receipt of order.

N. Audible Sound Levels

i. Unless otherwise specified, guaranteed transformer audible sound levels shall not exceed 70 Lp-dBA when calculated as the logarithmic sum of the no load audible sound (NLS), at 105% rated voltage, and the full load audible sound (LS) with all cooling equipment running.

a. This sound level may be exceeded momentarily during LTC tap changes, but under no conditions shall this level be continuously exceeded.

O. Live Part Clearance

i. Live parts clearances shall comply with those outlined in IEEE C57.12.00 "IEEE Standard General Requirement for Liquid-Immersed Distribution Power and Regulating Transformers."

P. Short Circuit Characteristics

i. Transformers shall be designed and constructed to withstand any stresses produced by short circuits.

ii. System impedance shall be excluded for short circuit calculations.

iii. Short circuit current calculations shall assume an infinite source and based on all windings operating at nominal voltages.

iv. All windings subject to radial buckling shall be designed to withstand free buckling and forced buckling. The Manufacturer shall provide the calculated free and forced buckling forces and withstand values for VMEU's approval.

v. The Manufacturer shall submit with the proposal a list of all similar transformers of your manufacture which have been short circuit tested.

2.2. Material to be Provided

A. Transformer ratings and configuration

i. Transformers shall be configured Delta on high-voltage windings and Zig Zag on low-voltage windings.

ii. Transformers shall be 69/15 kV unless otherwise specified.

B. Bushings and Connectors

i. Transformers shall have three (3) primary and four (4) secondary cover type bushings constructed of porcelain unless otherwise specified. The Manufacturer shall indicate the bushing manufacturer, type, catalog number, insulation class, BIL, and ampere rating on Attachment A-1.

ii. Bushings shall be inspected and tested by Manufacturer prior to installation and factory transformer testing. Test data shall be provided to VMEU.

iii. All bushings must be spaced to comply with, or exceed, IEEE C57.12.00 "IEEE Standard General Requirement for Liquid-Immersed Distribution Power and Regulating Transformers."

iv. Low-voltage side bushings shall be capable of being installed/removed without entering the transformer tank.

v. The continuous ampere capacity of all bushings, leads, etc., shall be equal to or greater than the 24-hour long-time emergency rating. Bushings rated continuous currents shall be selected from the latest revision of IEEE C57.19.01 "IEEE Standard for Performance Characteristics" standard values for nominal system voltage required.

vi. An outline drawing of each bushing with the descriptive information above shall be submitted for VMEU's approval. This outline drawing shall include all information described in Section 2.2.B.i above as well as:

a. Shank diameter.

b. Mounting bolt circle diameter.

c. Flange bolt diameter.

d. Interior and exterior length.

e. Leakage distance (max and min).

f. Oil and insulation length.

g. Bottom lead threads.

h. Type of internal connection.

i. Outside diameter.

j. Color.

C. Control Cabinet

i. Control cabinets shall be steel, NEMA 4 rated.

ii. Control cabinets shall use damping mounts to isolate them from vibration.

iii. Hinged doors shall include latching systems and mechanical stops so doors may remain open when necessary.

iv. A storage holder (for drawings, manuals, etc.) shall be provided on the inside of the cabinet door.

v. Control cabinet interiors shall be painted semi-gloss white.

vi. Control cabinets shall have the necessary ventilation and include thermostat-controlled heaters at the bottom of the control cabinet.

a. These heaters shall be provided with guards to prevent moisture buildup.

b. The surface temperature of protective heater guards shall not exceed 50 °C.

c. Control cabinets shall be provided with weatherproof breather(s) and shall be equipped with fine mesh filters and stainless-steel bug screens.

vii. The control cabinet and its ground bus shall be grounded to a tank ground pad using at minimum 250 MCM copper cable. All doors and panels shall be electrically bonded to the cabinet using flexible, braided copper cable.

viii. All external cables shall enter the bottom of the cabinet through six (6) four-inch (4") conduits. A gasketed, removable plate with space for the entrance of these conduits shall be provided in the bottom for easy access to the terminal blocks for VMEU's connections.

ix. Control cabinet shall include LEDs bright enough to illuminate all equipment.

a. The light circuit shall turn on for the first cabinet door opened and turn off for the last cabinet door closed.

b. Lights shall be installed with guards.

x. Devices mounted in the control cabinet shall be easily removable, without the need to remove mounting panels. Equipment shall be arranged to facilitate easy removal and replacement.

xi. Terminal Blocks, Conduit Requirements, Terminal Boards, Lugs and Power Connections

xii. All Manufacturer wiring for external connections and all spare contacts on devices shall be carried to terminal blocks located in the control cabinet. Arrangement shall be subject to VMEU approval.

xiii. Device terminal blocks shall not be mounted on a hinged panel.

xiv. Terminal blocks for VMEU's connections shall be Marathon or equivalent for ring tongue lugs. All terminal blocks shall have screws and metal terminal strips and strips shall remain secured in place when the screws are removed.

xv. Terminal blocks using stud and nut configuration are not acceptable.

xvi. All terminal blocks shall accommodate control cable up to No. 8 AWG and shall have a min. screw size of 10-32. Power supply (AC & DC) and CT Terminal Blocks are required to accommodate #4 AWG connections.

xvii. All wires shall be identified at terminal blocks.

xviii. Terminal blocks used for external connections shall be mounted above the conduit entrance plate.

xix. At least 20% of spare positions shall be provided for future wiring.

xx. Terminal block positions for cable shield terminations shall be provided for control, power, and current transformer cables. Shield terminals shall be grounded on the cabinet side.

xxi. All alarm contacts and spare auxiliary contacts shall be wired out to terminal blocks for VMEU's use.

xxii. The wiring to auxiliary equipment external to control cabinets shall be carried through weatherproof rigid galvanized metallic conduits with fittings that are threaded and rain tight.

xxiii. Provisions shall be made to ensure the isolation of each set of CT leads from any other set of CT leads. Each set of CT leads shall be directly routed, in conduit, to separate terminal blocks. Only one set of CT leads per block is permitted. Where two or more CT terminal blocks are in a common junction box, the box shall be

compartmentalized.

xxiv. All conduit and fittings shall be liquid tight with metal insert and of adequate size.

xxv. Conduit cable fill shall not exceed 40 percent of the inside cross-sectional area.

xxvi. Wiring splices will not be permitted in conduit fittings. All splices will be made on terminal blocks located in weatherproof enclosures.

xxvii. Any nuts or fittings, which become loose and fall into windings or tank, before acceptance of the transformer at the installation site, shall be located and removed at the Manufacturer's expense.

xxviii. All internal leads shall be adequately braced at the factory. All leads shall be clamped with blocks. Ties and tie wraps shall not be used, unless pre-approved by VMEU. Sagging of leads is not acceptable.

xxix. Any connections between dissimilar metals (i.e., copper and aluminum) must be approved by VMEU.

xxx. Ground conductor straps from main transformer core, series transformers, or preventative autotransformers shall be brought to externally accessible terminals in a weather sealed box on the tank cover. Core ground bushings shall be readily and permanently identified. A removable ground conductor shall be furnished to permit grounding the core, and removed, for testing. A removable bolted cover with gasket shall protect the core ground bushing. A separate drawing locating all core grounds and connections shall be provided.

xxxi. Terminal lugs for power connections shall be the long ferrule type and shall be double crimped.

xxxii. Manufacturer provide a run of steel threaded pipe from top of the transformer down to the foundation to run another ground conductor (Copper clad 19#9 conductor) from the ground loop bus on top of the transformer to eliminate the risk of losing the ground connection to the ground grid.

D. Oil Valves

i. Oil Valves shall be ball/globe valves with NPT threads, in accordance with ANSI/ASME B1.20.1 "Pipe Threads, General Purpose (Inch)", with a non-ferrous metallic pipe plug in open ends and body material conforming to ASTM B62 Copper Alloy UNS#83600.

a. Other valves shall be approved by VMEU.

b. Should a globe valve be approved, the hand wheels shall conform to ASTM B584, Copper Alloy UNS# 84400. Galvanized plugs, caps, piping, or fittings shall not be used for valve installations and connections.

ii. Valves shall be furnished per the below:

a. Oil drain and lower filter valve, 2", Ball/Globe with built-in sampling device equipped with pipe cap arranged such that the main valve is between the sampler and the main tank. A threaded outlet shall be provided. A pipe plug shall be furnished for the main valve. This valve shall completely drain the main tank.

b. Filter press valve, located in the upper portion of the tank, 1½" Ball/Globe valve, threaded for external connection and furnished with brass pipe plug.

c. One 3" Ball/Globe vacuum filling valve on one of the cover manholes located on the opposite end of the transformer tank from the filter press connection.

d. The LTC compartment shall have a 1" screw-end globe drain and filling valve. It shall also include a second valve of the same make to be located on the side wall of the compartment so that a filter press may be connected to the LTC.

e. Individual shut-off valves, top and bottom, shall be supplied for each individual radiator/cooler for isolation of individual radiator/cooler. Valves shall permit isolation and removal of the individual radiator/cooler while transformer is oil filled. Valves for isolating coolers or radiators shall be butterfly type valves. Adequate space to operate valves on a fully assembled transformer shall be provided, i.e., maintenance personnel shall be able to access the valve and utilize a wrench, if necessary, to open or close the valve.

f. Two dedicated 1-1/2"-inch Ball/Globe valves for installation of a supplied on-line combustible gas-in oil monitor. The valves shall be located near the bottom and top of the tank to facilitate circulation between the valves by temperature or pressure difference in the actively circulated bulk oil. The lower valve center shall be located no less than 12 inches from the transformer bottom.

g. An equalizing pipe shall be provided between the main tank and LTC with a Ball/Globe valve which will be closed under in-service condition and open during maintenance.

h. All valve assemblies shall consist of valve and flange as one cast piece. All valves and fittings must be of types and makes specifically approved by VMEU.

E. Gauges and Indicators

i. All gauges and indicator face covers shall be either unbreakable or replaceable. All gauges shall be clearly labeled to match the device and shall be mounted adjacent to each gauge.

ii. Gauges shall be arranged so that they can be easily read by a person standing in front of the cabinet door.

iii. Unless otherwise specified, the face of the gauge shall be mounted in the vertical plane for mounting heights of 90 inches or less from the mounting surface (grade).

iv. Gauge locations are subject to VMEU's approval.

v. Vendor shall provide infrared (IR) inspection windows of the transformer tank and secondary terminal connections, in the throat flange/bus duct.

F. Radiators and Accessories

i. Per a recent feasibility study completed by Sargent & Lundy, the cooling radiators shall be supported from the main tank and located on the high voltage side. The radiators shall be galvanized and do not need to be painted unless requested. Each individual radiator shall have (1) inch removable plugs for draining and venting capabilities, and valves when required.

G. Liquid Level Gauges

i. A magnetic liquid level gauge, with two sets of alarm contacts wired to terminal blocks in the control cabinet, shall indicate the oil level in each compartment, including the LTC equipment compartment.

ii. Liquid level gauge shall alarm before oil level reaches point at which continued operation is no longer possible under all operating conditions. Manufacturer shall supply minimum oil level from tank cover to oil, or conservator oil level, for continued operation under all conditions.

iii. Gauge locations are subject to VMEU's approval.

H. Auxiliary Devices and Alarms

i. All auxiliary relays, contactors, motor control devices, switches, etc. are to be furnished with individual dust tight cases or other specifically approved dust covers.

ii. All auxiliary devices, contactors, motor starters, etc., rated 600 volts or more, shall be equipped with inter-phase barriers between their connection terminals. Keepers shall be provided to prevent devices from being loosened by vibration.

iii. All control and auxiliary devices shall be marked inside the cabinets with the same designation used on the wiring diagrams. All control and auxiliary devices shall be labelled with black background and white letters. The label shall be installed in close proximity to the device and visible.

iv. All auxiliary device locations including valves and gauges shall be subject to the VMEU's approval.

v. All controls, fuse blocks, etc. shall be installed not more than 60 inches above nor less than 36 inches below the mounting surface (grade).

vi. All control cabinet devices shall be readily accessible for easy removal.

vii. All knife switches shall be Marathon or States.

viii. The current rating of all circuit breakers and fuses installed shall be clearly indicated on the drawings and on the equipment.

ix. All devices in and on cabinets shall be marked inside the cabinets with the same designation used on the wiring diagrams.

x. The location of devices on wiring diagrams shall correspond to the physical location in the control cabinet.

xi. All legends, bills of material, or other references to device numbers shall also identify device manufacturer, manufacturer's catalog number, and other important data including device ratings.

xii. Fan and motor power circuits shall be equipped with under voltage relays.

