

**AGREEMENT FOR DELIVERY, INSTALLATION, AND TESTING OF AUTOTRANSFORMERS**

THIS AGREEMENT FOR DELIVERY, INSTALLATION, AND TESTING OF AUTOTRANSFORMERS ("Agreement") is entered into by and between the **CITY OF OCALA**, a Florida municipal corporation ("City"), and **PTI TRANSFORMERS LP**, a foreign for-profit limited partnership duly organized in Manitoba, Canada and authorized to do business in the state of Florida (BN: 734422314) ("Contractor").

**RECITALS:**

**WHEREAS**, on April 13, 2023, City issued an Invitation to Bid ("ITB") for the delivery, installation, and testing of two (2) autotransformers for the City, ITB No.: ELE/230196 (the "Solicitation"); and

**WHEREAS**, two (2) firms responded to the Solicitation and, after consideration of price and other evaluation factors set forth in the Solicitation, PTI Transformers, LP was chosen as the intended awardee on the delivery, installation, and testing of two (2) autotransformers for the City (the "Project"); and

**WHEREAS**, Contractor certifies that Contractor and its subcontractors are qualified and possess the required licensure and skill to perform the work required for the Project.

**NOW THEREFORE**, in consideration of the foregoing recitals, the following mutual covenants and conditions, and other good and valuable consideration, City and Contractor agree as follows:

**TERMS OF AGREEMENT:**

1. **RECITALS.** City and Contractor hereby represent, warrant, and agree that the Recitals set forth above are true and correct and are incorporated herein by reference.
2. **CONTRACT DOCUMENTS.** The Contract Documents which comprise the entire understanding between City and Contractor shall only include: (a) this Agreement; (b) those documents listed in this section as Exhibits to this Agreement; (c) the City's Solicitation for the Project and the bid submitted by Contractor in response to same (the "Solicitation Documents"); and (d) those documents identified in the Project Specifications section of this Agreement. Each of these documents are incorporated herein by reference for all purposes.

If there is a conflict between the terms of this Agreement and the Contract Documents, then the terms of this Agreement shall control, amend, and supersede any conflicting terms contained in the remaining Contract Documents.

A. **Exhibits to Agreement:** The Exhibits to this Agreement are as follows:

- |            |                                                             |
|------------|-------------------------------------------------------------|
| Exhibit A: | Scope of Work (A-1 through A-3)                             |
| Exhibit B: | General Requirements (B-1 through B-23)                     |
| Exhibit C: | Technical Specifications (C-1 through C-30)                 |
| Exhibit D: | Proposed Ratings and Guaranteed Losses (D-1 through D-4)    |
| Exhibit E: | Proposed Delivery Date and Subcontractors (E-1 through E-2) |
| Exhibit F: | Autotransformer Loss Evaluation (F-1)                       |
| Exhibit G: | PTI Proposal (G-1 through G-109)                            |
| Exhibit H: | Letter of Confirmation (H-1)                                |
| Exhibit I: | Price Proposal (I-1 through I-2)                            |

If there is a conflict between the individual Exhibits regarding the scope of work to be performed, then any identified inconsistency shall be resolved by giving precedence in the following order: (1) Exhibit A, then (2) Exhibit B, then (3) Exhibit C, then (4) Exhibit D, then (5) Exhibit E, then (6) Exhibit F, then (7) Exhibit G, then (8) Exhibit H, then (9) Exhibit I.

3. **SCOPE OF SERVICES.** Contractor shall provide all materials, labor, supervision, tools, accessories, equipment, permits, fees, testing, inspections, certifications, and all other things necessary for Contractor to perform its obligations under this Agreement as set forth in the attached **Exhibit A - Scope of Work** and the Solicitation Documents. In the event of a conflict between this Agreement and the Solicitation Documents, this Agreement and all of its Exhibits shall be given precedence to resolve any identified inconsistency. The Scope of Work under this Agreement may only be adjusted by written amendment executed by both parties.
4. **COMPENSATION.** City shall pay Contractor a maximum limiting amount not to exceed **EIGHT MILLION, SEVENTY THOUSAND, THREE HUNDRED FORTY AND NO/100 DOLLARS (\$8,070,340)** (the "Contract Sum") over the entire contract term as full and complete compensation for the timely and satisfactory completion of the work in compliance with the Contract Documents, as follows:
  - A. **Invoice Submission.** All invoices submitted by Contractor shall include the City Contract Number, an assigned Invoice Number, and an Invoice Date. City will provide Contractor with an invoice cover sheet. Invoice cover sheets are required to be accurately completed and submitted with each invoice. Contractor shall submit the original invoice, no more than once monthly, through the responsible City Project Manager at: **Ocala Electric Utility**, Attn: **Lisa Crouthamel**, Address: **1805 NE 30<sup>th</sup> Avenue, Bldg. 400, Ocala, Florida 34470**, E-Mail: [lcrouthamel@ocalafl.gov](mailto:lcrouthamel@ocalafl.gov).
  - B. **Payment of Invoices by City.** The City Project Manager shall review and approve all invoices prior to payment. City Project Manager's approval shall not be unreasonably withheld, conditioned, or delayed. Payments by City shall be made no later than the time periods established in section 218.735, Florida Statutes.
  - C. **Retainage.** City shall withhold an amount equal to **TEN PERCENT (10%)** of amount due as retainage to secure Contractor's full and faithful performance of its obligations under this Agreement (the "Retainage"). Contractor shall not be entitled to any interest received by City on Retainage. The Retainage shall be payable to Contractor, subject to the provisions of this subsection, upon satisfaction of the following conditions precedent: (1) confirmation from the City Project Manager that Contractor has satisfactorily completed all work in accordance with the provisions of the Agreement; and (2) receipt of the Consent of Surety of the recorded bond for final payment.
  - D. **Withholding of Payment.** City reserves the right to withhold, in whole or in part, payment for any and all work that: (i) has not been completed by Contractor; (ii) is inadequate or defective and has not been remedied or resolved in a manner satisfactory to the City Project Manager; or (iii) which fails to comply with any term, condition, or other requirement under this Agreement. Any payment withheld shall be released and remitted to Contractor within **THIRTY (30)** calendar days of the Contractor's remedy or resolution of the inadequacy or defect.
  - E. **Excess Funds.** If due to mistake or any other reason Contractor receives payment under this Agreement in excess of what is provided for by the Agreement, Contractor shall promptly notify City upon discovery of the receipt of the overpayment. Any overpayment shall be refunded to City within **THIRTY (30)** days of Contractor's receipt of the overpayment or must also include interest calculated from the date of the overpayment at the interest rate for judgments at the highest rate as allowed by law.
  - F. **Amounts Due to the City.** Contractor must be current and remain current in all obligations due to the City during the performance of services under this Agreement. Payments to

Contractor may be offset by any delinquent amounts due to the City or fees and/or charges owed to the City.

- G. **Tax Exemption.** City is exempt from all federal excise and state sales taxes (State of Florida Consumer's Certification of Exemption 85-8012621655C-9). The City's Employer Identification Number is 59-60000392. Contractor shall not be exempted from paying sales tax to its suppliers for materials to fulfill contractual obligations with the City, nor will Contractor be authorized to use City's Tax Exemption Number for securing materials listed herein.
5. **TIME FOR PERFORMANCE.** Time is of the essence with respect to the performance of all duties, obligations, and responsibilities set forth in this Agreement and the Contract Documents.
  - A. **Transformer #1.** Contractor shall deliver and install **ONE (1)** 105/140/175 MVA Autotransformer at the **Dearmin Substation** site, located at 2779 SE 36<sup>th</sup> Avenue, Ocala, Florida 34471 no later than **FEBRUARY 17, 2025**. Contractor is required to provide **THIRTY (30)** days' notice prior to delivery.
  - B. **Transformer #2.** Contractor shall deliver and install **ONE (1)** 105/140/175 MVA Autotransformer at the **Dearmin Substation** site, located at 2779 SE 36<sup>th</sup> Avenue, Ocala, Florida 34471 no later than **FOUR (4) WEEKS AFTER THE DELIVERY AND INSTALLATION OF TRANSFORMER #1**. Contractor is required to provide **THIRTY (30)** days' notice prior to delivery.
  - C. **Spare Parts.** Contractor shall deliver **ONE (1)** lot of Spare Parts for 105/140/175 MVA Autotransformers to the **City of Ocala Electric Utility Warehouse**, located at 1805 NE 30<sup>th</sup> Avenue, Building #700 Ocala, Florida 34470 no later than **FEBRUARY 17, 2025**. Contractor is required to provide **THIRTY (30)** days' notice prior to delivery.
  - D. The Time for Performance under this Agreement may only be adjusted by Change Order, in the sole and absolute discretion of City. Any request for an extension of the Time for Performance must be submitted in a writing delivered to the City Project Manager, along with all supporting data. All requests for adjustments in the Contract Time shall be determined by City.
  - E. As to any delay, inefficiency, or interference in this performance of this Agreement caused by any act or failure to act by City, the Contractor's sole remedy shall be the entitlement of an extension of time to complete the performance of the affected work in accordance with the Contract Documents. Contractor agrees to make no claim for extra or additional costs attributable to said delays, inefficiencies, or interference, except as provided in this Agreement.
  - F. None of the provisions of this section shall exclude City's right of recovery for damages caused by delays or inefficiencies caused by any act or failure to act by Contractor, to include costs incurred by City for the procurement of additional professional services.
6. **LIQUIDATED DAMAGES FOR LATE COMPLETION.** The parties agree that it would be extremely difficult and impracticable under the presently known facts and anticipated circumstances to ascertain and fix the actual damages that City and its residents would incur should Contractor fail to achieve Substantial Completion and/or Final Completion and readiness for final payment by the dates specified for each under the terms of this Agreement. Accordingly, the parties agree that should Contractor fail to achieve Substantial Completion by the date specified, then Contractor shall pay City, as liquidated damages and not as a penalty, the sum of **ONE THOUSAND, SEVEN HUNDRED FORTY-TWO AND NO/100 DOLLARS (\$1,742)** per day for each calendar day of unexcused delay in achieving Substantial Completion beyond the date specified for Substantial Completion in the Contract Documents. After Substantial Completion, if

Contractor shall neglect, refuse, or fail to complete the remaining work within the time specified in the Contract Documents for Final Completion and readiness for final payment or any proper extension thereof granted by City, Contractor shall pay City, as liquidated damages and not as a penalty, additional sum of **ONE THOUSAND, SEVEN HUNDRED FORTY-TWO AND NO/100 DOLLARS (\$1,742)** per day for each calendar day of unexcused delay in achieving completion and readiness for final payment.

- A. **No Waiver of Rights or Liabilities.** Permitting Contractor to continue and finish the work, or any part thereof, beyond the dates specified for Substantial Completion and/or Final Completion and readiness for final payment shall not operate as a waiver on the part of the City of any of its rights under this Agreement. Any liquidated damages assessed pursuant to this section shall not relieve Contractor from liability for any damages or costs of other contractors caused by a failure of Contractor to complete the work as agreed.
  - B. **Right to Withhold or Deduct Damages.** When liquidated damages are due and owing, City shall have the right to: (1) deduct the liquidated damages from any money in its hands or from any money otherwise due or to become due to Contractor; or to (2) initiate any applicable dispute resolution procedure for the recovery of liquidated damages within the times specified under this Agreement.
  - C. **Non-Cumulative.** The parties agree and understand that the amounts set forth under this section for liquidated damages are not cumulative with one another. The amount set forth as liquidated damages for Contractor's failure to achieve Substantial Completion shall be assessed upon default and continue until Substantial Completion is attained. The amount set forth as liquidated damages for Contractor's failure to achieve Final Completion and readiness for payment shall be assessed after Substantial Completion is attained and apply until Final Completion is attained.
  - D. **Additional Costs.** In addition to the liquidated damages set forth under this section, Contractor agrees to pay all costs and expenses incurred by City due to Contractor's delay in performance to include inspection fees, superintendence costs, and travel expenses.
  - E. **Injunctive Relief.** The parties acknowledge that monetary damages may not be a sufficient remedy for Contractor's failure to achieve Substantial Completion or Final Completion in accordance with the terms of this Agreement, and that City shall be entitled, in addition to all other rights or remedies in law and equity, to seek injunctive relief.
7. **FORCE MAJEURE.** Neither party shall be liable for delay, damage, or failure in the performance of any obligation under this Agreement if such delay, damage, or failure is due to causes beyond its reasonable control, including without limitation: fire, flood, strikes and labor disputes, acts of war, acts of nature, terrorism, civil unrest, acts or delays in acting of the government of the United States or the several states, judicial orders, decrees or restrictions, or any other like reason which is beyond the control of the respective party ("Force Majeure"). The party affected by any event of force majeure shall use reasonable efforts to remedy, remove, or mitigate such event and the effects thereof with all reasonable dispatch.
- A. The party affected by force majeure shall provide the other party with full particulars thereof including, but not limited to, the nature, details, and expected duration thereof as soon as it becomes aware.
  - B. When force majeure circumstances arise, the parties shall negotiate in good faith any modifications of the terms of this Agreement that may be necessary or appropriate in order to arrive at an equitable solution. Contractor performance shall be extended for a number of days equal to the duration of the force majeure. Contractor shall be entitled to an extension

of time only and, in no event, shall Contractor be entitled to any increased costs, additional compensation, or damages of any type resulting from such force majeure delays.