I. Mechanical Pressure Relief Devices

i. The transformer shall be provided with a re-closable, self-resetting, mechanical type pressure relief device to automatically relieve internal pressure greater than 10 psi.

ii. The pressure relief device shall be piped such that oil blow off is directed to the base

of the transformer. The bottom of the discharge pipe shall be screened to prevent the entry of animals. The piping shall neither obstruct the mechanical flag, nor resetting of the pressure relief device.

iii. A pressure relief device shall be furnished for each oil filled compartment.

iv. This device shall be constructed to minimize oil discharge when it operates.

v. The main tank device shall be mounted directly on top of the transformer tank, except that when a conservator-type preservation system is used, an adapter may be provided, if required, to elevate the pressure relief device to level at or above the normal conservator oil level. When an inert-gas oil preservation system is utilized, the pressure relief device shall be in contact with the layer of inert gas in the top of the tank and shall operate to relieve the inert gas pressure.

vi. The pressure relief devices shall have all alarm contacts wired to terminal blocks in the control cabinet and shall have a mechanical target/flag visible to a person, standing at ground level near the transformer base.

J. Sudden Pressure Relays

i. The transformer shall be equipped with a sudden pressure relay for each oil filled compartment.

ii. The relays shall not operate on normal temperature variations caused by temperature change, vibration, mechanical shock, or pump surges.

iii. The relays shall withstand full vacuum or 20-psi positive pressure without damage.

iv. Relays should be mounted no more than 60 inches above the base.

v. Relays shall be mounted with a bronze ball valve between the relay and the main tank.

vi. Valve and piping shall be large enough to not minimize sensing capability of relay, piping length shall be minimized to prevent excessive pressure drop and shall meet sudden pressure relay manufacturer's requirements.

vii. The relay location shall be such that it can be inspected and tested with the transformer energized. A main tank shut off valve shall be provided for the sudden pressure relay.

viii. If the Manufacturer determines that there is a requirement for a transformer compartment or main tank sudden pressure relay to be mounted in a gas space, Manufacturer shall notify VMEU that a gas space sudden pressure relay is recommended no later than the design review.

K. Buchholz Relay

i. All conservator equipped units shall be provided with a Buchholz fault pressure relay, to be approved by VMEU.

L. Surge Arresters

i. Transformers shall have three (3) primary and three (3) secondary surge arresters. Manufacturer shall state the proposed surge arrester manufacturer, catalog number, and ratings in Attachment A-1.

ii. All surge arresters shall be spaced to comply with, or exceed, IEEE C57.12.00 "IEEE Standard General Requirement for Liquid-Immersed Distribution Power and Regulating Transformers."

iii. Arresters shall be station type, metal oxide, transformer mounted.

iv. Grounding path from arresters to bus bar and grounds at base of transformer shall be as short as possible. The Manufacturer shall supply the required copper bar and all necessary supports.

v. The Manufacturer shall not use internal surge arresters/varistors.

vi. Arresters shall be polymer housing, light gray, ANSI No. 70.

vii. Arresters shall comply with the latest issue of IEEE C62.11 "IEEE Standard for Metal-Oxide Surge Arresters for AC Power Circuits (>1 kV)."

M. Transformer Monitoring Device

i. Manufacturer shall provide monitoring devices for all transformers.

ii. All alarm and communication wiring/cable for the transformer monitoring device shall be prewired for alarm and SCADA communication.

iii. The transformer monitor shall operate on 125 VDC or as specified.

N. Bushing Current Transformers

i. Bushing Current Transformers (BCTs) compliant to IEEE C57.13 "IEEE Standard Requirements for Instrument Transformers" shall be provided.

ii. Manufacturer shall determine the maximum continuous thermal current rating factor required to meet the continuous nameplate and long-time emergency ratings as required by this specification. This rating shall be adequate for continuous operation of all current transformers (CTs or CT) at 50% of nameplate ratio. All CTs shall have a minimum continuous thermal current rating factor (RF) of no less than 2.0.

iii. Manufacturer shall state all CT ratings in Attachment A-1.

iv. BCTs shall all be multi-ratio type unless otherwise specified – tap ratios shall be agreed upon by VMEU and Manufacturer.

v. CTs, type, and ratios to suit Manufacturer, shall be provided for monitoring winding temperatures. If the hottest winding is not the low voltage winding, the Manufacturer shall discuss this with VMEU to determine the best winding for location of the CT for winding temperature indication. The CT ratios and their continuous thermal current rating factors shall be adequate for continuous operation at nameplate and long-time emergency ratings.

vi. One (1) current transformer, type, and ratio to suit Manufacturer, shall be provided for LTC equipment and shall be installed on the X1 bushing or appropriate bushing for LTC location. The CT ratio and its continuous thermal current rating factor shall be adequate for continuous operation at nameplate and long-time emergency ratings as required by this RFP. Manufacturer shall state the CT rating in Attachment A-1.

vii. Current transformer support brackets shall be attached to the tank by conventional bolts and nuts.

a. Welded type studs shall not be used.

viii. All tap leads from multi-ratio current transformers shall be brought out to a terminal board (specifically approved by VMEU) enclosed in a weatherproof housing mounted on the transformer. All leads and taps shall be wired to the control cabinet.

ix. All current transformer leads shall be extended to shorting-type terminal blocks in the control cabinet. They shall be shorted and grounded externally using appropriate size copper conductor for transit.

a. CT terminal blocks shall be the Marathon shorting type, or approved equivalent.

b. Each set of CT's shall be connected to an exclusive terminal block.

c. All current transformers shall have all taps brought out and terminated on marked terminal blocks. The short-circuiting strips of these blocks shall be grounded. These terminal blocks shall be used exclusively for CT wiring.

x. Current transformer leads shall not be wired to test switches.

xi. Current transformer leads inside the main tank shall be carried to the terminal board (in the tank) through adequately supported insulating tubes or metal tubes with an insulating insert. Leads tied to support ribs are not acceptable.

a. The ends of the insulated tubes shall have bushings or inserts suitable for protecting the current transformer leads.

b. At no place within the tank shall the current transformer leads be supported by anything other than the insulated tubes nor should the quantity of cable in the tubes exceed 40% fill.

c. At no place shall the leads be subject to chafing because of vibration.

xii. Transformer alarm leads are not to use the current transformer junction box. A separate junction box must be provided for this purpose.

O. Temperature Equipment

i. An Electronic Temperature Monitor (ETM) shall be housed in the transformer main control cabinet.

ii. The ETM shall include two (2) 4-wire 100-ohm platinum RTD probes in stainless steel probe housing, mounted in a closed well on the side of the main transformer tank and the LTC compartment. The Basic Temperature accuracy including probe is to be <1 °C.

iii. An ambient temperature probe, also 4-wire 100-ohm platinum RTD, shall be provided and mounted on the exterior of the transformer such that the sensor is shielded from direct sunlight and dissipated heat from the transformer. The location of the ambient sensor shall be indicated on the transformer outline drawing.

iv. The unit shall be configured to indicate the hottest spot winding temperature, as calculated from top oil temperature and winding current using the methods of latest

issue of IEEE Std. IEEE C57.147-2018: IEEE Guide for Acceptance and Maintenance of Natural Ester Insulating Liquid in Transformers and shall measure ambient temperature.

v. Interposing relays between the ETM and cooling controls shall be used to switch the cooling for Stage 1 and Stage 2 outputs. The cooling control contacts/interposing relays shall be wired first to a terminal block in the main control cabinet and then to the cooling power contactors. This terminal block shall be the same or adjacent terminal block that the temperature indicating gauge cooling control contacts are wired to (this is to allow VMEU to parallel the cooling controls or switch the cooling control to the temperature gauge contacts if required).

vi. A sensor failure relay shall be provided to alarm for failure of the ETM monitor or probes. All relay outputs will be wired to terminal blocks in the main control cabinet, to facilitate internal and external connections.

vii. The analog outputs and alarm contacts shall be wired to terminal blocks in the main control cabinet.

viii. All thermal wells shall be stainless steel and shall be located a minimum of 12 inches below the tank top for maintenance purposes; however, the wells should be positioned to be in oil representative of conditions in the transformer, i.e., not in a stagnant oil pocket. All temperature sensing devices shall be in wells that allow removal and replacement of sensing elements without draining oil from any transformer compartments. Consideration shall be given to locating the wells not lower than one inch below the bottom of the top radiator openings if this does not conflict with the 12-inch requirement. Further, wells shall remain immersed in oil under low ambient and low load conditions and remain immersed in oil at the level which the low oil level alarm is actuated.

ix. The highest temperature of the oil shall be provided by the ETM device as specified and by a dial type thermometer.

x. The dial thermometer shall have at least two sets of alarm contacts wired to a terminal block in the control cabinet. Contacts shall be adjustable over a range from 65 °C to 120 °C.

xi. Digital temperature instrumentation will be provided by the ETM device with an analog output of 0 – 1 mA. The analog output shall be wired to a terminal block in the control cabinet, and the ETM device shall have two sets of alarm contacts (independent settings) for oil temperature, also wired to the terminal block in the control cabinet.

xii. Temperature gauge or sensor leads shall be long enough to allow removal of the temperature gauge from the tank for testing without disconnecting the leads. The Manufacturer shall furnish a metal protective cover for leads dressed along the tank.

xiii. A thermal well shall be provided in order that the thermometer bulb may be removed without lowering the oil in the tank.

xiv. Each transformer shall be equipped with winding hottest-spot temperature detecting and indicating equipment. The temperature detecting and indicating

equipment shall include, but not necessarily be limited to, the following:

a. CTs.

b. Heating coil.

c. Terminal box.

d. Well for thermal relay bulb.

e. Dial-type thermometer gauge-relay and digital temperature instrumentation and control provided by the ETM.

f. Alarms and remote monitoring.

g. Wiring.

h. Miscellaneous.

xv. Winding temperature indication and control shall be provided both digitally by the ETM and by an indicating, dial type thermometer gauge-relay device.

xvi. The specified thermometer gauge-relay device for winding temperature indication shall have alarm contacts adjustable over a range from 65 °C to 120 °C.

xvii. A dial type liquid thermometer shall be provided with contacts wired to the control cabinet. Thermometer shall have a maximum indicator with external reset knob.

P. Tank Construction

i. The transformer shall be mounted in a steel case with steel base and steel cover.

ii. The transformer shall be designed for full vacuum and an internal pressure of 10psi when filling in the field without applying special bracing.

iii. The cover shall be welded to the steel case in such a manner that it may be chipped off and re-welded easily.

iv. The case shall be designed and constructed to withstand any mechanical stress leading to fatigue fracture resulting from operation between specified minimum and maximum ambient temperatures.

v. The design and construction shall best facilitate oil circulation and prevent transmission or magnification of noise or vibration.

vi. The transformer shall be constructed to minimize vibration in the tank surfaces to prevent excessive vibration or stress on any equipment.

vii. Tank covers shall be slopped outward to prevent accumulation of water and snow.

viii. All electrical and mechanical connections between the compartment, which contains circuit-interrupting devices and any other oil-filled compartment, shall be made oil-tight.

ix. There shall be no interchange of oil or gas between the main tank and the LTC compartment in which arcing occurs when currents are interrupted.

a. Barriers between the main transformer tank and the LTC compartment shall withstand full vacuum.

x. The assembled transformer shall be thoroughly weather and moisture proof and oil and gas tight in all respects.

xi. All lifting, moving, and jacking facilities shall have design safety factors no less than those described in the latest revision of IEEE C57.12.10 "IEEE Standard Requirements for Liquid-Immersed Power Transformers" and shall be verified by test or mathematical analysis.

xii. The entire case shall have sufficient strength to withstand lifting as a unit complete with core, coils, cooling equipment, LTC, bushings, and oil without installation of any special bracing and without distortion or excessive mechanical strain and shall be capable of being rigged in all four directions.

xiii. The case shall be provided with jack bosses.

a. Jacking facilities shall be located near the four corners of the tank and shall meet the requirements of the latest issue of IEEE C57.12.10 "IEEE Standard Requirements for Liquid-Immersed Power Transformers."

b. The jacking pads shall be located at least 24 inches above the base of the transformer.

c. Location and size of jack bosses shall be shown on the outline drawing.

xiv. The case shall be provided with a structural steel base designed so that the transformer can be moved on skids in any direction.

xv. The base shall be designed so that the transformer may be installed on two reinforced concrete beams.

xvi. Pulling eyes shall be provided at each end and at each side of the transformer tank base.

a. Suitable lugs or eye bolts shall be provided so that:

i. The completely assembled transformer may be handled as a unit.
ii. The core and coils may be lifted out of the case or may be made accessible by lifting the part of the case above the base.
iii. The cover, or removable part of the case, may be lifted separately.

xvii. The cover shall be designed such that gas bubbles will flow to the piping of the gas accumulation relay. Gas injection test is required. Valves to perform the test shall temporarily be provided by Manufacturer.

xviii. For Inert Gas type transformers - tank support stiffeners shall not be used as expansion members. Tank expansion area above oil, must be able to handle oil expansion for entire temperature range -20 °C to 40 °C range.