8. **INSPECTION AND ACCEPTANCE OF THE WORK.** Contractor shall report its progress to the City Project Manager as set forth herein. All services, work, and materials provided by Contractor under this Agreement shall be provided to the satisfaction and approval of the Project Manager.
  - A. The Project Manager shall decide all questions regarding the quality, acceptability, and/or fitness of materials furnished, or workmanship performed, the rate of progress of the work, the interpretation of the plans and specifications, and the acceptable fulfillment of the Agreement, in his or her sole discretion, based upon both the requirements set forth by City and the information provided by Contractor in its Proposal. The authority vested in the Project Manager pursuant to this paragraph shall be confined to the direction or specification of what is to be performed under this Agreement and shall not extend to the actual execution of the work.
  - B. Neither the Project Manager's review of Contractor's work nor recommendations made by Project Manager pursuant to this Agreement will impose on Project Manager any responsibility to supervise, direct, or control Contractor's work in progress or for the means, methods, techniques, sequences, or procedures of construction or safety precautions or programs incident Contractor's furnishing and performing the work.
9. **TERMINATION AND DEFAULT.** Either party, upon determination that the other party has failed or refused to perform or is otherwise in breach of any obligation or provision under this Agreement or the Contract Document, may give written notice of default to the defaulting party in the manner specified for the giving of notices herein. Termination of this Agreement by either party for any reason shall have no effect upon the rights or duties accruing to the parties prior to termination.
  - A. **Termination by City for Cause.** City shall have the right to terminate this Agreement immediately, in whole or in part, upon the failure of Contractor to carry out any obligation, term, or condition of this Agreement. City's election to terminate the Agreement for default shall be communicated by providing Contractor written notice of termination in the manner specified for the giving of notices herein. Any notice of termination given to Contractor by City shall be effective immediately, unless otherwise provided therein, upon the occurrence of any one or more of the following events:
    - (1) Contractor fails to timely and properly perform any of the services set forth in the specifications of the Agreement;
    - (2) Contractor provides material that does not meet the specifications of the Agreement;
    - (3) Contractor fails to complete the work required within the time stipulated in the Agreement; or
    - (4) Contractor fails to make progress in the performance of the Agreement and/or gives City reason to believe that Contractor cannot or will not perform to the requirements of the Agreement.
  - B. **Contractor's Opportunity to Cure Default.** City may, in its sole discretion, provide Contractor with an opportunity to cure the violations set forth in City's notice of default to Contractor. Contractor shall commence to cure the violations immediately and shall diligently and continuously prosecute such cure to completion within a reasonable time as determined by City. If the violations are not corrected within the time determined to be reasonable by City or to the reasonable satisfaction of City, City may, without further notice, declare

- Contractor to be in breach of this Agreement and pursue all remedies available at law or equity, to include termination of this Agreement without further notice.
- C. **City's Remedies Upon Contractor Default.** In the event that Contractor fails to cure any default under this Agreement within the time period specified in this section, City may pursue any remedies available at law or equity, including, without limitation, the following:
- (1) City shall be entitled to terminate this Agreement without further notice;
  - (2) City shall be entitled to hire another contractor to complete the required work in accordance with the needs of City;
  - (3) City shall be entitled to recover from Contractor all damages, costs, and attorney's fees arising from Contractor's default prior to termination; and
  - (4) City shall be entitled to recovery from Contractor any actual excess costs by: (i) deduction from any unpaid balances owed to Contractor; or (ii) placing a claim against the public construction bond; or (iii) any other remedy as provided by law.
- D. **Termination for Convenience.** City reserves the right to terminate this Agreement in whole or in part at any time for the convenience of City without penalty or recourse. The Project Manager shall provide written notice of the termination. Upon receipt of the notice, Contractor shall immediately discontinue all work as directed in the notice, notify all subcontractors of the effective date of the termination, and minimize all further costs to City including, but not limited to, the placing of any and all orders for materials, facilities, or supplies, in connection with its performance under this Agreement. Contractor shall be entitled to receive compensation solely for: (1) the actual cost of the work completed in conformity with this Agreement; and/or (2) such other costs incurred by Contractor as permitted under this Agreement and approved by City.
10. **WARRANTY.** Contractor warrants that all labor, materials, and equipment furnished under the agreement are new, of the type and quality required for the Project, and installed in a good and workmanlike manner in accordance with the Contract Documents. Contractor shall guarantee that the work shall be free from any defects in workmanship for a period of not less than **FIVE (5)** years from the date of Final Completion for each project. Contractor shall guarantee that the materials provided shall be free from any defects for the longer of: (1) **FIVE (5)** years from the date of Final Completion for each project; or (2) the period of warranty provided by any supplier or manufacturer. All written manufacturers' warranties for materials supplied must be provided to the City Project Manager before final payment will be authorized.
- A. **Extended Warranty Option.** When purchased, warranty may be extended by the period specified covering core and coils only against failure occurring with respect to normal operation and within the parameters for which the transformer was designed.
- B. **In/Out Coverage.** Contractor agrees to cover all expenses incurred to transport transformers to a repair facility and back to their respective sites for warranty failures occurring within **ONE (1)** year from the date of first energization including, but not limited to, any expenses related to the disconnection, crating, loading, unloading, and shipping of the transformers.
11. **DELAYS AND DAMAGES.** The Contractor agrees to make no claim for extra or additional costs attributable to any delays, inefficiencies, or interference in the performance of this contract occasioned by any act or omission to act by the City except as provided in the Agreement. The Contractor also agrees that any such delay, inefficiency, or interference shall be compensated for solely by an extension of time to complete the performance of the work in accordance with the provision in the standard specification.

12. **PERFORMANCE AND PAYMENT BOND.** Contractor shall furnish a certified and recorded Performance and Payment Bond in the amount of **EIGHT MILLION, SEVENTY THOUSAND, THREE HUNDRED FORTY AND NO/100 DOLLARS (\$8,070,340)** as security for the faithful performance of the work as required and set forth in Exhibit A – Scope of Work within the time set forth for performance under this Agreement and for prompt payments to all persons defined in section 713.01, Florida Statutes, who furnish labor, services, or materials for the completion of the work provided for herein.
13. **PERFORMANCE EVALUATION.** At the end of the contract, City may evaluate Contractor's performance. Any such evaluation will become public record.
14. **NOTICE REGARDING FAILURE TO FULFILL AGREEMENT.** Any contractor who enters into an Agreement with the City of Ocala and fails to complete the contract term, for any reason, shall be subject to future bidding suspension for a period of **ONE (1)** year and bid debarment for a period of up to **THREE (3)** years for serious contract failures.
15. **CONTRACTOR REPRESENTATIONS.** Contractor expressly represents that:
  - A. Contractor has read and is fully familiar with all the terms and conditions of this Agreement, the Contract Documents, and other related data and acknowledges that they are sufficient in scope and detail to indicate and convey understanding of all terms and conditions of the work to be performed by Contractor under this Agreement.
  - B. Contractor has disclosed, in writing, all known conflicts, errors, inconsistencies, discrepancies, or omissions discovered by Contractor in the Contract Documents, and that the City's written resolution of same is acceptable to Contractor.
  - C. Contractor has had an opportunity to visit, has visited, or has had an opportunity to examine and ask questions regarding the sites upon which the work is to be performed and is satisfied with the site conditions that may affect cost, progress, and performance of the work, as observable or determinable by Contractor's own investigation.
  - D. Contractor is satisfied with the site conditions that may affect cost, progress, and performance of the work, as observable or determinable by Contractor's own investigation.
  - E. Contractor is familiar with all local, state, and Federal laws, regulations, and ordinances which may affect cost, progress, or its performance under this Agreement whatsoever.
  - F. **Public Entity Crimes.** Neither Contractor, its parent corporations, subsidiaries, members, shareholders, partners, officers, directors, or executives, nor any of its affiliates, contractors, suppliers, subcontractors, or consultants under this Agreement have been placed on the convicted vendor list following a conviction of a public entity crime. Contractor understands that a "public entity crime" as defined in section 287.133(1)(g), Florida Statutes, is "a violation of any state or federal law by a person with respect to and directly related to the transaction of business with any public entity or with an agency or political subdivision of any other state or with the United States..." Contractor further understands that any person or affiliate who has been placed on the convicted vendor list following a conviction for a public entity crime: (1) may not submit a bid, proposal, or reply on a contract: (a) to provide any goods or services to a public entity; (b) for the construction or repair of a public building or public work; or (c) for leases of real property to a public entity; (2) may not be awarded or perform work as a contractor, supplier, subcontractor, or consultant under a contract with any public entity; and (3) may not transact business with any public entity in excess of the threshold amount provided in section 287.017, Florida Statutes, for CATEGORY TWO for a period of 36 months from the date of being placed on the convicted vendor list.

16. **CONTRACTOR RESPONSIBILITIES.** Except as otherwise specifically provided for in this Agreement, the following provisions are the responsibility of the Contractor:
  - A. Contractor shall competently and efficiently supervise, inspect, and direct all work to be performed under this Agreement, devoting such attention thereto and applying such skills and expertise as may be necessary to perform the work in accordance with the Contract Documents.
  - B. Contractor shall be solely responsible for the means, methods, techniques, sequences, or procedures of construction and safety precautions or programs incident thereto.
  - C. Contractor shall be responsible to see that the finished work complies accurately with the contract and the intent thereof.
  - D. Contractor shall comply with all local, state, and Federal laws, regulations, and ordinances which may affect cost, progress, or its performance under this Agreement, to include obtaining all permits, licenses, and other authorizations necessary for the prosecution of the work and be responsible for all costs associated with same.
  - E. Contractor shall operate and cause all construction equipment and materials supplied for or intended to be utilized in the Project to be operated and stored in only those areas prescribed by City. This includes the operations of workmen.
  - F. Contractor shall be fully responsible for receipt, inspection, acceptance, handling, and storage of all construction equipment and materials supplied for or intended to be utilized in the Project, whether furnished by Contractor or City. Contractor shall be responsible for providing adequate safeguards to prevent loss, theft, damage, or commingling with other materials or projects.
  - G. Contractor shall continue its performance under this Agreement during the pendency of any dispute or disagreement arising out of or relating to this Agreement, except as Contractor and City may otherwise agree in writing.
17. **NO EXCLUSIVITY.** It is expressly understood and agreed by the parties that this is not an exclusive agreement. Nothing in this Agreement shall be construed as creating any exclusive arrangement with Contractor or as prohibit City from either acquiring similar, equal, or like goods and/or services or from executing additional contracts with other entities or sources.
18. **RIGHT OF ACCESS AND OTHER WORK PERFORMED BY THIRD PARTIES.** City may perform additional work related to the Project itself, or have additional work performed by utility service companies, or let other direct contracts therefore which shall contain General Conditions similar to these. Contractor shall afford the utility service companies and the other contractors who are parties to such direct contracts (or City if City is performing the additional work with City's employees) reasonable opportunity for the introduction and storage of materials and equipment and the execution of work and shall properly connect and coordinate his work with theirs.
  - A. If any part of Contractor's work depends for proper execution or results upon the work of any such other contractor or utility service company (or City), Contractor shall inspect and promptly report to City in writing any latent or apparent defects or deficiencies in such work that render it unsuitable for such proper execution and results. Contractor's failure to so report shall constitute an acceptance of the other work as fit and proper for integration with Contractor's work except for latent or non-apparent defects and deficiencies in the other work.
  - B. Contractor shall do all cutting, fitting, and patching of work that may be required to make the parts come together properly and integrate with such other work. Contractor shall not

endanger any work of others by cutting, excavating, or otherwise altering their work, and will only cut or alter their work with the written consent of City.

19. **STORAGE OF MATERIALS/EQUIPMENT.** Contractor shall be fully responsible for receipt, inspection, acceptance, handling, and storage of equipment and materials (whether furnished by Contractor or City) to be utilized in the performance of or incorporated into the work.
20. **RESPONSIBILITIES OF CITY.** City or its representative shall issue all communications to Contractor. City has the authority to request changes in the work in accordance with the terms of this Agreement and with the terms in **Exhibit A – Scope of Work**. City has the authority to stop work or to suspend any work.
21. **COMMERCIAL AUTO LIABILITY INSURANCE.** Contractor shall procure, maintain, and keep in full force, effect, and good standing for the life of this Agreement a policy of commercial auto liability insurance with a minimum combined single limit of One Million Dollars (\$1,000,000) per occurrence for bodily injury and property damage arising out of Contractor's operations and covering all owned, hired, scheduled, and non-owned automobiles utilized in said operations. If Contractor does not own vehicles, Contractor shall maintain coverage for hired and non-owned automobile liability, which may be satisfied by way of endorsement to Contractor's Commercial General Liability policy or separate Commercial Automobile Liability policy.
22. **COMMERCIAL GENERAL LIABILITY INSURANCE.** Contractor shall procure, maintain, and keep in full force, effect, and good standing for the life of this Agreement a policy of commercial general liability insurance with limits not less than:
  - A. One Million Dollars (\$1,000,000) per occurrence and Two Million Dollars (\$2,000,000) aggregate (or project aggregate, if a construction project) for bodily injury, property damage, and personal and advertising injury; and
  - B. One Million Dollars (\$1,000,000) per occurrence and Two Million Dollars (\$2,000,000) aggregate (or project aggregate, if a construction project) for products and completed operations.
  - C. Policy must include coverage for contractual liability and independent contractors.
  - D. The City, a Florida municipal corporation, and its officials, employees, and volunteers are to be covered as additional insureds with a CG 20 26 04 13 Additional Insured – Designated Person or Organization Endorsement or similar endorsement providing equal or broader Additional Insured Coverage with respect to liabilities arising out of activities performed by or on behalf of Contractor. This coverage shall contain no special limitation on the scope of protection to be afforded to the City, its officials, employees, and volunteers.
23. **WORKERS' COMPENSATION AND EMPLOYER'S LIABILITY.** Contractor shall procure, maintain, and keep in full force, effect, and good standing for the life of this Agreement adequate workers' compensation and employer's liability insurance covering all of its employees in at least such amounts as required by Chapter 440, Florida Statutes, and all other state and federal workers' compensation laws, including the U.S. Longshore Harbor Workers' Act and the Jones Act, if applicable. Contractor shall similarly require any and all of its subcontractors to afford such coverage for all of its employees as required by applicable law. Contractor shall waive and shall ensure that Contractor's insurance carrier waives, all subrogation rights against the City of Ocala and its officers, employees, and volunteers for all losses or damages. Contractor's policy shall be endorsed with WC 00 03 13 Waiver of our Right to Recover from Others or its equivalent. **Exceptions and exemptions to this Section may be allowed at the discretion of the City's**

**Risk Manager on a case-by-case basis in accordance with Florida Statutes and shall be evidenced by a separate waiver.**

24. **INSTALLATION FLOATER INSURANCE.** Installation Floater insurance shall be provided by the Contractor to cover damages or destruction to equipment being installed or otherwise being handled or stored by the Contractor. The amount of coverage shall be adequate to provide total replacement value of the equipment, otherwise being handled or stored on or off premises or in transit. All risk coverage shall be provided either in a single policy or in a combination of underlying and umbrella on excess policies.

A. Unless waived in writing by the City, Contractor shall maintain the Installation Floater insurance in force and effect until final payment is made by City. The Installation Floater insurance shall not be cancelled or materially altered without at least **THIRTY (30)** days written notice to City and each other additional named insured.

25. **MISCELLANEOUS INSURANCE PROVISIONS.**

A. Contractor's insurance coverage shall be primary insurance for all applicable policies. The limits of coverage under each policy maintained by Contractor shall not be interpreted as limiting Contractor's liability or obligations under this Agreement. City does not in any way represent that these types or amounts of insurance are sufficient or adequate enough to protect Contractor's interests or liabilities or to protect Contractor from claims that may arise out of or result from the negligent acts, errors, or omissions of Contractor, any of its agents or subcontractors, or for anyone whose negligent act(s) Contractor may be liable.

B. No insurance shall be provided by the City for Contractor under this Agreement and Contractor shall be fully and solely responsible for any costs or expenses incurred as a result of a coverage deductible, co-insurance penalty, or self-insured retention to include any loss not covered because of the operation of such deductible, co-insurance penalty, self-insured retention, or coverage exclusion or limitation.

C. Certificates of Insurance. No work shall be commenced by Contractor under this Agreement until the required Certificate of Insurance and endorsements have been provided nor shall Contractor allow any subcontractor to commence work until all similarly required certificates and endorsements of the subcontractor have also been provided. Work shall not continue after expiration (or cancellation) of the Certificate of Insurance and work shall not resume until a new Certificate of Insurance has been provided. **Contractor shall provide evidence of insurance in the form of a valid Certificate of Insurance (binders are unacceptable) prior to the start of work contemplated under this Agreement to: City of Ocala. Attention: Procurement & Contracting Department, Address: 110 SE Watula Avenue, Third Floor, Ocala Florida 34471, E-Mail: [vendors@ocalafl.org](mailto:vendors@ocalafl.org).** Contractor's Certificate of Insurance and required endorsements shall be issued by an agency authorized to do business in the State of Florida with an A.M. Best Rating of A or better. The Certificate of Insurance shall indicate whether coverage is being provided under a claims-made or occurrence form. If any coverage is provided on a claims-made form, the Certificate of Insurance must show a retroactive date, which shall be the effective date of the initial contract or prior.

D. Failure to Maintain Coverage. In the event Contractor fails to disclose each applicable deductible/self-insured retention or obtain or maintain in full force and effect any insurance

coverage required to be obtained by Contractor under this Agreement, Contractor shall be considered to be in default of this Agreement.

- E. City as an Additional Insured. **Contractor and all Subcontractors must have the City of Ocala named as an Additional Insured and Certificate Holder on all liability policies identified in this Section** except for Workers' Compensation and Professional Liability policies.
- F. Notice of Cancellation of Insurance. Contractor's Certificate of Insurance shall provide **THIRTY (30) DAY** notice of cancellation, **TEN (10) DAY** notice if cancellation is for non-payment of premium. In the event that Contractor's insurer is unable to accommodate the cancellation notice requirement, it shall be the responsibility of Contractor to provide the proper notice. Such notification shall be in writing by registered mail, return receipt requested, and addressed to the certificate holder. Additional copies may be sent to the City of Ocala at [vendors@ocalafl.org](mailto:vendors@ocalafl.org).
- G. Failure to Maintain Coverage. The insurance policies and coverages set forth above are required and providing proof of and maintaining insurance of the types and with such terms and limits set forth above is a material obligation of Contractor. Contractor's failure to obtain or maintain in full force and effect any insurance coverage required under this Agreement shall constitute material breach of this Agreement.
- H. Severability of Interests. Contractor shall arrange for its liability insurance to include, or be endorsed to include a severability of interests/cross-liability provision so that the "City of Ocala" (where named as an additional insured) will be treated as if a separate policy were in existence, but without increasing the policy limits.

26. **SAFETY/ENVIRONMENTAL.** Contractor shall be responsible for initiating, maintaining, and supervising all safety precautions and programs in connection with the Work. Contractor shall make an effort to detect hazardous conditions and shall take prompt action where necessary to avoid accident, injury, or property damage. EPA, DEP, OSHA and all other applicable safety laws and ordinances shall be followed as well as American National Standards Institute Safety Standards. Contractor shall take all necessary precautions for the safety of, and shall provide the necessary protection to prevent damage, injury, or loss to:

- A. All employees on the work and other persons that may be affected thereby;
- B. All work, materials, and equipment to be incorporated therein, whether in storage on or off the site; and
- C. Other property at the site or adjacent thereto, including trees, shrubs, lawns, walks, pavements, roadways, structures, and utilities not designated for removal, relocation, or replacement in the course of construction.

All, injury, or loss to any property caused, directly or indirectly, in whole or in part, by Contractor, any subcontractor, or anyone directly or indirectly employed by any of them, or anyone for whose acts any of them may be liable, shall be remedied by Contractor. Contractor's duties and responsibilities for the safety and protection of the work shall continue until such time as the work is completed and accepted by City.

27. **COMPLIANCE WITH F.S. 287.135.** City may terminate Agreement immediately upon discovering that Contractor: (A) has been placed on the Scrutinized Companies that Boycott Israel List; (B) is engaged in a boycott of Israel; (C) has been placed on the Scrutinized Companies with Activities in Sudan List; (D) has been placed on the Scrutinized Companies with Activities in the Iran Petroleum Energy Sector List; or (E) has been engaged in business operations in Cuba or

Syria. This Agreement may also be terminated immediately if the Contractor falsely certified they are eligible to bid and contract with local government entities under F.S. 287.135.

28. **TRAFFIC CONTROL AND BARRICADES.** The Contractor shall mitigate impact on local traffic conditions to all extents possible. The Contractor is responsible for establishing and maintaining appropriate traffic control and barricades. The Contractor shall provide sufficient signing, flagging and barricading to ensure the safety of vehicular and pedestrian traffic at all locations where work is being performed under this Agreement.
  - A. In addition to the requirements set forth in bid, the Contractor shall maintain at all times a good and sufficient fence, railing or barrier around all exposed portions of said work in such a manner as to warn vehicular and pedestrian traffic of hazardous conditions.
  - B. Should Contractor fail to properly barricade its work or stored material sites in the manner outlined above, the City may have the necessary barricading done, and all cost incurred for said barricading shall be charged to the Contractor.
29. **WORK SITE AND CLEANUP.** Daily, during the progress of the work, Contractor shall keep the premises free from accumulations of waste materials, rubbish, and all other debris resulting from the work. At the completion of the work, Contractor shall remove all waste materials, rubbish, and debris from and about the premises, as well as all tools, appliances, equipment and machinery, and surplus materials, and shall leave the site clean and ready for occupancy by City. Contractor shall restore to their original condition those portions of the site not designated or alteration by this Agreement.
30. **NON-DISCRIMINATORY EMPLOYMENT PRACTICES.** During the performance of the contract, the Contractor shall not discriminate against any employee or applicant for employment because of race, color, religion, ancestry, national origin, sex, pregnancy, age, disability, sexual orientation, gender identity, marital or domestic partner status, familial status, or veteran status and shall take affirmative action to ensure that an employee or applicant is afforded equal employment opportunities without discrimination. Such action shall be taken with reference to, but not limited to: recruitment, employment, termination, rates of pay or other forms of compensation and selection for training or retraining, including apprenticeship and on-the-job training.
31. **SUBCONTRACTORS.** Nothing in this Agreement shall be construed to create, impose, or give rise to any duty owed by City or its representatives to any subcontractor of Contractor or any other persons or organizations having a direct contract with Contractor, nor shall it create any obligation on the part of City or its representatives to pay or seek payment of any monies to any subcontractor of Contractor or any other persons or organizations having a direct contract with Contractor, except as may otherwise be required by law. City shall not be responsible for the acts or omissions of any Contractor, subcontractor, or of any of their agents or employees, nor shall it create any obligation on the part of City or its representatives to pay or to seek the payment of any monies to any subcontractor or other person or organization, except as may otherwise be required by law.
32. **EMERGENCIES.** In an emergency affecting the welfare and safety of life or property, Contractor, without special instruction or authorization from the City Project Manager, is hereby permitted, authorized, and directed to act at its own discretion to prevent threatened loss or injury. Except in the case of an emergency requiring immediate remedial work, any work performed after regular working hours, on Saturdays, Sundays, or legal holidays, shall be performed without additional expense to the City unless such work has been specifically requested and approved by the City Project Manager. Contractor shall be required to provide to the City Project Manager with the names, addresses and telephone numbers of those representatives who can be

contacted at any time in case of emergency. Contractor's emergency representatives must be fully authorized and equipped to correct unsafe or excessively inconvenient conditions on short notice by City or public inspectors.