Q. Fall Protection

i. The transformer shall be supplied with provisions for fall protection to comply with OSHA requirements, to protect individuals from falls while working on top of the transformer during assembly, testing, or maintenance.

ii. A minimum of two (2) stainless steel base plates with tie-off anchor point, and with removable plugs to prevent the accumulation of water (if necessary), shall be welded on the tank cover for attaching safety tether poles to the transformer.

a. Plate locations and the number of plates will be reviewed during the design review and/or as part of the approval drawing process.

iii. The top of the transformer shall be constructed in a manner that will minimize risk of slip or fall for personnel working on top of transformer.

a. Fall protection at the edge of transformer is not in itself adequate.

iv. All attempts shall be made to minimize tripping hazards. Manufacturer shall clearly show all equipment, including conduit and piping, on the plan view drawing.

R. Gaskets

i. The joint between terminal bushings and cover, and the joints at all bolted covers which are in contact with oil or gas, shall have a machined finish with high temperature gaskets installed in gasket retaining recesses and provided with metal-to-metals stops to control compression of the gaskets.

ii. Gaskets shall be made of material suitable for use in continuous temperatures of 200 °C.

iii. Welded rings are not acceptable.

iv. This requirement in regard to gaskets, retaining recesses and control of pressure on the gaskets, in general, applies to manhole and handhole covers, bushings, removable equipment for access to LTC oil-filled compartments, covers over weatherproof terminal boxes where leads from current transformers and other wiring connections are brought out of the tank, all terminal boards over openings cut in the tank wall for LTC and auxiliary electrical connections, and wherever an oil-filled compartment is bolted to the case.

v. Gaskets shall not be glued in place.

vi. Manufacturer shall provide a separate drawing of all applicable gaskets used on the transformer drawn to scale.

S. Covers

i. Covers or doors weighing more than 45 pounds shall be hinged and removable with handles or lifting attachments.

ii. Opening clearance dimensions for all hinged doors shall be indicated on the transformer outline drawing.

iii. Any covers weighing 45 pounds or less shall have handles and guide studs to support the covers when the bolts are removed.

iv. Bolted covers shall be provided for access to the LTC selector switches and arcing tap switches.

v. At least two (2) manholes shall be provided in the cover, at opposite sides, for access to core and coils.

a. These shall be located so that personnel can enter the case without the necessity of removing internal parts.

vi. The manholes shall be a minimum of 20" in diameter.

T. Liquid Insulation System

i. The transformer shall be furnished with inhibited oil of 0.20% to 0.30% by weight inhibitor.

ii. The transformer shall be furnished with FR3 dielectric power transformer fluid.

iii. The test report shall include the metered amount of oil removed from the transformer and LTC after factory testing.

iv. The transformer insulating oil shall be new oil and shall be in accordance with ASTM D6871-17, "Standard Specification for Natural (Vegetable Oil) Ester Fluids Used in Electrical Apparatus."

v. The insulating oil shall not be contaminated with polychlorinated biphenyls (PCBs) and shall be certified to contain no detectable PCBs at the time of shipment.

a. Certification shall be provided that the transformer or components thereof have not been contaminated with PCBs prior to shipment.

vi. A nameplate attached to the transformer shall show the type of oil furnished with the transformer and indicate that it is inhibited oil and contains no detectable PCB's.

vii. All transports shall be equipped internally for steam cleaning in order to remove all foreign matter.

viii. The Manufacturer shall make every effort to eliminate water within the oil.

ix. Oil used in the transformer is subject to VMEU approval.

a. If VMEU decides to reject the oil, all expenses incurred will be the Manufacturer's responsibility.

x. All appropriate environmental and technical documentation shall be provided. Documentation shall be provided with each individual tanker or vessel.

U. Nitrogen Gas Pressure System

i. Unless otherwise specified, the method of oil preservation in the main tank shall be inert-gas pressure system in accordance with the latest issue of IEEE C57.12.10 "IEEE Standard Requirements for Liquid-Immersed Power Transformers."

ii. The internal gas pressure shall not exceed 8 lb./in^2 gauge.

iii. System shall increase pressure i.e., add nitrogen as required, and relieve pressure i.e., vent nitrogen as required.

iv. Pressure gauges with alarm contacts for transformer N_2 gas high, transformer N_2 gas low, and N_2 cylinder gas low pressure shall be wired to terminal blocks in the control cabinet.

v. The orifices for admission and exhaust of the gas shall be located at opposite sides or ends of the tank to facilitate purging the space above the oil.

vi. The regulating valve, pressure gauges, etc., shall be installed in a totally enclosed cabinet to be located as low as practical on the tank wall.

a. The cabinet shall be equipped with a weatherproof breather and with provisions for padlocking.

vii. A regulating valve shall be furnished to make the equipment automatic in operation and to maintain the tank pressure between approximate limits of one-half and eight pounds per square inch for normal operating conditions.

viii. A pressure gauge shall be provided to indicate gas pressure in the transformer tank. The range of the pressure gauge shall be 0 to 15 psi.

ix. Accuracy or readings shall be within two percent (2%) of full scale.

x. Alarm contacts shall be provided to close for a condition of over or under pressure in the tank.

a. The tank low-pressure alarm shall be adjustable for a pressure between –3 and +1/2 psi.

b. The tank high pressure alarm shall be adjustable for a pressure between 5-1/2 and 9 psi.

xi. A cylinder gauge shall be furnished to indicate gas pressure in the cylinder. The cylinder gauge for the cylinder shall be provided with an alarm contact that will close on low pressure; the alarm shall be adjusted to operate at a pressure of approximately 200psi.

xii. A pressure-vacuum bleeder device shall be provided.

xiii. A sampling valve with shutoff valve shall be provided.

xiv. The oil preservation system will utilize "Ultra High Purity Nitrogen" gas.

xv. The nitrogen bottle shall be installed in such a way that replacement of the bottle can be easily done. Means for securing the nitrogen bottle shall be provided.

xvi. Means for supporting the inert gas piping to prevent vibration shall be provided. Means (such as a metal flange or cover) shall also be provided to protect the gas piping on the transformer from physical damage.

xvii. All gas piping shall be stainless steel.

xviii. No gas piping shall not be secured to the tank using plastic ties.

xix. To allow "remote" installation of the gas cylinder by VMEU where desired, provisions for the inert gas piping to enter the "enclosed cabinet" shall also be provided.

V. Grounding and Neutral Connections

i. All ground pads and equipment grounding shall be in accordance with IEEE Std. C57.12.10 "IEEE Standard Requirements for Liquid-Immersed Power Transformers."

ii. Eight (8) NEMA, two-hole, copper faced ground pads shall be provided and welded to the outside of the tank, near the bottom for VMEU's ground grid connection.

a. Copper facing shall have a minimum thickness of 0.015".

iii. Thread protection shall be provided for the ground pads for use during shipping and storage of the transformer.

iv. The grounding of neutral bushing connections and arresters shall be assembled as follows:

a. Low voltage or secondary side arresters shall utilize their own copper bus bar, which shall run parallel to the side of the tank then run down at the corner to a ground pad.

b. A similar bus bar shall be installed on the high voltage or primary side of the transformer tank, run parallel to the side of the tank, then run down at the corner to a ground pad located at the base of the tank on the high voltage side of the transformer. This bus bar shall be used solely to ground each of the high voltage arresters.

c. A third ground, independent of the two copper bars, shall be furnished to solely ground the neutral bushing and run parallel to the side of the tank and then run down the corner to the ground pad located at the base of the tank on that side of the transformer.

d. Paths are to be as direct as possible (no sharp angles).

e. All bus bars shall be adequately supported for all fault currents.

f. The HV, LV and Neutral buses are run separately, connected directly to their individual ground pads and then connected separately to the ground grid through 19 strand #6 AWG copper clad conductors.

g. The copper bus bars shall be sized to carry full neutral loads, including all loading requirements, fault currents and arrester discharge currents.

W. Load Tap Changer

i. A Reinhausen Type ED motor drive and Beckwith model M-2001D-6L4S20C0C0S00 LTC Controller or similar approved equal shall be provided.

ii. The Beckwith LTC controller shall be capable of automatically detecting power flow reversal and shall be capable of "Reverse Regulation" and "Reverse Block" functionalities.

iii. An Incon 1250B or approved equal should be utilized for tap position monitoring.

iv. The load tap changing equipment covered by this RFP and all associated tests applied shall conform to the latest applicable standards of IEEE, ANSI, and NESC.

v. The transformer shall include a load tap changer (LTC) with equal voltage step taps and a neutral position.

vi. The LTC shall be located in the low voltage winding of the transformer.

vii. The LTC shall have ±16 steps each 5/8% and a neutral position, allowing for ±10% of the nominal secondary voltage.

viii. The tap changer is to be mounted above the main control cabinet, and the LTC control is to be mounted within the main control cabinet, unless otherwise specified.

ix. The LTC shall be located in a separate external compartment from the main tank. Opening clearance dimensions required for hinged tap changer doors shall be provided on the outline drawing.

x. The LTC and its equipment shall not prevent the transformer from meeting loading

requirements.

xi. The air vent for the LTC shall be provided with a suitable desiccant, located so that it may be conveniently accessed by a person standing at ground level. The desiccant shall have a recycling process so that it is self-drying and maintenance free.

xii. Manufacturer shall provide the following information regarding the rating of the LTC in Attachment A-1:

a. Full Capacity Rating of LTC.

b. Basis for this Rating (i.e., calculated).

c. Long-Time Emergency Rating of LTC.

d. Booster Transformer Normal and Long-Time Emergency Rating (if applicable).

e. Reverse Power Flow Detection Capabilities

xiii. Control equipment mounted on the transformer shall include an "OFF-POSITION" alarm to indicate that the tap changer is moving from one tap to another, and the contact wired to terminal blocks for VMEU's connection.

a. An associated light is to be on when the tap-changer is in the off-tap position or due to an incomplete tap change.

xiv. The LTC system shall be equipped with an appropriate monitoring system, to be approved by VMEU.

xv. The LTC system shall be capable of remote operation by VMEU's SCADA system.

xvi. Transformer shall be supplied with a programmable voltmeter in the main transformer control cabinet for LTC control testing. The meter shall have a universal power supply and terminals shall be provided to test LTC output voltage. The meter shall be located in the main control cabinet.

xvii. The tap-changer shall be furnished with a digital LTC control relay with accessories including line drop compensator, switch for time delay relays, etc., mounted on a panel in the tap-changer control cabinet.

a. The automatic control shall provide for automatic operation of the transformers locally as well as remotely by supervisory control equipment.

xviii. The LTC shall be self-protecting for switching during fault conditions or have a provision for lockout to prevent switching when carrying fault current.

X. Control & CT Wire

i. All control and CT wire shall be stranded copper type and shall have cross-linked polyethylene insulation type XHHW meeting the most recent edition of NEMA WC70/ICEA S-95-658 Standard for Non-shielded Power Cables Rated 2000 Volts or Less for the Distribution of Electrical Energy, or VMEU approved equivalent.

ii. All auxiliary power cables shall have similar insulation and be suitable for outdoor use.

iii. Control and CT wires shall not contain splices between terminal points.

iv. All control wire shall be a minimum of #12 AWG.

v. All CT leads shall be a minimum of #10 AWG.

vi. All circuits shall use ring type crimped terminals. Spade-type terminals are unacceptable.

vii. Legible sleeve type wire markers shall be used at each end of any wire over 6 inches in length.

Y. Windings and Leads

i. All transformer windings and leads shall be made of copper.

ii. All windings shall be of circular construction.