33. **INDEPENDENT CONTRACTOR STATUS.** Contractor acknowledges and agrees that under this Agreement, Contractor and any agent or employee of Contractor shall be deemed at all times to be an independent contractor and shall be wholly responsible for the manner in which it performs the services and work required under this Agreement. Neither Contractor nor its agents or employees shall represent or hold themselves out to be employees of City at any time. Neither Contractor nor its agents or employees shall have employee status with City. Nothing in this Agreement shall constitute or be construed to create any intent on the part of either party to create an agency relationship, partnership, employer-employee relationship, joint venture relationship, or any other relationship which would allow City to exercise control or discretion over the manner or methods employed by Contractor in its performance of its obligations under this Agreement.
34. **ACCESS TO FACILITIES.** City shall provide Contractor with access to all City facilities as is reasonably necessary for Contractor to perform its obligations under this Agreement.
35. **ASSIGNMENT.** Neither party may assign its rights or obligations under this Agreement to any third party without the prior express approval of the other party, which shall not be unreasonably withheld.
36. **RIGHT OF CITY TO TAKE OVER CONTRACT.** Should the work to be performed by Contractor under this Agreement be abandoned, or should Contractor become insolvent, or if Contractor shall assign or sublet the work to be performed hereunder without the written consent of City, the City Project Manager shall have the power and right to hire and acquire additional men and equipment, supply additional material, and perform such work as deemed necessary for the completion of this Agreement. Under these circumstances, all expenses and costs actually incurred by City to accomplish such completion shall be credited to City along with amounts attributable to any other elements of damage and certified by the Project Manager. The City Project Manager's certification as to the amount of such liability shall be final and conclusive.
37. **PUBLIC RECORDS.** The Contractor shall comply with all applicable provisions of the Florida Public Records Act, Chapter 119, Florida Statutes. Specifically, the Contractor shall:
  - A. Keep and maintain public records required by the public agency to perform the service.
  - B. Upon request from the public agency's custodian of public records, provide the public agency with a copy of the requested records or allow the records to be inspected or copied within a reasonable time at a cost that does not exceed the cost provided in Chapter 119, Florida Statutes, or as otherwise provided by law.
  - C. Ensure that public records that are exempt or confidential and exempt from public records disclosure requirements are not disclosed except as authorized by law for the duration of the contract term and following completion of the contract if the Contractor does not transfer the records to the public agency.
  - D. Upon completion of the contract, transfer, at no cost, to the public agency all public records in possession of the Contractor or keep and maintain public records required by the public agency to perform the service. If the Contractor transfers all public records to the public agency upon completion of the contract, the Contractor shall destroy any duplicate public records that are exempt or confidential and exempt from public records disclosure requirements. If the Contractor keeps and maintains public records upon completion of the

contract, the Contractor shall meet all applicable requirements for retaining public records. All records stored electronically must be provided to the public agency, upon request from the public agency's custodian of public records, in a format that is compatible with the information technology systems of the public agency.

**IF THE CONTRACTOR HAS QUESTIONS REGARDING THE APPLICATION OF CHAPTER 119, FLORIDA STATUTES, TO THE CONTRACTOR'S DUTY TO PROVIDE PUBLIC RECORDS RELATING TO THIS CONTRACT, CONTACT THE CUSTODIAN OF PUBLIC RECORDS AT: CITY OF OCALA, OFFICE OF THE CITY CLERK; 352-629-8266; E-mail: [clerk@ocalafl.org](mailto:clerk@ocalafl.org); City Hall, 110 SE Watula Avenue, Ocala, FL 34471.**

38. **AUDIT.** Contractor shall comply and cooperate immediately with any inspections, reviews, investigations, or audits relating to this Agreement as deemed necessary by the Florida Office of the Inspector General, the City's Internal or External auditors or by any other Florida official with proper authority.
39. **PUBLICITY.** Contractor shall not use City's name, logo, seal or other likeness in any press release, marketing materials, or other public announcement without City's prior written approval.
40. **E-VERIFY.** Pursuant to section 448.095, Contractor shall register with and use the U.S. Department of Homeland Security's ("DHS") E-Verify System, accessible at <https://everify.uscis.gov/emp>, to verify the work authorization status of all newly hired employees. Contractor shall obtain affidavits from any and all subcontractors in accordance with paragraph 2(b) of section 448.095, Florida Statutes, and maintain copies of such affidavits for the duration of this Agreement. By entering into this Agreement, Contractor certifies and ensures that it utilizes and will continue to utilize the DHS E-Verify System for the duration of this Agreement and any subsequent renewals of same. Contractor understands that failure to comply with the requirements of this section shall result in the termination of this Agreement and Contractor may lose the ability to be awarded a public contract for a minimum of one (1) year after the date on which the Agreement was terminated. Contractor shall provide a copy of its DHS Memorandum of Understanding upon City's request. Please visit [www.e-verify.gov](http://www.e-verify.gov) for more information regarding the E-Verify System.
41. **CONFLICT OF INTEREST.** Contractor is required to have disclosed, with the submission of their bid, the name of any officer, director, or agent who may be employed by the City. Contractor shall further disclose the name of any City employee who owns, directly or indirectly, any interest in Contractor's business or any affiliated business entity. Any additional conflicts of interest that may occur during the contract term must be disclosed to the City of Ocala Procurement Department.
42. **WAIVER.** The failure or delay of any party at any time to require performance by another party of any provision of this Agreement, even if known, shall not affect the right of such party to require performance of that provision or to exercise any right, power or remedy hereunder. Any waiver by any party of any breach of any provision of this Agreement should not be construed as a waiver of any continuing or succeeding breach of such provision, a waiver of the provision itself, or a waiver of any right, power or remedy under this Agreement. No notice to or demand on any party in any circumstance shall, of itself, entitle such party to any other or further notice or demand in similar or other circumstances.

43. **SEVERABILITY OF ILLEGAL PROVISIONS.** Wherever possible, each provision of this Agreement shall be interpreted in such a manner as to be effective and valid under the applicable law. Should any portion of this Agreement be declared invalid for any reason, such declaration shall have no effect upon the remaining portions of this Agreement.
44. **INDEMNITY.** Contractor shall indemnify and hold harmless City and its elected officials, employees and volunteers against and from all damages, claims, losses, costs, and expenses, including reasonable attorneys' fees, which City or its elected officials, employees or volunteers may sustain, or which may be asserted against City or its elected officials, employees or volunteers, arising out of the activities contemplated by this Agreement including, without limitation, harm or personal injury to third persons during the term of this Agreement to the extent attributable to the actions of Contractor, its agents, and employees.
45. **NO WAIVER OF SOVEREIGN IMMUNITY.** Nothing herein is intended to waive sovereign immunity by the City to which sovereign immunity may be applicable, or of any rights or limits of liability existing under Florida Statute § 768.28. This term shall survive the termination of all performance or obligations under this Agreement and shall be fully binding until any proceeding brought under this Agreement is barred by any applicable statute of limitations.
46. **NOTICES.** All notices, certifications or communications required by this Agreement shall be given in writing and shall be deemed delivered when personally served, or when received if by facsimile transmission with a confirming copy mailed by registered or certified mail, postage prepaid, return receipt requested. Notices can be concurrently delivered by e-mail. All notices shall be addressed to the respective parties as follows:

If to Contractor:

PTI Transformers LP  
 Attention: Brett Todd  
 101 Rockman Street  
 Winnipeg, MB, CA R3T 0L7  
 Phone: 204-474-5713  
 Cell: 204-806-1918  
 E-mail: [btodd@ptitransformers.com](mailto:btodd@ptitransformers.com)

Copy to:

Attention: Bob Gray  
 Cell: 603-770-2048  
 E-mail: [bgray@ptitransformers.com](mailto:bgray@ptitransformers.com)

If to City of Ocala:

Daphne M. Robinson, Esq., Contracting Officer  
 City of Ocala  
 110 SE Watula Avenue, Third Floor  
 Ocala, Florida 34471  
 Phone: 352-629-8343  
 E-mail: [notices@ocalafl.org](mailto:notices@ocalafl.org)

Copy to:

William E. Sexton, Esq., City Attorney  
 City of Ocala  
 110 SE Watula Avenue, Third Floor  
 Ocala, Florida 34471  
 Phone: 352-401-3972  
 E-mail: [cityattorney@ocalafl.org](mailto:cityattorney@ocalafl.org)

47. **ATTORNEYS' FEES.** If any civil action, arbitration or other legal proceeding is brought for the enforcement of this Agreement, or because of an alleged dispute, breach, default or misrepresentation in connection with any provision of this Agreement, the successful or prevailing party shall be entitled to recover reasonable attorneys' fees, sales and use taxes, court costs and all expenses reasonably incurred even if not taxable as court costs (including, without limitation, all such fees, taxes, costs and expenses incident to arbitration, appellate, bankruptcy and post-judgment proceedings), incurred in that civil action, arbitration or legal proceeding, in addition to any other relief to which such party or parties may be entitled. Attorneys' fees shall include, without limitation, paralegal fees, investigative fees, administrative costs, sales and use taxes and all other charges reasonably billed by the attorney to the prevailing party.
48. **JURY WAIVER.** IN ANY CIVIL ACTION, COUNTERCLAIM, OR PROCEEDING, WHETHER AT LAW OR IN EQUITY, WHICH ARISES OUT OF, CONCERNS, OR RELATES TO THIS AGREEMENT, ANY AND ALL TRANSACTIONS CONTEMPLATED HEREUNDER, THE PERFORMANCE HEREOF, OR THE RELATIONSHIP CREATED HEREBY, WHETHER SOUNDING IN CONTRACT, TORT, STRICT LIABILITY, OR OTHERWISE, TRIAL SHALL BE TO A COURT OF COMPETENT JURISDICTION AND NOT TO A JURY. EACH PARTY HEREBY IRREVOCABLY WAIVES ANY RIGHT IT MAY HAVE TO A TRIAL BY JURY. NEITHER PARTY HAS MADE OR RELIED UPON ANY ORAL REPRESENTATIONS TO OR BY ANY OTHER PARTY REGARDING THE ENFORCEABILITY OF THIS PROVISION. EACH PARTY HAS READ AND UNDERSTANDS THE EFFECT OF THIS JURY WAIVER PROVISION.
49. **GOVERNING LAW.** This Agreement is and shall be deemed to be a contract entered and made pursuant to the laws of the State of Florida and shall in all respects be governed, construed, applied, and enforced in accordance with the laws of the State of Florida.
50. **JURISDICTION AND VENUE.** The parties acknowledge that a majority of the negotiations, anticipated performance and execution of this Agreement occurred or shall occur in Marion County, Florida. Any civil action or legal proceeding arising out of or relating to this Agreement shall be brought only in the courts of record of the State of Florida in Marion County or the United States District Court, Middle District of Florida, Ocala Division. Each party consents to the exclusive jurisdiction of such court in any such civil action or legal proceeding and waives any objection to the laying of venue of any such civil action or legal proceeding in such court and/or the right to bring an action or proceeding in any other court. Service of any court paper may be effected on such party by mail, as provided in this Agreement, or in such other manner as may be provided under applicable laws, rules of procedures or local rules.
51. **REFERENCE TO PARTIES.** Each reference herein to the parties shall be deemed to include their successors, assigns, heirs, administrators, and legal representatives, all whom shall be bound by the provisions hereof.
52. **MUTUALITY OF NEGOTIATION.** Contractor and City acknowledge that this Agreement is a result of negotiations between Contractor and City, and the Agreement shall not be construed in favor of, or against, either party because of that party having been more involved in the drafting of the Agreement.
53. **SECTION HEADINGS.** The section headings herein are included for convenience only and shall not be deemed to be a part of this Agreement.