Z. Painting

i. All metal shall be chemically cleaned and treated. After cleaning, all metal surfaces shall be inspected for rust and scale, and if necessary, further cleaned to remove any remaining rust and scale. Immediately after cleaning and inspection, at least one coat of primer shall be applied to all metal surfaces. The enclosure shall then have at least two coats of ANSI-70 light gray finish applied prior to shipment.

ii. Manufacturer shall provide three one-pint aerosol spray cans of color-matching paint, per transformer, for field touch-ups.

iii. The interior of the tank and cover shall be coated with a white oil resistant two-part epoxy polyamide paint system, compatible with transformer oil.

iv. The interior of all compartments, including subpanels, shall be painted medium semi-gloss white.

v. All steel support structures shall be hot-dipped galvanized.

AA. Hardware and Spare Parts

i. All hardware (nuts, bolts, studs, etc.) shall be in US Standard sizes.

ii. All hardware shall be stainless steel.

iii. Manufacturer shall take precautions to prevent nuts and bolts from binding.

iv. Prices shall be provided for the following spare parts, as applicable:

a. One (1) high voltage bushing.

b. One (1) low voltage bushing.

c. One (1) neutral bushing.

d. One (1) complete set of spare gaskets.

e. One (1) fan motor and blade assembly.

f. Other recommended spare parts, particularly those with long lead times or unique design requirements.

BB. Limiting Footprint Restrictions

i. Height: 205 Inches
ii. Width: 430 inches
iii. Depth: 165 inches

PART 3 – EXECUTION

3.1. Tests, Evaluations, and Guarantees

A. General

i. The Manufacturer shall test transformers in accordance with the tests described in the latest revisions of IEEE C57.12.00 "IEEE Standard for General Requirements for Liquid-Immersed Distribution, Power, and Regulating Transformers" and IEEE C57.12.90 "IEEE Standard Test Code for Liquid-Immersed Distribution, Power, and Regulating Transformers," as well as tests outlined in this RFP.

ii. All transformers shall be tested to Class II values provided in the latest revision of IEEE C57.12.00 "IEEE Standard for General Requirements for Liquid-Immersed Distribution, Power, and Regulating Transformers."

a. Sequence of tests shall additionally be in compliance with IEEE C57.12.00 and IEEE C57.12.90.

iii. The Manufacturer's tests shall ensure successful operation of all parts of the power transformers.

a. The Manufacturer shall supply a proposed detailed testing program at least 30 calendar days prior to scheduled factory acceptance testing (FAT). Information submitted for approval shall include the following:

i. Tests to be performed, including description of equipment used, voltage levels, current levels, and duration for each test.
ii. Sequence of all tests.
iii. Transformer connections for each test, including no-load and LTC connection, ground connection, etc. Test connection information shall be supplied for every test and test iteration.

b. The Manufacturer shall not proceed with testing until the test program is approved by VMEU.

c. At minimum, the following tests shall be included:

i. Resistance measurements (all taps).
ii. Polarity and phase relation tests.
iii. Ratio tests (all connections and taps).
iv. No-load losses and excitation current tests.
v. Load loss measurements.
vi. Dielectric tests, including but not limited to:
    1. Lightning impulse tests.
    2. Low-frequency tests.
    3. Applied-voltage tests.
    4. Partial discharge measurement.
vii. Positive sequence impedance measurement.
viii. Zero sequence impedance measurement.
ix. Temperature-rise tests.
x. Audible sound tests.
xi. CTs ratio, polarity test, and saturation curves.
xii. Core insulation resistance test.
xiii. Control and cooling losses.
xiv. Mechanical tests.
xv. Frequency response analysis (FRA).
xvi. Insulation power factor and capacitance.
xvii. Insulation resistance test.
xviii. Low-frequency test on auxiliary devices and control and current transformer circuits.
xix. Operational tests and programming of all controls, alarms, ETM devices, annunciators, remote signals and devices, including oil flow and direction confirmation, and minimum operating oil level confirmation.

d. On conservator type expansion system, a gas injection test shall be performed by injecting 100cc more than a trip setting of Gas Detection Relay (GDR / Buchholz relay) of dry air gas. Injection is made in four separate corners of the cover. After each test air shall be bled and test repeated until all four corners are tested.

    i. Test shall be acceptable if trip occurs two minutes after each of the injection of gas. In total four tests are conducted, and each test shall record time and volume of gas.

e. Tests, which require cooling in operation, shall be performed with all cooling on and without spare radiator connected to the transformer.

iv. The Manufacturer's test proposal shall include descriptive information on the instrumentation used.

a. The amount of measurement error in the test instrumentation and the method of determining this error shall be specified.

b. All instrument calibration information shall be available for review and inspection at the time of testing. No instrumentation shall be overdue for calibration.

B. Resistance Measurement Testing

i. Resistance measurement tests shall be performed per IEEE C57.12.90 "Test Code for Liquid-Immersed Distribution, Power, and Regulating Transformers."

ii. Cold resistance measurements shall be converted to a standard reference temperature equal to the rated average winding temperature 85 °C.

C. Polarity and Phase Relationship Testing

i. Polarity and phase relationship tests shall be performed on all transformers in accordance with IEEE C57.12.90 "Test Code for Liquid-Immersed Distribution, Power, and Regulating Transformers."

D. Ratio Testing

i. Ratio testing shall be performed on all transformers in accordance with IEEE C57.12.90 "Test Code for Liquid-Immersed Distribution, Power, and Regulating Transformers."

E. No-Load Losses and Excitation Current Testing

i. No-load losses and excitation current tests shall be performed twice, once before Impulse testing as part of the routine tests and shall be repeated after the completion of Impulse testing.

ii. The no-load loss and excitation current tests shall be performed at 100% and 110% of rated voltage and at rated frequency. A harmonic component shall be measured at Nominal tap 100% rating.

iii. No-load losses shall include the excitation losses of the main transformer and the following components if provided: LTC reactors, LTC preventive autotransformer, and series transformer.

iv. No-load loss guarantees will be based on the no-load test performed after impulse testing.

F. Load Loss Testing

i. Load loss test shall be evaluated at the maximum 65 °C nameplate rating and based on the highest loss LTC tap position. The guaranteed load losses will be those existing when the transformer is operating at maximum nameplate ratings and shall include all auxiliary cooling equipment.

ii. Load losses shall be measured at the maximum 65 °C nameplate rating and at rated frequency and shall be corrected to a reference temperature of 85 °C.

iii. All units shall have load losses tested. The loss measurement shall be made in accordance with the latest revisions of IEEE C57.12.00, C57.12.90 and C57.123.

a. Additional load-loss tests on transformers with LTC shall be carried out. These tests shall be made on rated, minimum, and maximum LTC tap positions for a total of three additional tests at the 65 °C nameplate rating.

G. Liquid Dielectric Testing

i. Dissolved gas-in-oil tests shall be performed before the start of all tests, before and after each temperature rise or dielectric test, and after completion of all testing.

ii. Insulating oil shall not be replaced or processed between test sequences.

iii. Results of all dissolved gas-in-oil tests shall be included in certified test reports. VMEU reserves the right to request sampling from different points. The dissolved gas levels should not exceed the values given in the table below.

Gas	Normal Temperature Rise Test	Long Term Emergency Loading Temperature Rise Test
C_2H_2	Not detectable	Not detectable
CH_4	2 ppm	4 ppm
C_2H_6	1 ppm	3 ppm
C_2H_4	1 ppm	2 ppm
H_2	10 ppm	25 ppm
CO	20 ppm	40 ppm
CO_2	250 ppm	300 ppm

H. Dielectric Testing

i. All impulse tests shall be performed with the neutral terminals solidly grounded. Other line terminals required to be grounded for testing shall be solidly grounded (low-impedance shunt for current detection is acceptable) unless for voltage reasons, i.e., terminal exceeding voltage levels during test, or the inability to adjust the surge generator to meet required waveform shapes and times without the addition of external resistance as permitted by the latest issue of IEEE C57.12.90.

a. Manufacturer shall state in their proposal if external grounding resistance is required to perform impulse tests.

ii. Impulse tests shall be performed per IEEE C57.12.90. The top oil temperature shall be recorded at the beginning of the test.

iii. Impulse tests shall consist of applying the number and types of waves indicated in a specific test sequence as outlined in IEEE C57.12.90 to each winding and neutral terminal.

iv. All impulse voltages applied to the transformer, including equipment calibrating tests, shall be recorded, and be made available to VMEU during testing.

v. An Applied-Voltage test shall be performed in accordance with the latest issue of IEEE C57.12.90.

vi. An Induced-Voltage test shall be performed in accordance with the latest issue of IEEE C57.12.90.

vii. Insulation power factor (ratio of power dissipated in the insulation in watts to the product of effective voltage and current in volt-amperes) shall be performed on all winding-to-winding and winding-to-ground insulations.

viii. The tests shall be performed immediately prior to preparation for shipment with the transformer oil filled.

ix. All measurements exceeding 0.5% corrected to a reference temperature of 20 °C, must be reviewed with and approved by VMEU before shipment of the transformer.

x. Insulation resistance measurements shall be made to determine insulation resistance from individual windings to-ground or between individual windings.

xi. A 1000-volt megohmmeter shall be used.

xii. The actual test results shall be included in the certified test report.

I. Temperature Rise Testing

i. Temperature rise tests shall be performed with the transformer fully assembled, with all cooling operating as designed, and with the transformer sealed and utilizing its own conservator or inert gas pressure system.

ii. The temperature-rise tests shall be made at the maximum 65 °C nameplate rating, and at any other nameplate or long-time emergency loading rating specified.

iii. Tests shall be made at rated currents and rated frequency to verify both maximum and minimum transformer ratings.

iv. Thermography shall be performed at least twice during any temperature rise test. The first test shall be performed during the heat rise test to determine the proper operation of all cooling equipment, and the second test shall be performed a short time before shutdown to identify any tank hot spots and confirm tank temperatures are as designed.

v. The transformer oil shall be checked for dissolved combustible gases before and after the temperature rise tests and shall not exceed the values specified. This gas analysis shall be included as part of the test report.

vi. To avoid conflict as to effects on dissolved gas measurements of exposure of the top oil to air during the test, the unit will be sealed and filled with oil for transformers that have a conservator for oil preservation.

vii. Top and bottom liquid temperature measurements shall be made with thermometers inserted into the oil flow.

a. Surface measurements are not acceptable.

viii. The Manufacturer shall measure and record cooler inlet or bottom oil temperature and the cooler outlet temperature.

ix. The ultimate liquid temperature rise above ambient shall be considered to be reached when the temperature rise does not vary more than 2.5% or 1 °C, whichever is greater, during a 3-hour period.

x. The average liquid temperature rise shall be taken to be equal to the top liquid temperature minus one-half the difference in temperature of the moving liquid at the top and the bottom of the cooling means.

xi. The average temperature rise of the winding shall be the average winding temperature minus the ambient temperature.

xii. The average temperature of the winding shall be determined by the resistance method.

J. Audible Sound Level Testing

i. All audible sound tests shall be made utilizing the Sound Pressure method.

ii. Audible Sound level tests shall be made on all units in accordance with the latest revision of IEEE C57.12.90 and the requirements of this RFP.

iii. The term "audible sound level tests" shall include overall sound level (dBA), narrowband measurements (dB), and octave band analysis (dB) for bands with mid-band frequencies from 63 Hz to 10,000 Hz analysis results.

iv. Test results shall be presented as described in the latest issue of IEEE C57.12.90.

v. The transformers shall be assembled to minimize vibration of transformer parts and equipment.

vi. The transformers shall be tested at the LTC taps that produce the highest sound levels. The tap settings shall be listed with the results in the certified test report.

vii. Audible sound level guarantees shall not be exceeded.

viii. A no-load audible sound (NLS) test shall be made on a fully assembled transformer, and with the transformer energized at 105% of rated voltage and at rated frequency.

a. In addition, a rated load (65 °C nameplate) audible sound test (LS) shall be made in accordance with IEEE C57.12.90 with all cooling equipment in operation.

b. The logarithmic sum of the audible sound level at no load (NLS) and 105% rated voltage with all fans running plus logarithmical addition of rated load sound (LS) shall not exceed the requirements.

ix. VMEU reserves the right to reject, at no cost or penalty, any transformer with tested total audible sound levels exceeding those in this RFP.

K. Impedance Testing

i. Positive and Zero sequence impedance measurements shall be performed on all transformers. The impedance values shall be corrected to a reference temperature of 85 °C.

L. Partial Discharge Testing

i. Each transformer shall be partial discharge tested. The partial discharge test shall be a three-phase partial discharge test at the values provided in the latest issue of IEEE C57.12.00 applied for one (1) hour.

ii. Both apparent charge in picocoulombs (pC) and radio influence voltage (RIV) measurements shall be made.

iii. Apparent Charge in pC shall be measured on the terminals of the transformer under test and readings shall be taken at five (5) minute intervals.

iv. The magnitude of the partial discharge level shall not exceed 150 pC for the 1-hour test period.

a. The increase in partial discharge levels during the 1-hour period shall not exceed 50 pC nor exhibit any steadily rising trend or sudden sustained increase in levels during the last 20 minutes of the test.

v. RIV readings shall be taken at five (5) minute intervals and shall not exhibit a continued increase pattern nor exceed the specified limits.

vi. The RIV level shall not exceed 100 microvolts for all tests when circulating pumps are not running. The RIV level for subsequent tests with the oil circulating pumps

running shall not exceed by more than 100 microvolts the RIV level obtained with circulating pumps not operating.

vii. If RIV readings exhibit a rising pattern near the end of the test period, the test shall be extended to determine any trends.

viii. There shall be no bursts or discharges accompanied by sonic disturbances within the tank. Any discharge shall be recorded, oil samples shall be taken, and combustible gas content checked.

ix. The RIV level at 120% rated voltage, prior to the application of the enhanced voltage, shall be recorded and compared with the RIV level recorded at 120% rated voltage immediately after the application of the enhanced voltage.

a. Deviation between these values of more than 20% shall be brought to the attention of VMEU.

x. Any unusual bursts, discharges or sonic disturbances shall be investigated by the Manufacturer, utilizing all available technology (e.g., acoustic or electronic signatures) and visible observations (e.g., bubbles in the oil) to locate the source of the partial discharge event and resolve. Any partial discharge test that exceeds the values specified shall be discussed with VMEU and investigated by the Manufacturer. Any transformer that has partial discharge inception and/or extinction at less than 110% of rated voltage will be rejected.

xi. All digital signatures and patterns, meter readings and data taken during the partial discharge test, together with a diagram of the test circuit employed, shall be included in the transformer certified test report.

M. Frequency Response Analysis (FRA) Testing

i. FRA tests, utilizing the swept frequency method, shall be performed on all three phases with the transformer fully assembled and oil filled.

ii. The following information shall be recorded for each FRA test:

a. Manufacturer, model and serial number, calibration date, and measurement impedance of test set used for the tests. Further, the designed output voltage of the test set shall be recorded, e.g., 10 volts.

b. Sketch, drawing, or detailed description of test set-up. This information shall provide details of all test lead connections so that the test can be repeated in exact same configuration. In addition, oil level and oil temperature when filled or transformer temperature if empty shall also be recorded.

c. Description of test leads, i.e., cable type, impedance, and length. A photograph of each test setup showing the instrument and connected test leads shall be provided.

d. Frequency, magnitude, and phase shall be recorded for all tests. Plots of all tests performed shall be provided.

N. Mechanical Testing

i. Mechanical tests of all tanks, radiators, coolers, and heat exchangers shall be made to verify the pressure requirements for maximum operating pressures and full

vacuum filling conditions as required.

ii. Leak tests on tank, coolers, and piping in the form of a sustained hot oil (50 °C at the top) test, for a period of 18 hours at 10 psi at the cover. Manufacturer may propose factory standard leak test during bidding process.

iii. Transformers using conservator type designs shall demonstrate the function of gas accumulation relay.

O. Operational Testing

i. Manufacturer shall perform any and all necessary tests to ensure full operation of all furnished equipment, including but not limited to transformer devices, indicators, fans, motors, alarms, cooling controls, and LTC controls.

ii. ETM shall be programmed, and all I/O shall be tested and documented. ETM shall be programmed during temperature rise test and readings recorded and included in test report.

iii. Alarm processors and annunciators shall be programmed with alarm settings and tested from each device to the alarm processor. Tests shall be documented.

P. Test Reports

i. Two (2) certified hard copies of the results of the factory tests are required, and the Manufacturer shall additionally furnish a USB drive including all information from the certified test reports.

ii. Certified test reports shall be forwarded to VMEU before shipment of the transformer to facilitate review and approval of results to determine if the transformer can be released for shipment.

iii. Certified reports are preferred; preliminary factory test results will be considered, if necessary, so that the release of a transformer for shipment can be expedited.

iv. A transformer shall NOT ship without approval of the test results.

v. If preliminary test results must be issued, the certified test reports shall be furnished with VMEU no later than two (2) weeks after testing has been completed.

vi. The test report shall include all the information specified in the latest issues of IEEE C57.12.00 and IEEE C57.12.90 and in addition the following information:

a. Resistance of windings corrected to 85 °C.

b. Regulation at 0.8 and unity power factor.

c. Insulation resistance test.

d. Power factor test for all windings.

e. Bushing tests.

f. Turn ratio tests.

g. Excitation and no-load losses at 100 and 110 percent of rated voltage.

h. Load losses at rated load and neutral LTC tap positions. Load losses at the highest loss LTC tap position.

i. Impedance and load losses at extreme tap positions.

j. Auxiliary losses.

k. Core or shell form construction shall be stated.

l. Positive sequence saturation curve – 0% to 150% RMS voltage vs. RMS magnetization current – as viewed from the high voltage terminals.

m. Air core reactance- as viewed both from the high and low voltage terminals.

n. Magnetization impedance at 100% voltage as viewed from the high voltage terminals.

o. Positive and negative sequence impedance for all transformers expressed in complex form (R + jX) in percent utilizing the transformer's minimum nameplate rating as the base. For three winding transformers, Manufacturer shall develop an equivalent T-Network, calculating the impedance of each leg of the equivalent-T expressed in complex form (R + jX).

i. The high to low impedance at both the maximum and minimum LTC positions are required.
1. Impedance for taps between the extreme LTC positions is not required.

ii. Impedance values shall be corrected to 85 °C.

p. Zero sequence impedance test values in complex form (R + jX) in percent utilizing the transformer's minimum nameplate rating as the base. For three winding transformers, the Manufacturer shall develop an equivalent zero sequence T-network, calculate and provide the impedance of each leg of the equivalent-T. The appropriate equivalent network shall be developed in accordance with the latest issue of IEEE 57.12.90.

q. Design ratings for the following ancillary equipment shall be given together with the manufacturer's name and style and/or catalog number for each item and shall be submitted with the test report:

i. LTC (Full Range)
ii. Bushings (including connection)
iii. BCTs
iv. Terminal Boards and Connectors
v. Other Ancillary Equipment

vii. Photographs or other permanent record copies of all impulse test voltage and current waves.

viii. Partial discharge levels for all tests required by this RFP including apparent charge and RIV levels at the one-hour test level voltage.

ix. The LTC tap position shall be indicated with the data for each of the following tests:

a. Load loss

b. Impulse

c. Induced volts

d. Temperature rise

e. Audible sound

x. The following information shall be furnished with the test report:

a. Time constant for conductor temperature rise over oil in minutes.

b. Winding configuration types (disc, helical, etc.) and arrangement/location with respect to the core leg.

c. Core window dimensions and area of core legs.

d. Winding material.

e. For forced oil cooling transformers only, flow design, i.e., directed, or non-directed.

f. Construction of core.

g. Type of LTC.

h. Serial no. and power factor for each bushing.

i. Admittance plots for all frequency response analysis tests performed shall be provided and the parameters of the admittance defined.

xi. The metered amount of oil removed from the transformer and LTC after factory testing shall be included in the test report.

Q. Guarantees

i. The Manufacturer shall guarantee all fields applicable in Attachment A-1, Guaranteed Data Sheet.

ii. These guarantees are to be submitted with the proposal and are to form a part of the order awarded to the successful bidder.

R. Inspection upon delivery

i. Part number verification.

ii. Verification of equipment quantities.

iii. Verify no shipping or handling damage present.

iv. Verify material is new and not expired.

3.2. Shipping

A. Method of packing and loading shall be such as to protect all parts from dampness, corrosion, wreckage, or vibration injury that might reasonably be encountered in transportation and handling.

B. Assembled cores, coils, and lead supports (i.e., active unit) shall be designed for minimum, repetitive shipping forces of 5G longitudinally, 2G laterally and 3G vertically. These minimum design G-force accelerations, as related to number and duration of impacts, shall be reviewed during the formal design review process. No temporary internal bracing is permitted.

C. Release for shipment is to be granted by the Owner based upon the manufacturer's compliance with the following:

i. Furnishing of the requisite number of copies of the final drawings as called for in the

request for proposals.

ii. Thirty (30) days notification of tentative shipping schedule and one (1) working days notification prior to delivery. Transformers shall not be shipped without VMEU approval of test results and approval to ship.

D. The following mailing addresses shall be used for correspondence:

i. Transformer Ship-To Location:

Vineland Municipal Electric Utility
300 Lubins Ln, Vineland, NJ 08360
Attention: Tom Dunmore
Phone: (856) 794-4000 Ext 44291

ii. For Other Correspondence:

Vineland Municipal Electric Utility
57 W. Park Avenue
Suite A, PO Box 1508
Vineland, NJ 08362
Attention: William Burns
Phone: (856) 794-4000 Ext 4977

3.3. Design Review and Inspections

A. Design Review

i. VMEU will perform a design review at design completion, for each new design and for each significant design change.

ii. A design review meeting shall be held at the completion of detail design prior to the start of fabrication.

iii. The design review will be completed prior to the start of final transformer design and manufacturing.

iv. Manufacturer shall provide fifteen (15) workdays' notice that the design is available for review.

B. Core and Coil Inspection

i. The Manufacturer shall notify VMEU fourteen (14) calendar days before coils are placed on core legs.

ii. The Manufacturer shall notify VMEU in writing at least fourteen (14) calendar days prior to the time the core and coils will be ready for tanking for the core and coil inspection.

iii. Tanking of the core and coil assembly without VMEU inspection shall result in credit to VMEU of an additional two-year warranty at no cost to VMEU.

iv. The inspection shall occur after drying out and final clamping immediately prior to tanking. Core and coil assembly shall be complete, and preliminary tests complete.

a. Permanent connections shall be complete and secured in place, all string and cloth knots secured, fiber nuts glued, and hardware tight except that which

must be removed to facilitate internal tank connections.

b. The tank and cover should also be available for inspection at that time.

C. Witness Test

i. All standard tests may be performed without a witness unless otherwise requested.

ii. All impulse tests, applied and induced voltage tests, and one-hour partial discharge tests shall be performed in the presence of VMEU's witness, unless permission otherwise is provided in writing.

a. VMEU reserves the right to request witness for any other tests performed by Manufacturer.

iii. Twenty-five (25) workdays' notice shall be given so that arrangements can be made for VMEU to witness tests.

iv. Should any test fail and require a retest on a different date, the Manufacturer shall be responsible for all costs incurred by VMEU to witness the retest.

D. Receiving and Acceptance Inspection

i. VMEU will check the transformer when received to check for any equipment damage, inspect the unit for any leaking, and check that the packing slip matches items received.

3.4. Chemical and Hazardous Substance Control

A. The Manufacturer shall, where possible, minimize or eliminate the use of all substances classified as hazardous by U.S. or New Jersey environmental regulations.

B. The Manufacturer shall provide a complete list and location of all known hazardous substances located on or within the assembled transformer or shipped separately.

C. All chemical and hazardous substance items shall be labeled in accordance with OSHA regulation 29CFR1910 and "Right to Know" regulations for the State of New Jersey. "Material Safety Data Sheets" shall be provided for all items identified.

3.5. Delivery

A. The transformer shall arrive at the delivery location and be set no later than the date agreed upon by the Manufacturer and VMEU.

B. Late delivery not agreed to beforehand, in writing, by the Manufacturer and VMEU, shall constitute breach of contract. The Manufacturer shall be liable for any and all material loss to VMEU due to the Manufacturer.

i. This shall additionally apply to any other nonconformity to this request for proposals.

3.6. Production Schedule

A. The Manufacturer shall furnish a production schedule, in writing, within four (4) weeks following receipt of PO.

B. Schedule shall include key milestones that have to be met for the unit to meet its required shipping date and transportation to the installation site, as well as, provide dates for inspection points and witness testing for unit.

C. The production schedule shall include critical milestones necessary to meet the shipping date as well as dates for transformer inspection.

D. Monthly updates shall be made in writing for the project, except for the last eight (8) weeks prior to scheduled shipment.

E. Weekly updates shall be made in writing for the last eight (8) weeks prior to the scheduled shipment date.

3.7. Proposal Evaluation Criteria

A. Bids are to be evaluated by VMEU and will take into account proposed price, rating guarantees, warranty period, equipment delivery, schedule, and any other factors VMEU determines to be relevant.