54. **RIGHTS OF THIRD PARTIES.** Nothing in this Agreement, whether express or implied, is intended to confer any rights or remedies under or because of this Agreement on any persons other than the parties hereto and their respective legal representatives, successors and permitted assigns. Nothing in this Agreement is intended to relieve or discharge the obligation or liability of any third persons to any party to this Agreement, nor shall any provision give any third persons any right of subrogation or action over or against any party to this Agreement.
55. **AMENDMENT.** No amendment to this Agreement shall be effective except those agreed to in writing and signed by both parties to this Agreement.
56. **COUNTERPARTS.** This Agreement may be executed in counterparts, each of which shall be an original and all of which shall constitute the same instrument.
57. **ELECTRONIC SIGNATURE(S).** Contractor, if and by offering an electronic signature in any form whatsoever, will accept and agree to be bound by said electronic signature to all terms and conditions of this Agreement. Further, a duplicate or copy of the Agreement that contains a duplicated or non-original signature will be treated the same as an original, signed copy of this original Agreement for all purposes.
58. **ENTIRE AGREEMENT.** This Agreement, including exhibits, (if any) constitutes the entire Agreement between the parties hereto with respect to the subject matter hereof. There are no other representations, warranties, promises, agreements or understandings, oral, written or implied, among the Parties, except to the extent reference is made thereto in this Agreement. No course of prior dealings between the parties and no usage of trade shall be relevant or admissible to supplement, explain, or vary any of the terms of this Agreement. No representations, understandings, or agreements have been made or relied upon in the making of this Agreement other than those specifically set forth herein.
59. **LEGAL AUTHORITY.** Each person signing this Agreement on behalf of either party individually warrants that he or she has full legal power to execute this Agreement on behalf of the party for whom he or she is signing, and to bind and obligate such party with respect to all provisions contained in this Agreement.

**[REMAINDER OF PAGE INTENTIONALLY LEFT BLANK. SIGNATURE PAGE TO FOLLOW]**



**IN WITNESS WHEREOF**, the parties have executed this Agreement on \_\_\_\_\_.

**ATTEST:**

**CITY OF OCALA**

\_\_\_\_\_  
Angel B. Jacobs  
City Clerk

\_\_\_\_\_  
James P. Hilty, Sr.  
City Council President

**Approved as to form and legality:**

**PTI TRANSFORMERS, LP**

\_\_\_\_\_  
William E. Sexton, Esq.  
City Attorney

\_\_\_\_\_  
By: \_\_\_\_\_  
(Printed Name)

Title: \_\_\_\_\_  
(Title of Authorized Signatory)

**BACKGROUND**

Contractor shall provide **TWO (2)** 105/140/175 MVA autotransformers, to include both the delivery of the autotransformers to the City's designated site and placement of the autotransformers on existing concrete foundation pads (21'X11') without any modifications required. Contractor shall also furnish **ONE (1)** lot of spare parts per the specifications and Scope of Work.

City of Ocala reserves the right to approve manufacturers. **Transformers must be manufactured in a North American Free Trade Agreement (NAFTA) country.**

Contractor must comply with North American Electric Reliability Corporation (NERC) Supply Chain Standards. The Supply Chain Standards focus on the following four security objectives:

- software integrity and authenticity;
- vendor remote access protections;
- information system planning; and
- vendor risk management and procurement controls.

Services provided by Contractor shall be coordinated with the City Project Manager, Lisa Crouthamel, at Ocala Electric Utility Department, 1805 NE 30<sup>th</sup> Ave, Bldg. 400, Ocala, Florida 34470, Telephone 352-317-3151 and E-Mail: [lcrouthamel@ocalafl.org](mailto:lcrouthamel@ocalafl.org).

**QUALIFICATIONS AND REQUIREMENTS**

Contractor must be a licensed Electrical Contractor with a minimum of **FIVE (5)** years of experience providing similar services based on equipment of the same design and rating, having been fabricated and manufactured in the same factory, using material and components of the same type.

Contractor must have documented experience with the equipment based on commercial installation for a municipal, industrial environment or investor-owned utility in the United States of America, under operating conditions comparable to those experienced in Central Florida.

**Special Notice:** *Contractor acknowledges and agrees that it has made itself fully aware of and agrees to comply with all local, state, and Federal laws, regulations, ordinances, and permitting requirements related to the provision of the required goods and services and that said laws, regulations, ordinances, and permitting requirements are incorporated herein by reference.*

**SUBCONTRACTORS**

Contractor acknowledges and accepts responsibility for the performance of any subcontractors. Contractor acknowledges and agrees that it has fully investigated its subcontractors and has evidence on file that each subcontractor: (a) has engaged successfully in their respective line of work for a reasonable period; (b) maintains a fully equipped organization that is capable, technically, and financially, of performing the work required; and (c) has satisfactorily made similar installations. Contractor shall complete **Exhibit E – Proposed Delivery Date & Subcontractors**. The City reserves the right to reject Contractor's use of any subcontractor based on previous experience with said subcontractor.

**DELIVERY/REQUIRED SHIPPING DATE**

**TRANSFORMER #1:** One (1) 105/140/175 MVA Autotransformer shall be delivered and installed at the Dearmin Substation site, located at 2779 SE 36<sup>th</sup> Avenue, Ocala, FL 34471. FOB DESTINATION, PREPAID & ALLOWED. **Delivery to the destination shall be no later than 78 WEEKS. (If transformer delivery date exceeds 78 weeks, OEU will review the extended date for acceptability.) OEU can only receive delivery of transformers during the Spring and Fall months.**

**TRANSFORMER #2:** One (1) 105/140/175 MVA Autotransformer shall be delivered and installed at the Dearmin Substation site, located at 2779 SE 36<sup>th</sup> Avenue, Ocala, FL 34471. **Delivery to the destination shall be four (4) weeks after the delivery and installation of Transformer #1.** FOB DESTINATION, PREPAID & ALLOWED.

**SPARE PARTS:** One (1) lot of Spare Parts for 105/140/175 MVA autotransformer shall be delivered to the City of Ocala, Electric Utility Warehouse, 1805 NE 30<sup>th</sup> Avenue, Building #700, Ocala, FL 34470. **Delivery to the destination shall be no later than the manufacturer's standard lead time.** FOB DESTINATION, PREPAID & ALLOWED.

1. Contractor shall provide thirty (30) days' notice prior to delivery, and it is the Contractor's responsibility to unload all equipment at the destination sites listed above.
2. Contractor is encouraged to visit the sites of the proposed work and to become thoroughly acquainted with the conditions relating to the delivery, construction, and labor requirements, to fully understand the field conditions which may affect the execution of the required work.
3. The materials and equipment to be furnished hereunder shall be delivered and ALL transportation charges paid by the supplier to the destination.

**CLEAN UP**

Contractor shall be responsible for the disposal of shipping and packing materials and for performing perform other clean-up associated with the delivery and installation activities.

**MEASUREMENT AND PAYMENT**

The intent of this section is to define the basis of payment for bid items listed in the Contractor's proposal. Separate payment will be made only for specific items listed in this section.

**1. Autotransformers 105/140/175 MVA.**

- A. Measurement shall consist of furnishing and delivering two (2) new autotransformers to their respective foundations at the Dearmin Substation Site, per the scope of work and specifications, including all submittals except for field test results, excluding spare parts, installation, and testing.

- B. Payment for completion of all work required of the Contractor shall be as stated in the Scope of Work and per all specifications, at the price shown in the Contractor's proposal. Final payment after the equipment is placed in service will constitute full compensation for all work required and/or specified.

**2. Autotransformers 105/140/175 MVA - Installation and Testing.**

- A. Measurement shall consist of the complete assembly of the autotransformer, services of a service engineer, field testing and submittal of field test results, per the requirements of **Exhibit A – Scope of Work**, and **Exhibit C – Technical Specifications**
- B. Payment for completion of all work required of the Contractor shall be as outlined below at the price shown in the Contractor's proposal. Payment in this amount will constitute full compensation for all work required and specified.

**3. Autotransformers 105/140/175 MVA - Spare Parts.**

- A. Measurement shall consist of furnishing spare parts for the autotransformer per the requirements of **Exhibit C – Technical Specifications**
- B. Payment for spare parts furnished by the Contractor shall be at the price shown in the Contractor's proposal and will constitute full compensation for the materials and all related work
- C. Payment for completion of all work required of the Contractor shall be as outlined below at the price shown in the Contractor's proposal. Payment in this amount constitute full compensation for all work required and/or specified.

**PAYMENT**

- 1. Ninety percent (90%) of the Purchase Order amount for equipment and spare parts will be paid **THIRTY (30)** days after the delivery of equipment and spare parts is completed, approved, and accepted by the owner and upon presentation of an invoice in duplicate. **TEN PERCENT (10%)** of the amount due shall be retained until all required submittals have been approved and until the equipment is placed in service or for **ONE HUNDRED EIGHTY (180)** days from delivery of the equipment, whichever comes first.
- 2. Payment by the City shall not relieve the Contractor of the obligation to comply with the requirements of the Contract. The Purchase Order amount for installation and testing will be paid **THIRTY (30)** days after completion of testing, submittal, and approval of field test reports, and upon presentation of an invoice in duplicate.

GENERAL REQUIREMENTS  
AUTOTRANSFORMERS 105/140/175 MVA  
DEARMIN SUBSTATION

PART 1 – GENERAL REQUIREMENTS

1.01 WORK INCLUDES:

- A. The work consists of furnishing two (2) 105/140/175 MVA Autotransformers, manufactured in the United States of America, as herein specified, delivering transformers to the designated site, and installing the transformers on existing concrete foundation pad (21' by 11') without any modifications required, testing of said autotransformers as herein specified, and providing one lot of spare parts as herein specified.
- B. This section outlines equipment standards, and requirements for the transformer tank, weatherproofing and painting, oil preservation equipment, insulating oil, progress photographs, submittal requirements, and shipping, delivery, installation, and field testing.

1.02 REFERENCES

The transformers, accessories and equipment shall be of a design accepted as standard except as otherwise specifically stated herein. The work shall, as a minimum, conform to applicable provisions of the latest edition or revision of the following standards, except as modified herein.

A. Institute of Electrical and Electronics Engineers (IEEE):

- C57.12.00 General Requirements for liquid-immersed distribution, power and regulating transformers.
- C57.12.10 Requirements for liquid-immersed power transformers.
- C57.12.90 Test code for liquid-immersed distribution, power and regulating transformers.
- C57.13 Requirements for instrument transformers.
- C57.19.00 General Requirements and test procedure for outdoor power apparatus bushings.

- C57.19.01 Performance characteristics and dimensions for outdoor apparatus bushings.
- C57.91 Guide for loading mineral-oil-immersed transformers and step-voltage regulators.
- C57.98 Guide for transformer impulse tests.
- C57.109 Guide for liquid-immersed transformer through-fault-current duration
- C57.113 Recommended Practice for Partial Discharge Measurement in Liquid-Filled-Power Transformers and Shunt Reactors.
- C57.131 Requirements for Tap Changers.

B. American Society for Testing and Materials (ASTM):

- A 343 Test method for alternating-current magnetic properties of materials at power frequencies using wattmeter-ammeter-voltmeter method and 25-cm Epstein Test Frame.
- A 712 Test method for electrical resistivity of soft magnetic alloys.
- D 88 Test method for saybolt viscosity.
- D 92 Test method for flash and fire points by cleveland open cup tester.
- D 97 Test methods for pour point of petroleum products.
- D 664 Test method for acid number of petroleum products by potentiometric titration.
- D 971 Test method for interfacial tension of oil against water by the ring method.
- D 974 Test method for acid and base number by color-indicator titration.
- D 1533 Test method for water in insulating liquids by coulometric karl fischer titration.
- D 1816 Test method for dielectric breakdown voltage of insulating liquids using VDE electrodes.
- D 1933 Nitrogen gas as an electrical insulating material.
- D 2029 Test methods for water vapor content of electrical insulating gases by measurement of dew point.
- D 4059 Test method for analysis of polychlorinated biphenyls in insulating liquids by GA chromatography.

C. National Electrical Manufacturers Association (NEMA)

TR1          Transformers, step voltage regulators and reactors

1.03 DESIGN AND PERFORMANCE REQUIREMENTS

- A. The workmanship, design and materials shall be of the highest quality and be the most suitable for the application. The material shall be new, of proven manufacture, and free of defects. The design shall provide maximum mechanical and dielectric strength of the insulation, uniform flux density on distribution, minimum dielectric losses, minimum interference with oil circulation, and the elimination of potential discharge (corona) at test and operating voltages.
- B. All standard fittings and accessories shall be included and located in accordance with latest ANSI Standards.
- C. The transformers shall be constructed in accordance with IEEE C57.12.10 and shall include all items necessary for complete assembly. The material and workmanship shall be of high quality and the unit shall be modern in appearance and design.
- D. The transformers shall be designed and constructed to be completely self-protected by its ability to withstand, without mechanical damage, the effects of external short circuits, as specified in IEEE C57.12.00, Section 7, IEEE C57.12.90, Section 12 and IEEE C57.109.

1.04 SUBMITTALS

The Equipment Contractor shall provide a complete schedule of data submittals within ten days of the receipt of Purchase Order.

- A. Submit Transformer Outline Drawing (including bushing, stud size and details of terminals), Transformer Base Details, Nameplate Drawings, and Auxiliary Schematic Diagrams, Physical Drawings for remote mounted equipment and performance data for review within one-fifth (20%) of the quoted delivery time. Submittal shall include the following data:

1. Weight of core and coils.
  2. Weight of tank and fittings.
  3. Weight and quantity of oil.
  4. Total weight.
  5. Shipping weight.
  6. Height overall.
  7. Height over case.
  8. Floor space (footprint).
  9. Center of gravity.
  10. Details of bushings terminals.
  11. Location and detailed list of all accessories.
  12. Number, size and type of fan and/or pump motors.
- B. Bushing Drawings, Lightning Arrester Drawings, Radiator Details, Wiring Diagrams, and Current Transformer Curves shall be submitted for review within one-half (50%) of the quoted delivery time.
- C. Submit detailed specifications on painting and protective finishes.
- D. Submit proof of short circuit design considerations by short circuit calculations. The calculations shall include electrical and mechanical forces.
1. Short circuit force values shall include, but not be limited to, short circuit amperes, repulsion force in pounds and vertical force in pounds.
  2. Indicate mechanical safety factors used in design of hoop strength of the outer winding, buckling strength of the inner winding, core clamp strength, vertical bar strength, clamping ring strength and jackscrew strength.
- E. Instruction Manuals shall be submitted for review four weeks before shipment. Instruction Manuals shall contain information on receiving, storing and assembly of the transformer; they shall provide complete description, including manufacturer's catalog or part numbers for all components, including, without limitation, relays, switches, bushings, arresters, gauges, LTC, radiators, valves and all other parts which might require maintenance or replacement during normal operation. Copies of final approved as built drawings shall also be included.
- F. Submit proposed method of delivery for the Autotransformer. Submit impact recorder information with the shipping instructions, including manufacturer, type, quantity, and

model number of the impact recorders to be used. The Equipment Contractor shall also state the maximum force limits the recorders can register for vertical, longitudinal and horizontal axis' before the manufacturer considers the transformers may have been damaged during shipment. The Equipment Contractor shall furnish the necessary information for releasing and returning the impact recorders at no additional cost to the Owner. The Equipment contractor shall provide copies of the impact recorder travel logs to the Owner for record purposes.

G. Factory Tests: Certified test reports for tests performed by the manufacturer shall be submitted for review prior to shipment. Factory tests will be performed in a facility within the United States and witnessed by Ocala Electric Utility personnel.

H. Installation Tests

1. A complete outline of the transformer installation testing procedures to be conducted by the Equipment Contractor shall be submitted to the Owner for review, and comments shall be incorporated before installation testing commences at the site.

2. Submit final field test results, including the technician's field copied test sheets, before the equipment is delivered as ready to be put into service.

I. Final record drawings shall be furnished via email in a format compatible with Autodesk AutoCAD Release 2018 (two copies). Drawings to be emailed to Lisa Crouthamel ([lcrouthamel@ocalafl.org](mailto:lcrouthamel@ocalafl.org)), Matthew O'Cull ([mocull@ocalafl.org](mailto:mocull@ocalafl.org)), Chris Coffee ([ccoffee@ocalafl.org](mailto:ccoffee@ocalafl.org)) and Robert Whitehead ([rwhitehead@ocalafl.org](mailto:rwhitehead@ocalafl.org))

## 1.05 PHOTOGRAPHS

A. The Equipment Contractor shall furnish photographs of the core and coil assembly of the transformer. The photographs shall be taken just prior to placing the completed core and coil assembly into the tank.

B. The photographs are to be emailed to Lisa Crouthamel, Matthew O'Cull, Chris Coffee, and Robert Whitehead. A total of five different views are required as follows (Segments as defined in IEEE C57.12.10):

1. Top view.
2. Front view.
3. Left side view, Segment 2.
4. Rear view, Segment 3.
5. Right side view, Segment 4.

## 1.06 DELIVERY, STORAGE AND HANDLING

Deliver the transformer with all manufacturers' tags and labels intact. Deliver packaged material and equipment in manufacturer's original unopened containers bearing manufacturer's name. Handle and store the transformer and packaged materials in such a manner so as to avoid damage to the units.

## 1.07 WARRANTY

- A. The transformer manufacturer's warranty period shall extend five (5) years from date of on-site acceptance tests and incorporation of any comments made during the review of the test and include coverage of the transportation in and out charges for the duration of the warranty.
- B. The transformer manufacturer's extended warranty shall include all parts of the transformer regardless of manufacturer.

## PART 2 - PRODUCTS

### 2.01 MATERIALS AND EQUIPMENT

- A. All material and equipment shall be new, approved and labeled, where required, by UL. Only products by manufacturers regularly engaged in production of specified units will be acceptable.
- B. Where two or more units of the same class of equipment or materials are required, provide all units from a single manufacturer.

- C. Provide materials and equipment of suitable material to perform satisfactorily when exposed to conditions of project site.
  - 1. Provide breather and drain fittings in all raceways and enclosures where necessary to prevent condensation or trapping of moisture.
  - 2. Provide humidistat-controlled heaters in all control panels to prevent condensation.

## 2.02 TANK AND BASE

- A. The transformer tank shall be rectangular or equivalent oval and shall be of welded steel plate construction. Welding shall comply with applicable requirements of the latest codes of the American Welding Society. All tanks shall be suitable for vacuum filling in the field. Tanks, covers and appurtenances (i.e., valves, etc.) shall be designed to withstand full vacuum with 800 pounds on the cover, and shall include the required number of manholes in the cover necessary for inspection and installation (two minimum) with handholes as necessary. Minimum inside diameter of manholes shall be 20 inches.
- B. The tank cover shall be provided with lifting eyes for lifting cover or hood assembly only. The main tank shall be provided with lugs for lifting the entire unit with oil. Two copper-faced ground pads shall be welded at diagonal corners of the bottom of the main tank for grounding purposes. Ground pads shall be drilled and tapped on 1.75-inch centers for 0.5-13 bolts. A stainless-steel name and diagram plate describing the unit, its taps, and ratings, with schematic diagrams, shall be furnished and attached to the tank at not more than five feet above top of concrete pad. Screws, if used to attach name and diagram plate, shall be stainless steel.
- C. The base shall be furnished with pulling eyes and skid noses suitable for skidding on rails on rollers in directions parallel and perpendicular to a line through the high voltage bushings. Provision for jacking shall be furnished per ANSI Standards. The transformer shall be provided with channel base rather than flat base, (the channel base shall not have a continuous plate on the bottom side) and shall allow free circulation of air to bottom of tank. The base shall be designed for direct placement on the Owners foundation without the use of additional rails or supports.

- D. The tank shall be furnished with a combination oil drain, sampling, and lower filter press valve and upper filter press valve. A vacuum filling connection shall be furnished on the cover. Gas purging connections shall be furnished on the side wall to allow purging from ground level.
- E. The transformer shall be furnished with two 1-inch valves located approximately 6 inches down from the cover. One valve is to be located at the end away from the vacuum connection on the low voltage side and one valve is to be located above the main drain valve. Three horizontal +++ marks shall be stamped on the tank directly above the main drain valve at the oil level required to cover the core, coils, and all critical high voltage insulation.
- F. The transformer shall be furnished with detachable radiators with provisions to drain each individual radiator unit and with shut-off valves located between each radiator and main tank or header at both top and bottom connections. Valves shall be repairable without requiring a person to enter the transformer tank. Radiator flanges shall be supplied and arranged such that radiators may be mounted or removed for repair with 3500-pound handling facilities.
- G. All valves shall be designed and manufactured to operate at full vacuum.
- H. Hinged doors shall be provided in all outer tank walls for easy access to, and exposing, complete load tap changer compartment, inspection doors, drain and shut off valves, filling and vacuum plugs, vent and exhaust devices. Any hinged door exceeding 5 feet in height shall be split into two doors of equal vertical height.
- I. The transformer shall be equipped with one automatic reset pressure relief device per each 10,000 gallons of oil or fraction thereof in the main transformer tank. The device(s) shall be located on the tank cover, complete with visual indicator and alarm contacts, shall be of self-resealing type and shall minimize discharge of oil and exclude the weather after operation. The device shall be located as close to the HV and LV bushings as practical for maximum protection of tank in the event of bushing failure.
- J. Tank footprint will not exceed 21'x11'

- K. The transformer shall be equipped with 8510816 DBI Sala Advanced Portable Fall Arrest Post bases for attaching our fall arrest device when performing maintenance.

## 2.03 PAINT AND WEATHERPROOFING

- A. Exterior of transformer tank and base (and the outside shell of a double wall where required to maintain low noise level) shall be given two primer coats of one mil each and three finish coats of one mil each to a minimum thickness of 3 mils.
- B. The interior surfaces of the transformer tank, control compartment and tap changer compartment shall be primed and painted.
- C. Paint shall be the manufacturer's best quality specifically selected for the application and shall not be affected by insulating oil. Exterior finish shall be ANSI 70 Gray. Interior finish shall be white.
- D. Prior to painting, all surfaces shall be properly cleaned by sand blasting, shot blasting or be solvent-, steam-, or pressure-washed to remove all dirt, grease, rust or mill scale. After cleaning, all surfaces shall be degreased using an appropriate commercially available degreasing solution and rinsed with clean water, dried, primed and painted as outlined above. All galvanized surfaces shall be properly primed before painting.
- E. The transformer will be installed outdoors in a locality subject to high ambient temperatures, tropical hurricane winds and torrential rains. The Equipment Contractor shall be responsible for adequate weatherproof design to protect against these conditions.
- F. External Fasteners (bolts, nuts, washers, lock washers, machine screws) for bolt thread diameters less than 1/2 inch shall be stainless steel or bronze. External fasteners for bolt thread diameters 1/2 inch or larger shall be hot dipped galvanized, stainless steel, or bronze.
- G. The transformer tank base and internal surfaces "boxed-in" by the support channels shall be undercoated with bitumastic at the factory.

## 2.04 OIL PRESERVATION EQUIPMENT

The transformer shall be provided with a type of automatic positive pressure nitrogen blanket gas seal system to protect the insulating oil against oxidization. The equipment provided shall be a complete unit with compressed gas cylinder, pressure regulator, necessary gauges, alarm contacts, valves, and piping; all contained in a weatherproof cabinet on the side of the transformer tank. All gasket joints shall be located below the minimum oil level so transformer leaks will be detected.

## 2.05 INSULATING OIL

- A. Insulating oil shall be new fractionally distilled pure oxidation-inhibited mineral oil especially refined for transformers, free from moisture, acid, alkali, and injurious Sulphur compounds and shall not form a deposit under maximum anticipated operating temperatures.
- C. Physical properties of insulating oil shall be as follows:
  - 1. Dielectric Breakdown Voltage - 35,000 volts min. (curved electrodes), ASTM D 1816.
  - 2. Viscosity - Not over 62 Saybolt at 37.8°C, ASTM D 88.
  - 3. Pour Point - Not higher than minimum -40°C, ASTM D97.
  - 4. Flash Point - Not under 146°C, ASTM D92.
  - 5. Fire Point - Not Under 160°C, ASTM D 92.
  - 6. Neutralization Number - 0.03 maximum, ASTM D 664 and D 974.
  - 7. Interfacial Tension - 40 dynes per square centimeter minimum, ASTM D 971.
  - 8. Water Content at 25°C -25 ppm maximum, ASTM D 1533 (Karl Fisher Method).
  - 9. Corrosive Sulphur - None.
  - 10. Inorganic Chlorides and Sulphates - None.