B. Proposals will be judged based on their ability to supply a substation transformer that meet the needs of VMEU. The selection of a transformer manufacturer will be based on what is in the best interests of VMEU. Respondents to this solicitation should meet the guidelines and minimum proposal requirements detailed in Section 2 – "Technical Specifications" and provide all relevant information necessary to allow VMEU to conduct a thorough analysis of each proposal. The following criteria, and associated weighting factors, will be used by VMEU in evaluating proposals:

Criteria	Weighting Factor
Total evaluated cost (including losses over time) to supply one substation transformer	50%
Compliance of the Manufacturer to meet or exceed the requirements of Section 2 - Technical Specifications	40%
Experience in the design and manufacture of transformer units similar to the VMEU proposed transformer unit	10%

C. VMEU reserves the right to consider any other factors that it deems to be relevant to its needs. VMEU reserves the right to request additional information from individual Respondents or to request all Respondents to submit supplemental materials in fulfillment of the content requirements of this RFP or to meet additional information needs of VMEU. VMEU also reserves the unilateral right to waive any technical or format requirements contained in the RFP. The selection of a transformer manufacturer will be based on what is in the best interests of VMEU.

3.8. Manufacturer Data

A. The proposal shall include all information outlined in this request for proposals and describe all equipment offered.

B. Manufacturer's proposal shall state if a transformer sound enclosure will be used to meet audible sound level guarantees.

C. Manufacturer's proposal shall state how no-load losses are to be measured and on which tap position.

D. Manufacturer's proposal shall include the cost of a service engineer's trip to the job site.

E. Manufacturer's proposal shall include a proposed outline diagram for the transformer,

indicating winding arrangement, LTC location, etc.

F. Manufacturer's proposal shall include a completed form of Attachment A-1 with all guaranteed values populated.

3.9. Drawings and Transmittals

A. Approval Drawings

i. Approval drawings are to be furnished in PDF and AutoCAD DWG format to VMEU.

ii. Approval drawings should include transmittal of two (2) hard copies as well as an emailed PDF set.

iii. Transformer outline drawings and preliminary nameplate drawings (including connection diagram) shall be furnished within four (4) weeks of Manufacturer accepting a PO. The outline drawings should contain the weight of the unit, dimensions, cooler arrangement, piping details, and quantity and weight of oil.

a. A separate drawing locating all core grounds and other ground connections shall be provided and appropriately marked with conductor or plate size and continuous current carrying capacity.

iv. Drawings shall be provided showing all gaskets used, drawn to scale, and marked for easy location and identification.

v. Approval drawings shall include all drawings necessary for the installation, assembly, operation, and maintenance of the transformer.

vi. The approval of drawings shall not in any way relieve the Manufacturer of responsibility for correctness, or from a result arising from error or omission.

vii. Drawings must be approved by VMEU prior to start of manufacturing.

viii. Drawings will not be approved until all drawings have been received.

B. Drawing Compliance

i. All drawings shall become the property of VMEU and may be used in the future without additional permission from the Manufacturer.

ii. In the case of any discrepancies between approved drawings and this request for proposals, the RFP requirements will apply unless specific, written approval is granted by VMEU for each discrepancy.

C. Final Drawings

i. Final drawings shall be provided in both AutoCAD DWG format and PDF format on a USB drive.

ii. Final drawings shall accurately depict all equipment, connections, material quantities, etc. as detailed in this request for proposals.

D. Transmittals

i. Manufacturer shall allow VMEU fifteen (15) workdays to respond to package transmittals.

ii. Any manufacturing and construction work done without and/or prior to VMEU

drawing approval will be solely and completely at the Manufacturer's risk.

iii. The approval of drawings shall not in any way relieve the Manufacturer of responsibility for correctness, or from a result arising from error or omission.

3.10. Field Assembly & Testing

A. If assembly and testing activities are included in the Manufacturer's scope of work, a formal coordination meeting shall be held to discuss assembly and testing activities and schedule.

i. The coordination meeting location and date will be agreed upon by VMEU and the determined Contractor once field assembly and testing responsibilities have been assigned. VMEU may require this meeting be held at the project site.

B. If VMEU or party other than the Manufacturer is to perform field assembly and testing, the Manufacturer shall send a technical representative to be present on-site to oversee these activities.

PART 4 – Attachments

4.1. List of Attachements

Sequence	Document Name
1	ATTACHMENT A-1: Proposal - Power Transformer
2	ATTACHMENT A-2: Transformer Specification Sheet
3	ATTACHMENT A-3a: Preliminary Transformer Layout Plan
4	ATTACHMENT A-3b: Preliminary Transformer Layout Section
5	ATTACHMENT A-4: Existing Transformer Nameplate
6	ATTACHMENT A-5: Transformer Oil Containment Options

ATTACHMENT A-1: Power Transformer Proposal

TO BE COMPLETED BY THE VENDOR

VINELAND RFQ No._____Date_____

Manufacturer _____

Transformer Type _____

1. Primary Voltage
   a. Rated nominal system voltage _____kV, RMS sym
   b. Rated maximum voltage _____kV, RMS sym
2. Secondary Voltage
   a. Rated nominal system voltage _____kV, RMS sym
   b. Rated maximum voltage _____kV, RMS sym
3. Transformer Rating
   a. Cooling class _____
   b. Temperature rise _____°C
   c. Continuous MVA without cooling _____MVA
   d. Continuous MVA (ONAN/KNAN) _____MVA
   e. Continuous MVA (ONAF/KNAN Stage 2) _____MVA
4. Impedance
   a. H to X _____%
5. Losses
   a. No load losses at rated voltage _____kW
   b. Load losses at continuous MVA and rated voltage _____kW
   c. Load losses at maximum MVA and rated voltage _____kW
6. Efficiency
   a. Efficiency @ 100% of rated MVA (ONAN/KNAN) _____%
   b. Efficiency @ 75% of rated MVA (ONAN/KNAN) _____%
   c. Efficiency @ 50% of rated MVA (ONAN/KNAN) _____%
   d. Efficiency @ 100% of rated MVA (ONAF/KNAF) _____%
   e. Efficiency @ 75% of rated MVA (ONAF/KNAF) _____%
   f. Efficiency @ 50% of rated MVA (ONAF/KNAF) _____%
   g. Efficiency @ 100% of rated MVA (ONAF/KNAF Stage 2) _____%
   h. Efficiency @ 75% of rated MVA (ONAF/KNAF Stage 2) _____%
   i. Efficiency @ 50% of rated MVA (ONAF/KNAF Stage 2) _____%
7. Cooling Fans
   a. Total # of fans _____
   b. Fan manufacturer _____(manuf)

c. Fan type _____(type)
d. Horsepower, each motor _____HP
e. Voltage _____VAC
f. Number of phases _____phase(s)
g. Load current, each motor _____A
h. Max sound level _____dB

8. Cooling Pumps
   a. Total # of pumps _____
   b. Pump manufacturer _____(manuf)
   c. Pump type _____(type)
   d. Horsepower, each motor _____HP
   e. Voltage _____V AC
   f. Number of phases _____phase(s)
   g. Load current, each motor _____A
   h. Max sound level _____dB
9. Rated Frequency _____Hz
10. High Voltage Bushings
    a. Manufacturer _____
    b. Type _____
    c. Insulating medium _____
    d. Insulation class (BIL) _____
    e. Maximum guaranteed R.I.V. level _____V
    f. Minimum external creepage distance L-Gnd _____inches
    g. Strike distance _____inches
    h. Permissible safe strength of installed bushing:
       i. Vertical downward (Compression) _____lbs.
       ii. Cantilever (Shear) _____lbs.
       iii. Tensile _____lbs.
       iv. Torsion _____lbs.
    i. Height above floor required to remove bushing _____inches
    j. Will transformer be shipped with bushings installed? _____Y/N
    k. Stud connectors proposed _____
    l. Emergency Short Time Current [6 Mo., 24 Hr., 4Hr., 15 Min. (attach separate table)]
       i. Porcelain
       ii. Polymer
11. Low Voltage Bushings
    a. Manufacturer _____
    b. Type _____
    c. Insulating medium _____
    d. Insulation class (BIL) _____
    e. Maximum guaranteed R.I.V. level _____V
    f. Minimum external creepage distance L-Gnd _____inches
    g. Strike distance _____inches
    h. Permissible safe strength of installed bushing:

i. Vertical downward (Compression) _____lbs.
ii. Cantilever (Shear) _____lbs.
iii. Tensile _____lbs.
iv. Torsion _____lbs.

i. Height above floor required to remove bushing _____inches
j. Will transformer be shipped with bushings installed? _____Y/N
k. Stud connectors proposed _____
l. Emergency Short Time Current [6 Mo., 24 Hr., 4Hr., 15 Min. (attach separate table)]
i. Porcelain
ii. Polymer

12. Neutral Bushing
a. Manufacturer _____
b. Type _____
c. Insulating medium _____
d. Insulation class (BIL) _____kV
e. Maximum guaranteed R.I.V. level _____V
f. Minimum external creepage distance L-Gnd _____inches
g. Strike distance _____inches
h. Permissible safe strength of installed bushing:
i. Vertical downward (Compression) _____lbs.
ii. Cantilever (Shear) _____lbs.
iii. Tensile _____lbs.
iv. Torsion _____lbs.
i. Height above floor required to remove bushing _____inches
j. Will transformer be shipped with bushings installed? _____Y/N
k. Stud connectors proposed _____
l. Emergency Short Time Current [6 Mo., 24 Hr., 4Hr., 15 Min. (attach separate table)]
i. Porcelain
ii. Polymer

13. High Voltage Surge Arresters
a. Manufacturer _____
b. Model _____
c. Class _____
d. Duty Cycle Voltage (rms) _____kV
e. MCOV (rms) _____kV

14. Low Voltage Surge Arresters
a. Manufacturer _____
b. Model _____
c. Class _____
d. Duty Cycle Voltage (rms) _____kV
e. MCOV (rms) _____kV

15. Auxiliary Loads
    a. LTC motor (where applicable)
        i. Horsepower @ 1 or 3 phases _____HP @ _____phase
        ii. Charging time _____seconds
        iii. Starting current at minimum starting voltage _____A @ _____V AC
        iv. Starting current at rated starting voltage _____A @ _____V AC
        v. Voltage range (min. to max.) _____V to _____V AC
    b. Heaters
        i. Number _____
        ii. Location _____
        iii. Voltage _____V AC
        iv. Load _____kW
    c. Maximum operational kVA/kW auxiliary load required per transformer _____kVA
16. High Voltage Current Transformers
    a. Maximum number available per bushing _____
    b. Accuracy class _____
    c. Thermal current rating factor for all taps _____
    d. Ratio(s) _____
17. Low Voltage Current Transformers
    a. Maximum number available per bushing _____
    b. Accuracy class _____
    c. Thermal current rating factor for all taps _____
    d. Ratio(s) _____
18. Neutral Current Transformers
    a. Maximum number available per bushing _____
    b. Accuracy class _____
    c. Thermal current rating factor for all taps _____
    d. Ratio(s) _____
19. Oil
    a. Type of oil preservation system _____
    b. Is vacuum filling required? _____(Y/N)
    c. Oil shipped separately _____gallons
    d. Proposed method of shipping _____
20. Weight
        i. Oil _____lbs.
        ii. Total assembled with oil _____lbs.
        iii. Total shipping _____lbs.
        iv. Heaviest piece _____lbs.
        v. Core and windings untanking _____lbs.
21. Dimensions (*Refer to RFP Section 2.2.BB.)*
    a. Overall height _____inches
    b. Height to top of tank _____inches
    c. Untanking height _____inches

d. Width _____inches
e. Depth _____inches

22. Maintenance Requirements
    a. Number of mechanical operations before overhaul_____
    b. Number of rated short circuits before internal maintenance check_____
    c. Number of rated continuous current interruptions before internal maintenance check_____
23. Miscellaneous Items
    a. Recommended amount of technical supervision provided by manufacturer during equipment installation at substation/site (indicate per order or per transformer) _____hrs.
    b. Cost per day for additional factory service _____$$
24. Exceptions to this Request for Proposals
    a. List any exceptions taken to these specifications and/or inquiry.
    b. Each exception shall reference the appropriate section to this request for proposals where the exception was taken.

Total Bid Amount (Transformer Price): $_____

Lead Time (months): _____

Company: _____

ATTACHMENT A-2: Transformer Specifications

[56] MVA 69/15kV DELTA-ZIGZAG POWER TRANSFORMER SPECIFICATION REQUIREMENTS

VMEU USE ONLY

VINELAND RFP No._____Date_____

1.	Primary Voltage	
	a. Rated nominal system voltage	69 kV, RMS sym
	b. Rated maximum voltage	72.5 kV, RMS sym
2.	Secondary Voltage	
	a. Rated nominal system voltage	13.2 kV, RMS sym
	b. Rated maximum voltage	15 kV, RMS sym
3.	Cooling Class	ONAN/ONAF/ONAF
4.	Rating	
	a. 55°C rise, ONAN/KNAN	30 MVA
	b. 55°C rise, ONAF/KNAF (First Stage)	40 MVA
	c. 55°C rise, ONAF/KNAF (Second Stage)	50 MVA
	d. 65°C rise, ONAN/KNAN	33.6 MVA
	e. 65°C rise, ONAF/KNAN (First Stage)	44.8 MVA
	f. 65°C rise, ONAF/KNAN (Second Stage)	56 MVA
5.	Frequency	60 Hz
6.	Number of Phases	3
7.	Average Winding Temperature Rise	65 °C
8.	Ambient Design Temperature (Avg/Max)	30 / 40 °C
9.	Maximum Winding Hot Spot Temperature Rise	80 °C
10.	Seismic Ground Acceleration	Zone 2
11.	Impedance (H to X)	7.31 %
12.	High Voltage Surge Arresters	
	a. Class	STATION
	b. Duty Cycle Voltage (rms)	72 kV
	c. MCOV (rms)	57 kV
13.	Low Voltage Surge Arresters	
	a. Class	STATION
	b. Duty Cycle Voltage (rms)	15 kV
	c. MCOV (rms)	12.7 kV
14.	High Voltage Current Transformers	
	a. Maximum number available per bushing	3
	b. Accuracy class	C800
	c. Thermal current rating factor for all taps	2.0
	d. Ratio(s)	1200:5
15.	Low Voltage Current Transformers	
	a. Maximum number available per bushing	3

b. Accuracy class C800
c. Thermal current rating factor for all taps 2.0
d. Ratio(s) 2000:5

16. Neutral Current Transformers
    a. Maximum number available per bushing 1
    b. Accuracy class C800
    c. Thermal current rating factor for all taps 2.0
    d. Ratio(s) 1200:5

*Items 12-14 are for protection CT's, manufacturer to specify separate CTs for LTC and ETM.

17. DC Control Voltage 125 V DC
18. Auxiliary Power 120 / 240 V AC
19. Limiting Footprint Dimensions
    a. Height 205 inches
    b. Width 430 inches
    c. Depth 165 inches

FDR 152

POLE No. YE5554

19+58

SEE DETAIL No.1 DWG. 66-15-404

18+30

25'-0"

25'-0"

18'-0"

THESE DUCTS TO BE INSTALLED BY THE CITY OF VINELAND

10'-0"

SEE DETAIL No.2 DWG. 66-15-404

℄ MANHOLE 17+87

FDR 154

SEE DETAIL No.3 DWG. 66-15-404

17+79

POLE No. YE5555

17+47.5 ℄ PROPERTY

A 66-15-403

LINE WIRE 477MCM ALUM.

SHIELD WIRE 3/8"ϕ ALUMAWELD

CYCLONE FENCE 10'-0" HIGH

POLE No. YE5556

17+12

TL 105

SEE DETAIL No.3 DWG. 66-15-404

THESE DUCTS TO BE INSTALLED BY THE CITY OF VINELAND

SEE DETAIL No.2 DWG. 66-15-404

℄ MANHOLE 17+05

B 66-15-404

16+90

PROPERTY LINE

16+65

PROPERTY LINE

G G

P.R.R. R/W

℄ R.R. TRACK

RR R/W

SEE DETAIL No.1 DWG. 66-15-404

15+32

POLE No. YE5557

FDR 151

#4/0

3/8"ϕ ALUMAWELD SHIELD WIRE

ISOLATION SW.

LIGHTNING ARRESTER

15/20/25 MVA TRANSFORMER 69KV/13.2KV

477 MCM ALUM.

ϕ1 ϕ2 ϕ3

2.5KVA STATION SERVICE TRANSFORMER 13.2KV/240-120V

15'-8 1/2"

37'-0"

11'-0" 5'-0" 5'-0" 11'-0" 14'-3"

11'-3"

23'-0 1/2"

2-10' REMOVABLE SECTIONS

GROUNDING NETWORK #4/0 BARE COPPER CABLE BURIED 1'-6" BELOW GRADE

GROUND FOR FENCE POST TO BE #4/0 BARE COPPER CABLE (TYPICAL)

12"

FLEXIBLE GRND. CONNECTION

12' TRUCK GATE

3' MAN GATE

4" CONDUIT

JUNCTION BOX

HAND HOLE

CONTROL BLDG. SEE DWG. 66-15-405

BLDG. GROUND BUS

CONTROL PANEL GROUND

CABLE TRAY GROUND

13.2KV SWGR. GROUND

℄ DUCT EL. 85.42 BOTTOM OF DUCT EL. 84.92

75'-0"

SEE DETAIL No.4 DWG 66-15-404

14'-0"

16'-0"

SPARE

8'-0"

SEE DETAIL No.4 DWG 66-15-404

CONDUIT RISER SIDE VIEW

GROUND LEVEL

SECTION K-K

4"

TO PHILA.

NORTH VINELAND TAP

WEST VINELAND SUBSTATION

JOHN LANE

RT. 47 DELSEA DR.

WEST BLVD.

EAST BLVD.

GENERATING STATION

NEW PEACH ST.

PEACH ST.

CENTRAL R.R. OF N.J.

LANDIS AVE.

CENTRAL SUBSTATION

WEST AVE. EXTENSION

ORCHARD RD.

A.C.E. SHERMAN AVE. SUBSTATION

SHERMAN AVE.

MILLVILLE RD.

KEY PLAN

POLE No. VE855 (EXISTING)

FDR 153

LINE OF PROPOSED EXTENSION OF STREET

1-2" COND. FOR 120V/240V SECONDARY FEEDER FROM VINELAND STA.

1" C. TELEPHONE

H H

83'-0"

POLE No. VE849 (EXISTING)

TL 106

POLE No. VE844 (EXISTING)

22'-0"

PROPERTY LINE

60'-0"

PROPERTY LINE

TOP OF CONCRETE 24" MIN. BELOW GRADE

6" 9" 6"

5" CONCRETE ENVELOPE

#4/0 BARE COPPER GROUND CABLE IN EACH CONDUIT

SECTION 'D-D'
SCALE 1"=1'-0"

1'-9"

6" 9" 6"

CONCRETE ENVELOPE

SECTION 'G-G'
SCALE 1"=1'-0"

1" COND. TELEPHONE

2" COND. 120/240VAC

12"

SECTION 'H-H'
SCALE 1"=1'-0"

3500LB. CONCRETE

SECTION 'J-J'
SCALE 1"=1'-0"

NOTES

1. ——— INDICATES GROUNDING NETWORK
2. —●— INDICATES 5'0" COPPERWELD SECTIONAL GROUND RODS 1"ϕ.
3. —●— INDICATES CADWELDED CONNECTION TO GROUND NETWORK
4. ——— INDICATES UNDERGROUND CONDUIT.
5. ALL UNDERGROUND CONDUIT FOR POWER WIRING SHALL BE PLASTIC CONDUIT.

TRANSFORMER OPTION 2

303/0024

PLAN—WEST VINELAND SUBSTATION
69KV SERVICE FROM A.C.E.

IMPORTANT
THIS DRAWING MUST NOT BE USED FOR CONSTRUCTION PURPOSES UNLESS CERTIFIED.
USE FIGURED DIMENSIONS
DO NOT SCALE

Date Issued for Bids:
Approved for Construction
Date 11/21/67
By KRM

CITY OF VINELAND, N. J.
MUNICIPAL ELECTRIC UTILITY
25,000 KW EXTENSION NO. 10

ALBERT C. WOOD ASSOCIATES
INCORPORATED
CONSULTING ENGINEERS
PHILADELPHIA, PENNSYLVANIA 19103

Sargent & Lundy
PROJ. No. A14230.006

For further information regarding specifics of the feasibility study or design contact,
Jeremy Johnson, PE, PMP
Senior Program Manager
Sargent & Lundy
1-302-399-7050 (mobile)
Jeremy.L.Johnson@sargentlundy.com
www.sargentlundy.com

STATE OF NEW JERSEY ROBERT E. WOOD 7708 LICENSED PROFESSIONAL ENGINEER

DRAWN BY MF SCALE 1/8"=1'-0"
CHECKED BY KRM
APPROVED BY REW PRINT ISSUED

DRAWING NUMBER 66-15-402 D

REVISIONS

	DATE	BY	CHD.	APPR.	
K					
J					
I					
H					
G					
F					
E					
D	1/25/71	E.R.R.			AS BUILT
C	11/16/67	GLH	KRM	REW	RELOCATED HANDHOLE & LOCATION OF DUCT ON POLE VE 855
B	9-26-67	KRM		REW	REVISED PHASING IN STRUCTURE, REVISED UNDERGROUND DUCTS, GROUNDING, RELOCATED HANDHOLES & ADDED SECTION H-H
A	8/9/67	KRM	EJ	REW	ISSUED APPROVED FOR CONSTRUCTION

303/0013

SECTIONS & DETAILS W VINELAND SUBSTATION FILED AS CVEU 1451

TRANSFORMER OPTION 2

IMPORTANT
THIS DRAWING MUST NOT BE USED FOR CONSTRUCTION PURPOSES UNLESS CERTIFIED

USE FIGURED DIMENSIONS DO NOT SCALE

Date Issued for Bids:
Approved for Construction
Date
By

CITY OF VINELAND, N. J.
MUNICIPAL ELECTRIC UTILITY
25,000 KW EXTENSION NO. 10

ALBERT C. WOOD ASSOCIATES
INCORPORATED
CONSULTING ENGINEERS
PHILADELPHIA PENNSYLVANIA 19103

Sargent & Lundy
PROJ. No. A14230.006

For further information regarding specifics of the feasibility study or design contact,
Jeremy Johnson, PE, PMP
Senior Program Manager
Sargent & Lundy
1-302-399-7050 (mobile)
Jeremy.L.Johnson@sargentlundy.com
www.sargentlundy.com

PROFESSIONAL ENGINEER LICENSED 7788

REVISIONS
A — ADDED DIMENSION ABOVE TOP OF TRACK — CITY OF VINELAND ELECTRIC UTILITY
BY BDC

DRAWN BY JF
CHECKED BY
APPROVED BY
SCALE 1/4"=1'-0"
PRINT ISSUED
DRAWING NUMBER 66-15-403-1
CVEU 1451

MICROFILMED

GENERAL ELECTRIC

TITLE NAMEPLATE

FIRST MADE FOR

UNLESS OTHERWISE SPECIFIED USE THE FOLLOWING:— APPLIED PRACTICES | SURFACES ✓ | TOLERANCES ON MACHINED DIMENSIONS: FRACTIONS ± DECIMALS ± ANGLES ±

131C1948

ALBERT C. WOOD ASSOC.
APPROVAL OF SHOP DETAIL
CLIENT 66-15 CITY OF VINELAND, N. J.
PROJECT NEW 69KV SERVICE
☒ APPROVED
☐ APPROVED AS NOTED
☐ REJECTED
APPROVAL DOES NOT ABSOLVE CONTRACTOR FROM RESPONSIBILITY FOR ERRORS, OR INDICATE ACCEPTANCE OF EXTRA WORK.
BY K. R. MURDOCK DATE JUN 30 1967

SKETCH SHOWING LOCATION OF HOLES

STN STL C59F1E2 .032 THK ETCHING FILLED WITH BLACK BAKING ENAMEL

204.00 SQ. IN. AREA

(6) .219 HOLES

12" — 11.38" — 6" — 1.44" — 17" — 16.38"

GENERAL ELECTRIC

TRANSFORMER

NO. F-960926 CLASS OA/FA/FOA THREE- PHASE 60 CYCLES ○

VOLTAGE RATING 69000-13200ZZ/7620
KVA RATING 15000 CONTINUOUS 55 C RISE SELF COOLED
KVA RATING 20000 CONTINUOUS 55 C RISE FORCED AIR
KVA RATING 25000 CONTINUOUS 55 C RISE FORCED OIL
KVA RATING 28000 CONTINUOUS 65 C RISE FORCED OIL
IMPEDANCE VOLTS % 69000-13200ZZ VOLTS AT 15000 KVA