## PART 3 EXECUTION

### 3.01 SHIPMENT

- A. Assembly: The transformer core and coil shall be shipped completely assembled in the tank, in oil, or in a dry inert gas atmosphere having a maximum dew point of - 50°F. The dew point of the gas in the tank shall be determined just prior to shipment. If shipped in dry inert gas atmosphere, the assembly shall be pressurized to 5 psig sufficiently in advance of shipment to permit verification that a seal is obtained. The transformer shall be shipped upright and as complete as possible consistent with shipment limitations and protection of the equipment. At the option of the Equipment Contractor, the oil, bushings, frames, minor accessories, and radiators may be shipped separately.
- B. Packing: The method of packing shall be such as to adequately protect the case, radiators, core and coils, bushings and all other auxiliary devices or accessories against corrosion, dampness, breakage or vibration injury that might reasonably be encountered in transportation and handling. Packing crate shall be such that prolonged outdoor storage will not result in deterioration of crates or damage to contents. A complete set of spare gaskets shall be shipped with the transformer.
- C. Weatherproof: All auxiliary equipment shall be shipped in weatherproof packages. Packing material shall be such that it will provide weatherproof protection for a period of one year in outdoor storage areas. Accessories shall not be shipped separately without the prior knowledge and consent of the Owner.
- D. Moisture Control: All conduits and auxiliary equipment mounting positions shall be sealed and/or covered to prevent water damage during storage.
- E. Positive Pressure: All valves, shipping covers, etc. shall be sealed and effectively crated to prevent tampering or removal while in transit, and a means shall be provided for allowing gas pressure to be measured without requiring release of the gas.
- F. Recorder Installation: The Equipment Contractor shall furnish a minimum of two, three-way (horizontal, longitudinal, and vertical) measurement impact recorders for the transformer shipped. Recorders shall be attached to the transformer and to the carrier on which the transformer is shipped. At least one recorder must operate satisfactorily throughout the time the transformer is in transit.

- G. Complete Shipment: Shipment of the transformer shall be made so that the transformer, complete with all accessories, can be made to an individual destination simultaneously. Fans shall be packed so they can be removed readily from the transporting unit for storage.
- H. FOB Site: Shipment shall be made FOB Foundation Pad at site. Freight and handling shall be prepaid for delivery to designated site.

### 3.02 INSPECTION

- A. The transformer shall be inspected upon receipt. In the event residual pressure (allowing for differences in temperature) is not sufficient to ensure that positive pressure was maintained throughout the temperatures encountered during shipment, the transformer shall be considered as possibly contaminated by moisture, and special precautions acceptable to the Owner shall be taken by the Equipment Contractor prior to placing the transformer in service.
- B. Upon arrival and before unloading the transformer, the impact recorder tape will be removed and inspected by the Owner, the Equipment Contractor and the Carrier's Agent. It shall be the Equipment Contractor's responsibility to see that the transformer is supplied with a recorder that is still operating when the transformer is received. If in the opinion of the Owner, the Equipment Contractor or the Carrier's Agent the impact recorder tape or other considerations indicates rough handling during shipment, the Equipment Contractor shall take immediate action to determine if any damage has occurred and shall report in writing to the Owner defining the conditions that exist and recommending corrective action. It will be the Owners discretion of whether to proceed with repairs or reject unit based on the severity of damage. The recorder tape will be retained by the Owner for study and will be returned to the Equipment Contractor when studies are completed

### 3.03 DELIVERY AND INSTALLATION

The transformer furnished hereunder shall be delivered to the Owner complete and ready to be placed in service, including satisfactorily completing all required field acceptance

tests. The Equipment Contractor shall make all necessary provisions required for the transportation, receipt, handling and unloading of the transformer and provide delivery and placement as described herein. This shall include but not be limited to: loading and unloading, rigging, transporting, handling, placing, assembling, filling with insulating oil, testing, checking of current transformers, relays and other accessories and/or auxiliaries and satisfactorily placing the transformer in service as work of this Contract. All work involved in assembling and testing the transformer shall be performed under the supervision of a fully qualified factory trained service engineer and the Equipment Contractor shall provide all necessary supervision, labor, equipment, materials, tools, and devices necessary for complete and satisfactory assembly and testing. The foundation will be provided by others. Connections to the high voltage, low voltage, neutral, and ground terminals, and connections of low voltage power, CT, and control circuits to incoming terminals will also be provided by others. The Equipment Contractor shall advise the Owner not less than ten days in advance of the date of arrival of the transformer.

#### 3.04 FIELD INSTALLATION TESTS

All tests recommended, or required by the transformer manufacturer, shall be conducted; and, in addition thereto, a nitrogen dew point test, an oil analysis, Power Factor Tests, TTR tests, Insulation Resistance tests, current transformer tests, Winding Resistance test, Leakage Reactance and an operational test of the sudden pressure relay. The hot oil and hot spot dial indicators shall be calibrated with the thermocouple in hot oil and a current input, where applicable. The transformer shall soak for minimum of 48 hours to allow transformer temperature to equalize before field test can be performed.

- A. Insulating oil for the transformer shall be treated, heated, filtered, and processed, with a vacuum in the tank, in strict accordance with the requirements of these specifications or in strict accordance with the published recommendations of the equipment manufacturer, whichever shall require the most complete treatment or processing. **See Exhibit A –General Requirements, Appendix 1.** An oil analysis shall mean, as a minimum, the following tests: Dielectric test, acidity test, color test, power factor test and interfacial tension test. Where acidity, interfacial tension or other tests indicate the presence of acidic, colloidal, or other contaminants, a re-

refining process, the Fuller's Earth pressure percolation method, shall be used to remove these contaminants.

1. The delivered transformer oil and oil used at the factory shall be non-PCB oil. The Manufacturer shall certify, by statement on the transformer test report, that all oil used in processing and testing the transformer contained less than 2 PPM polychlorinated biphenyls as determined by test method ASTM D4059 or equivalent.
  2. Failure of any of the above tests shall be grounds for refusal of the oil shipment, and a new shipment required immediately.
- B. A complete Doble or Biddle power factor test shall be performed on the transformer. Power factor tests shall be performed in accordance with the standards and procedures established by the test equipment manufacturer for the type of equipment and voltage class applicable and shall include windings, bushing tests and surge arresters. Three copies of a complete written report shall be submitted to the Owner for each piece of equipment, identifying test equipment, the test procedures followed, and the "as-found" and "as left" condition of equipment tested.
- C. Ratio Tests shall be made (1) at all tap positions of the manual tap changer for de-energized operation with the automatic load-tap-changer on the rated voltage (Neutral Tap) position, and (2) at all automatic load-tap-changer positions with the manual tap changer for de-energized operation on the rated voltage (Neutral Tap) position.
- D. The insulation resistance test, , shall be performed so as to produce results that can be directly compared to the technique used and the results obtained by the original equipment manufacturer for establishing the base resistance values. Resistance readings shall be recorded for all windings on the full winding tap position.
- E. All current transformers shall be checked for ratio, saturation excitation, burden, and polarization. The correct location and polarity as per identification marking shall be verified.

- F. A Sweep Frequency Response Analysis (SFRA) test shall be performed on the transformer at the site, after it has been installed on the foundation. The SFRA test equipment used, and test procedures used for the field tests, shall be those recommended by Doble Engineering. Results of the SFRA field tests shall be compared with the Certified Factory tests made prior to shipping, to determine that no shipping damage was sustained and that the unit is ready for service. A composite test report, approved by the Manufacturer and reviewed by the Owner, shall be provided to the Owner for future reference.

### 3.05 FACTORY SERVICE ENGINEER

The services of a fully qualified factory trained service engineer shall be made available during assembly, filling with oil, and testing after assembly. The service engineer shall be made available for one eight-hour day to instruct Owner's personnel in the proper operation, adjustment, test, and maintenance of the transformer. Such instructions shall be in addition to work specified above.

- A. The work of the service engineer to be performed under the scope of this contract shall be coordinate with the work to be performed by the Owner.
- B. When the presence of a service engineer is required at the time equipment is placed in service, the service engineer shall perform all operations required to establish that the unit is ready to be placed in service, to advise the Owner when the unit is ready to be energized and upon approval by the Owner, to place the unit in service. As part of this operation, the service engineer shall afford opportunity to Owner's personnel to observe and learn the correct practices to be followed prior to energizing equipment.
- C. A fully qualified service engineer must be available upon 24 hours' notice, and qualified shop facilities must be available within a radius of 400 miles of the Owner.

## APPENDIX 1 - OIL TREATMENT

### A. GENERAL:

1. The purpose of this appendix is to set certain minimums for oil filling, which may be superseded by more stringent requirements of a particular equipment manufacturer. This appendix shall not be construed as establishing the details as to how the equipment is to be received, tested, erected, and made ready for installation and connection to the energized circuit; nor is it to establish the details as to how the oil that will be used in such equipment is to be received, treated, and placed in such equipment. The details are to be established by the recommendations of the manufacturer of the equipment to be installed or by a good standard practice. Acceptable procedures, depending upon which establishes the most stringent requirements for the procedures required to erect or install the equipment or to process and treat the oil to be placed therein, are as follows:
  - a. Those set forth in this appendix.
  - b. The published recommendations or requirements for procedures prepared by the equipment manufacturer.
  - c. Special recommendations or requirements issued by the equipment manufacturer for this application.
2. All appropriate receiving inspections and tests shall be made of and on the equipment to be installed. All operations required for the proper erection and installation of such equipment, including necessary detailed testing, shall be scheduled as shall the operations that are inherent in the testing and placement of oil. All necessary grounds shall be positively established including, without limitation, those grounds required to control the development of static electricity and to disperse and eliminate any static electricity that develops.

3. All appropriate receiving tests shall be performed on the insulating oil. Tests shall be individually made and shall be complete for each compartment of each carrier. Certified copies of tests made at the depot where oil is placed in transport shall be compared with requirements of equipment manufacturer. Shipping and receiving tests shall demonstrate that the oil proposed for delivery meets the equipment manufacturer's requirements. Necessary arrangements shall be made for the delivery, placement and setup of oil processing equipment, necessary safety precautions shall be taken and provisions for required testing shall be satisfactorily completed.
4. Oil-processing equipment shall be of adequate capacity for the size of equipment to be installed and for the services required. Adequate vacuum levels must be maintained. The necessary corrective action shall be taken to eliminate leaks which would be a contributing factor to the inability to maintain and hold vacuum.
5. Important considerations are the elimination of moisture and oxygen, both in free air space or entrapped or entrained in windings or oil. Acceptable level of oxygen is 0%. Acceptable levels of moisture shall be stated in the published recommendation of the equipment manufacturer and shall be established by proper dew point tests.
6. Vacuum levels and periods of time for holding such levels shall be not less than those stated herein and shall be increased as necessary to maintain the levels recommended by standard test procedures or the specific recommendations of the equipment manufacturer.
7. All vacuum gauges shall be properly operable and shall have current calibrations.
8. Check rotation of pump and motor to confirm that the wheel of the pump is turning in the direction established by markings on the housing.
9. Establish with certainty that the valves to radiators, coolers, or other compartments (except conservator tank) connected to the main tank are open before drawing a vacuum on the equipment tank. Further attention shall be

given to ensure that all interconnecting valves are operable and are in the proper position as are any connections or openings between the bushings, structural chambers, the bushing mounting and the main equipment tank and to ensure that the connections and valves to the conservator tank are in the proper position.

10. Disable the transformer load tap changer to ensure that the equipment cannot be operated while the main tank is under a vacuum.
11. Take the necessary steps, including but not limited to, grounding of terminals to ensure that no voltage is applied to the equipment while under vacuum. This includes the elimination of any test or other procedure which could cause any voltage in the equipment.
12. Equipment must be under the observation and control of qualified personnel while vacuum tests are in progress. This includes the periods of waiting while the vacuum is being held for stated periods of time.
13. In the event vacuum or oil processing equipment should fail during the accomplishment of tests or processing, it shall be necessary to restart the tests or processing procedure. This requirement for restarting procedures will not be justification for extension of contract time or changes in contract price, therefore it may be appropriate to have backup equipment available.
14. All necessary installation operations that are required shall be performed in a timely manner so that once vacuum procedures are established and the equipment has been dried, the oil may be introduced with minimum requirements for opening or otherwise reducing the quality of treatment of the environment in which the insulating oil is placed or of the oil itself.
15. All necessary precautions must be taken as regards the equipment to be installed, the test equipment, the oil, the oil handling, and transfer equipment.
16. The Service Engineer, as required elsewhere in these specifications, shall be present at the time the equipment and oil are received, receiving tests are conducted and during all other procedures and tests for processing and placement of oil.