H V WINDING CONNECTIONS

VOLTS	AMP 28000 KVA	DIAL POS
72450	223	1
70725	229	2
69000	234	3
67275	240	4
65550	247	5

BASIC IMPULSE INSULATION LEVELS

ITEM				KV
H_1	H_2	H_3		350
X_0	X_1	X_2	X_3	110

APPROX. WEIGHTS IN POUNDS

TOTAL	131450
UNTANKING	46500
TANK AND FITTINGS	39700
MAIN TANK 10C OIL 4760 GAL.	35400
LTC HSG 10C OIL 430 GAL.	3200
RADIATORS 10C OIL 890 GAL.	6650

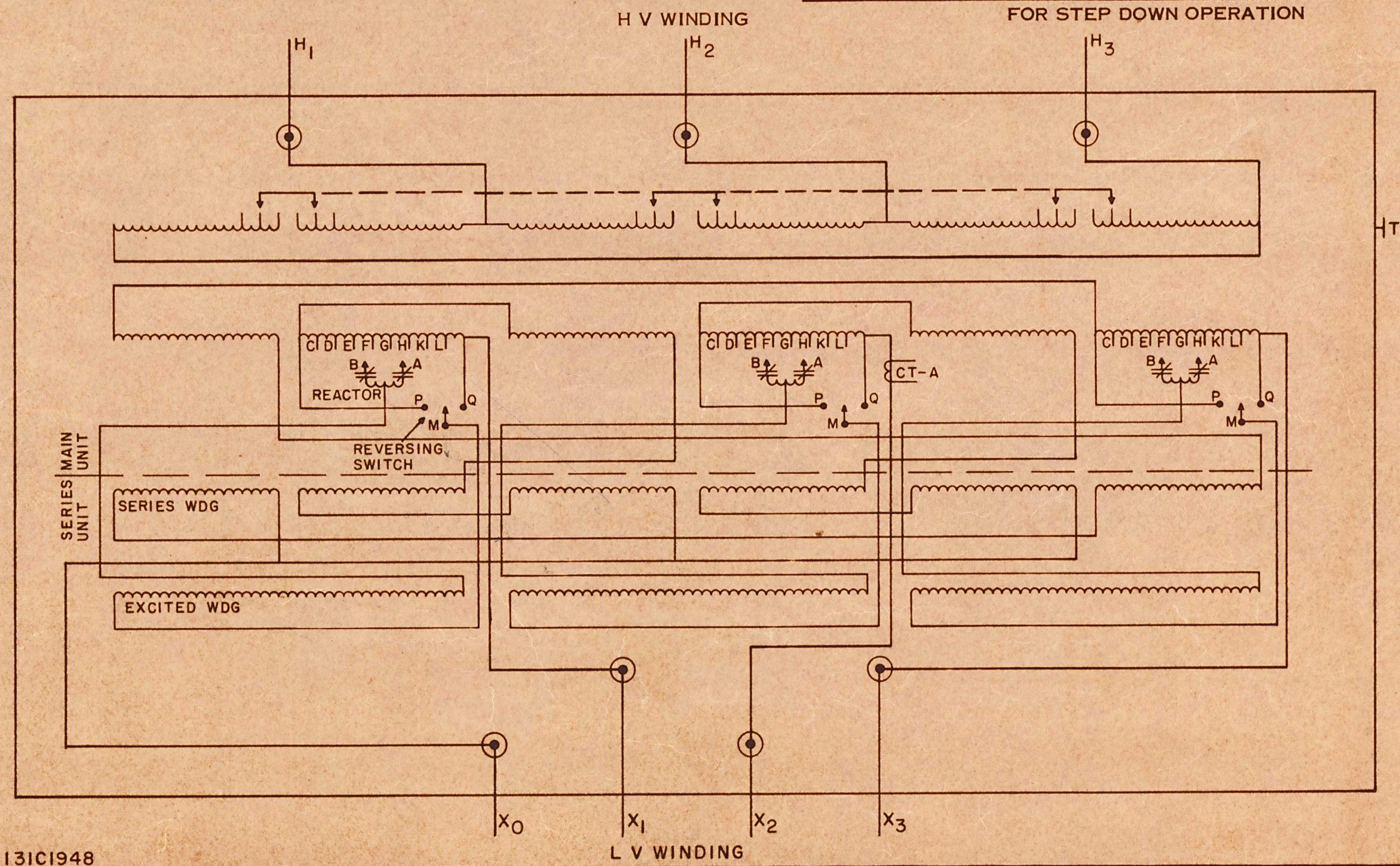
H_1 H_2 H_3 X_1 X_2 X_0 X_3

LIQUID LEVEL CHANGES 1.0 INCH PER 10 C CHANGE IN LIQUID TEMPERATURE.
LIQUID LEVEL BELOW TOP SURFACE OF THE HIGHEST POINT OF HIGHEST MANHOLE FLANGE AT 25 C IS 12.75 INCHES.
MAXIMUM OPERATING PRESSURES OF LIQUID PRESERVATION SYSTEM 7.5 POUNDS POSITIVE TO 5 POUNDS NEGATIVE.
TANK SUITABLE FOR 14.7 POUNDS VACUUM FILLING.
CT-A IS FOR USE WITH WINDING TEMPERATURE EQUIPMENT.

L V WINDING CONNECTIONS

VOLTS L-L	VOLTS L-N	AMP 28000 KVA		MECHANISM DIAL POS	CONNECTS A TO	CONNECTS B TO	REVERSING SWITCH CONNECTS
14520	8382	1115	RAISE	33	L	L	M TO P
14438	8334	1120		32	L	K	
14353	8287	1125		31	K	K	
14273	8239	1135		30	K	H	
14190	8192	1140		29	H	H	
14108	8144	1145		28	H	G	
14025	8096	1155		27	G	G	
13943	8049	1160		26	G	F	
13860	8001	1165		25	F	F	
13778	7953	1175		24	F	E	
13695	7906	1180		23	E	E	
13613	7858	1190		22	E	D	
13530	7811	1195		21	D	D	
13448	7763	1200		20	D	C	
13365	7715	1210		19	C	C	
13283	7668	1215		18	C	M	
13200	7620			17	M	M	
13118	7572		LOWER	16	M	L	M TO Q
13035	7525			15	L	L	
12953	7477			14	L	K	
12870	7430			13	K	K	
12788	7382			12	K	H	
12705	7334			11	H	H	
12623	7287			10	H	G	
12540	7239	1225		9	G	G	
12458	7191			8	G	F	
12375	7144			7	F	F	
12293	7096			6	F	E	
12210	7049			5	E	E	
12128	7001			4	E	D	
12045	6953			3	D	D	
11963	6906			2	D	C	
11880	6858			1	C	C	

FOR STEP DOWN OPERATION



NP 131C1948
CAUTION: BEFORE INSTALLING OR OPERATING READ INSTRUCTIONS GEK-

ROME, GEORGIA MADE IN U. S. A.

REVISIONS | PRINTS TO

303/0070

MADE BY Ruth Hyatt April 20, 1967
ISSUED Ruth Hyatt April 20, 1967
APPROVALS
ROME
DIV OR DEPT
LOCATION 131C1948
NC 65A 960926
WS

FF-809-P (12-62) PRINTED IN U. S. A.

FF-809-P-NC-2

FDR 152
POLE No. VE5554
19+58
18+30
SEE DETAIL No.1 DWG. 66-15-404
25'-0"
18'-0"
THESE DUCTS TO BE INSTALLED BY THE CITY OF VINELAND
SEE DETAIL No.2 DWG. 66-15-404
℄ MANHOLE 17+87
FDR 154
SEE DETAIL No.3 DWG. 66-15-404
17+77
POLE No. VE5555
17+47.5
PROPERTY
LINE WIRE 477MCM ALUM.
SHIELD WIRE 3/8"Ø ALUMAWELD
CYCLONE FENCE 10'-0" HIGH
POLE No. VE5556
TL 105
℄ MANHOLE 17+05
SEE DETAIL No.2 DWG. 66-15-404
THESE DUCTS TO BE INSTALLED BY THE CITY OF VINELAND
16+90
16+65
PROPERTY LINE
R.R. TRACK
R.R. R/W
SEE DETAIL No.1 DWG. 66-15-404
15+32
POLE No. VE5557
FDR 151
RIP-RAP OR CONCRETE SPLASH BASIN
40'X17', 4'-0" DEEP (MAXIMUM) CONCRETE BASIN, CONTAINING 20'X10' PEDESTAL FOR TRANSFORMER SUPPORT, AND RAILS FOR MOVING TRANSFORMER.
FLEXIBLE GRND. CONNECTION
12' TRUCK GATE
3' MAN GATE
INSPECTION CAN W/LID,SUMP PUMP W/OIL/WATER SEPERATOR
3/8"Ø ALUMAWELD SHIELD WIRE
ISOLATION SW.
LIGHTNING ARRESTER
15/20/25 MVA TRANSFORMER 69KV/13.2KV
477MCM ALUM.
25KVA STATION SERVICE TRANSFORMER 13.8KV/240-120V
GROUNDING NETWORK #4/0 BARE COPPER CABLE BURIED 1'-6" BELOW GRADE
2-10' REMOVABLE SECTIONS
GROUND FOR FENCE POST TO BE #4/0 BARE COPPER CABLE (TYPICAL)
JUNCTION BOX
CONTROL BLDG. SEE DWG. 66-15-405
HAND HOLE
℄ DUCT EL. 85.42 BOTTOM OF DUCT EL. 84.92
SEE DETAIL No.4 DWG. 66-15-404
CONDUIT RISER SIDE VIEW
GROUND LEVEL
SECTION K-K
75'-0"
POLE No. VE855 (EXISTING)
FDR 153
1-2" COND. FOR 120V/240V SECONDARY FEEDER FROM VINELAND STS.
1" C. TELEPHONE
LINE OF PROPOSED EXTENSION OF STREET
PROPERTY LINE
83'-0"
POLE No. VE849 (EXISTING)
TL 106
POLE No. VE844 (EXISTING)
22'-0"
60'-0"
N
KEY PLAN
TO PHILA.
NORTH VINELAND TAP
WEST VINELAND SUBSTATION
GENERATING STATION
CENTRAL SUBSTATION
A.C.E. SHERMAN AVE. SUBSTATION
SHERMAN AVE.
LANDIS AVE.
TOP OF CONCRETE 24" MIN. BELOW GRADE
CONCRETE ENVELOPE
#4/0 BARE COPPER GROUND CABLE IN EACH CONDUIT
SECTION 'D-D' SCALE 1"=1'-0"
SECTION 'G-G' SCALE 1"=1'-0"
1" COND. TELEPHONE
2" COND. 120/240VAC
SECTION 'H-H' SCALE 1"=1'-0"
3500LB. CONCRETE
SECTION 'J-J' SCALE 1"=1'-0"
NOTES
1. INDICATES GROUNDING NETWORK
2. INDICATES 30" COPPERWELD SECTIONAL GROUND RODS 1"Ø.
3. INDICATES CADWELDED CONNECTION TO GROUND NETWORK
4. INDICATES UNDERGROUND CONDUIT.
5. ALL UNDERGROUND CONDUIT FOR POWER WIRING SHALL BE PLASTIC CONDUIT.
TRANSFORMER OPTION 2
303/0024
PLAN—WEST VINELAND SUBSTATION 69KV SERVICE FROM A.C.E.
IMPORTANT
THIS DRAWING MUST NOT BE USED FOR CONSTRUCTION PURPOSES UNLESS CERTIFIED.
USE FIGURED DIMENSIONS DO NOT SCALE
CITY OF VINELAND, N. J.
MUNICIPAL ELECTRIC UTILITY
25,000 KW EXTENSION NO. 10
ALBERT C. WOOD ASSOCIATES INCORPORATED CONSULTING ENGINEERS PHILADELPHIA, PENNSYLVANIA 19103
For further information regarding specifics of the feasibility study or design contact, Jeremy Johnson, PE, PMP Senior Program Manager Sargent & Lundy 1-302-399-7050 (mobile) Jeremy.L.Johnson@sargentlundy.com www.sargentlundy.com
PROJ. No. A14230.006
STATE OF NEW JERSEY LICENSED PROFESSIONAL ENGINEER 7768
D AS BUILT
C RELOCATED HANDHOLE & LOCATION OF DUCT ON POLE VE 855
B REVISED PHASING IN STRUCTURE, REVISED UNDERGROUND DUCTS, & GROUNDING, RELOCATED HANDHOLES & ADDED SECTION H-H
A ISSUED APPROVED FOR CONSTRUCTION
REVISIONS
SCALE 1/8"=1'-0"
DRAWING NUMBER 66-15-402 D