**B. VACUUM AND RELATED PROCEDURES:**

1. Dew point tests (ASTM D 2029) shall be conducted as part of the receiving test. In the event these dew point tests indicate moisture content above that acceptable to the equipment manufacturer, the carrier and the equipment manufacturer shall be notified, and operations suspended until instructions (to be confirmed in writing, with copies to the Owner) are received from the equipment manufacturer.
2. A careful log shall be maintained of the time that the equipment is open. Operations shall be suspended, and equipment shall be closed if temperature, humidity, or other weather conditions are such that the operations requiring the equipment to be opened would jeopardize the condition of the equipment. The time that operations are suspended shall be counted as "open" time in determining how long equipment is to be held under a vacuum unless the equipment is sealed and secured under dry nitrogen (ASTM D 1933) at a minimum pressure of 3.0 psig.
3. If the dew point test conducted as part of the receiving test for the equipment demonstrates moisture content acceptable to the equipment manufacturer, and subject to acceptable temperature, humidity and other weather conditions, the necessary steps in the assembly and erection of the equipment shall be completed.
4. Information as to the local temperature, humidity and other weather conditions and the time required for the equipment to be opened for assembly and erection shall be coordinated with the Service Engineer. A record of such local weather conditions shall be maintained in the log.
5. The equipment to be installed shall be closed. Prior to closing, dew point tests shall be taken, following which the equipment shall be pressurized with dry nitrogen. The dew point of the dry nitrogen used to charge the equipment shall be taken and the equipment shall be allowed to sit a minimum of 24 hours, after

which time a dew point test shall again be taken and, depending upon the moisture content evidenced by a dew point, the equipment processing shall proceed or shall be suspended, pending advice from the equipment manufacturer.

6. The degree of pressure to be applied shall be as established by the equipment manufacturer and shall be held for a period of 24 hours. Leaks, if any, shall be detected and corrected. The equipment shall be re-pressurized and held for a period of 24 hours and the process repeated until such time as satisfactory conditions are established. If satisfactory moisture conditions cannot be established after two pressure/vacuum/pressure cycles are completed, a complete dry-out procedure recommended by the manufacturer and approved by the Owner shall be satisfactorily accomplished.
7. The oil processing equipment shall be assembled. At an appropriate time, the vacuum equipment shall be connected from the vacuum pump to the equipment to be installed, making the connection at the approved vacuum connector location. Any vacuum/pressure detection or relief devices shall be left in an operating condition. Connection shall be made with a pipe of adequate size, but not less than 2-1/2 inches I.D. This pipe shall be used to connect the vacuum hose with the cutoff valve and a vacuum gauge. The vacuum millimeter sending unit shall be placed on the equipment to be installed in the most logical location.
8. Proper connection and testing of pumps shall be accomplished. The vacuum pump shall be run with the vacuum booster cut off at a 30-inch vacuum to establish that the pump is operating satisfactorily. The vacuum booster valve shall be open to dry the vacuum hose (by establishing a minimum reading of 0.2 millimeters under blanked-off conditions measured on the vacuum gauge connected to the vacuum pump).
9. Before opening the valve to extend the vacuum to the equipment to be installed, the initial moisture level shall be established by the dew point test.
10. After the dew point reading of the equipment to be installed is established, the valve at the top of the equipment shall be opened to extend the vacuum into

the equipment and the exact time for opening the valve and initiating the vacuum shall be noted and recorded.

11. The vacuum shall be pulled to a level of 1.0 millimeter, or less.
12. The specified vacuum shall be maintained for a minimum of 24 hours, or 12 hours plus 2 hours for each hour that the equipment has been "open" or exposed to the atmosphere during installation and erection, whichever time shall be greater. If satisfactory moisture levels have been established prior to pulling down the vacuum test, proceed to Paragraph 21. If satisfactory moisture conditions have not been established by dew point tests, proceed as described in the following paragraphs.
13. Break the vacuum with extra-dry nitrogen. The condition of nitrogen used for this purpose shall be verified by a dew point test at the site.
14. Re-pressurize the equipment with extra-dry nitrogen in accordance with the recommendation of the equipment manufacturer.
15. Equipment shall be left under pressure for a minimum of 24 hours.
16. Conduct all required dew point tests of the equipment and verify that readings satisfy the requirements or recommendations of the equipment manufacturer.
17. If the dew point tests do not produce satisfactory results, the pressure/vacuum/pressure cycle shall be repeated. See Paragraph 6. If satisfactory results are obtained proceed as described in the following paragraphs.
18. Restart the vacuum pump in preparation of drawing the vacuum for oil filling. Start the pump, with the main valve on the equipment being installed closed, to pull pump and hose down to 0.2 millimeters under blanked-off conditions to ensure that pump and hose are working properly. Maintain vacuum for a minimum of one hour; leave the booster in manual mode, with booster valve closed, if booster is in service.

19. Open the main vacuum valve at the top of the equipment to be installed. Put the booster in the automatic mode and open the booster valve.
20. Pull the vacuum down to 1.0 millimeter or less (not more than 1.0 millimeter) and hold for a minimum of 12 hours, or time recommended by factory whichever is longer.
21. Conduct necessary receiving tests on oil after vacuum conditions have been satisfied and oil satisfies the test requirements as specified by the equipment manufacturer. Start oil flow into the main tank.
22. Maintain a vacuum of not more than 3 millimeters while oil is filling.
23. Adjust flow rate of oil so that specified vacuum is maintained.
24. Bring the oil to the level stated by the manufacturer above core and coils. Once the oil has reached the established level, shut down the oil flow, maintain the vacuum pump in operation at not more than 1 millimeter of vacuum, for a minimum of four hours.
25. Break the vacuum with extra-dry nitrogen, with the condition of the nitrogen verified by on-site dew point test.
26. Pressurize the tank to the level specified by the equipment manufacturer. Following the recommended procedure stated by the equipment manufacturer, and fill other compartments as required.
27. Ensure that oil is filled to the level specified by the equipment manufacturer.
28. Be sure that all oil valves are left in proper position. Record all readings, have readings verified by the Service Engineer and deliver the original to the Owner's representative. Follow all necessary safety procedures. The responsibility for the equipment to be installed shall remain with the equipment manufacturer until

the Service Engineer certified the equipment as ready to be energized and the equipment is accepted as being in this condition by the Owner's representative.

TECHNICAL SPECIFICATIONS  
AUTOTRANSFORMERS 105/140/175 MVA  
DEARMIN SUBSTATION

PART 1 - GENERAL

1.01 WORK INCLUDED

This section supplements Exhibit B – General Requirements and provides technical design information for the manufacture, assembly, accessories, factory test requirements and operating requirements for high-voltage type outdoor oil-immersed autotransformer.

1.02 RELATED SECTIONS.

Related sections are Exhibit B – General Requirements.

1.03 TRANSFORMER CAPABILITY

- A. The transformer unit shall be capable of transforming its self-cooled rating continuously, oil to air, at rated voltage and frequency without exceeding a temperature rise of 55°C. The transformer shall be equipped with two stages of automatic, forced air auxiliary cooling equipment which shall increase its self-cooled rating to the levels stated with the auxiliary cooling equipment in service and without exceeding a temperature rise of 55°C. The transformer shall be insulated to permit safe operation at not less than 65°C with increased thermal operating capacity of not less than 12%.
- B. The impedance of the transformers shall be based on the self-cooled rating (55°C).

## 1.04 TRANSFORMER RATING

|    |                                       |                                                                                                                                                      |
|----|---------------------------------------|------------------------------------------------------------------------------------------------------------------------------------------------------|
| A. | Number of Phases                      | Three                                                                                                                                                |
| B. | Coolant                               | Insulating Oil                                                                                                                                       |
| C. | Type                                  | ONAN/ONAF/ONAF<br>(See item 1.04)                                                                                                                    |
| D. | Frequency                             | 60 Hz                                                                                                                                                |
| E. | Winding Impedances                    | 7.5% @ 105 MVA with $\pm 3\%$                                                                                                                        |
| F. | Capacity                              | 105/140/175 MVA<br>(Main Windings)<br>(Tertiary Winding: 35% of largest<br>MVA<br><br>or common winding).                                            |
| G. | High Voltage Winding<br>Rated Voltage | 230 kV Grd. Wye.                                                                                                                                     |
| H. | Low Voltage Winding<br>Rated Voltage  | 67 kV Grd. Wye.                                                                                                                                      |
| I. | Tertiary Winding Rated Voltage        | 13.2 KV (Delta)                                                                                                                                      |
| J. | Full Rated Taps                       | As specified hereafter above<br>and<br>below rated voltage, manual for<br>de-energized operation; and<br>automatic for load tap change<br>operation. |
| K. | Basic Insulation Level (BIL)          | High Voltage – 750 KV                                                                                                                                |

Low Voltage – 350 KV  
Tertiary Voltage - 110 KV  
HOXO Neutral Voltage – 110 KV

|    |                             |                                                                                                              |
|----|-----------------------------|--------------------------------------------------------------------------------------------------------------|
| L. | Avg. Temperature Rise       | 105/140/175 MVA at 55°C, I<br>additional 12%<br>capacity (117/157/196 MVA)<br>at 65°C.                       |
|    | 1. Hot Spot                 | 55°C Rating - 65°C                                                                                           |
|    | 2. Hottest Spot Temperature | 65°C Rating - 80°C                                                                                           |
| M. | Duty                        | Continuous                                                                                                   |
| N. | Phase Displacement          | IEEE Standard C57.12.00 (Typical)                                                                            |
| O. | Sound Level                 | Shall not exceed:<br><br>77 db @ 105 MVA<br>79 db @ 140 MVA<br>80 db @ 175 MVA<br>(5 db below NEMA TRI-1974) |

As a preference, Ocala Electric Utility prefers ONAN/ONAF/ONAF. It is recommended that the base bid incorporate a transformer of this type. However, if the bidder believes a different design would be to the mutual interest of the Bidder and the Utility, it is recommended that you bid an alternate, incorporating the alternate method of cooling you prefer.

- A. The Autotransformer will be used as a connection point from a 230 KV transmission line to supply bus for a looped transmission system at 69 KV. The neutral of the transformer will be solidly grounded.
- B. Available control power from the existing battery bank is 130 VDC.

#### 1.06 SHORT CIRCUIT REQUIREMENTS

- A. The transformer shall be designed and constructed to be completely self-protected by its ability to withstand, without mechanical damage, the effects of external short circuits, as specified in IEEE C57.12.00, Section 7, IEEE C57.12.90, Section 12 and IEEE C57.109. The leakage impedance measured after the test series shall not differ from that measured before the Test series by more than two percent of its former value.
- B. The transformer test data shall include proof of circuit design considerations by short circuit calculations. The calculations shall include electrical and mechanical forces.
- C. Short circuit force values shall include, but not be limited to, short circuit amperes, repulsion force in pounds and vertical force in pounds.
- D. Mechanical safety factors used in design of hoop strength of the outer winding, buckling strength of the inner winding, core clamp strength, vertical bar strength, clamping ring strength and jackscrew strength.

### PART 2 PRODUCTS

#### 2.01 MATERIALS AND EQUIPMENT

Materials and equipment shall comply with the requirements of Exhibit B – General Requirements.

**2.02 TANK**

The transformer tank and base are specified in Exhibit B – General Requirements.

**2.03 CORES**

- A. Cores shall be assembled and tested to conform to the requirements of ASTM 712, with core losses limited per ASTM A 343.
- B. The transformer shall be free from unusual or harmful vibration. Lifting eyes or lugs shall be provided for handling the core assemblies when un-tanked.
- C. The core laminations shall be free of burrs and shall be stacked using modern joint design to provide uniform flux density and magnetic reluctance over the joint region. The lamination insulation coating shall be impervious to hot insulating transformer oil.
- D. The core shall be rigidly clamped with the electrical centers of all coils in line to prevent deteriorating vibrations, interference with oil circulation, objectionable noise conditions, and short circuit and shipment distortions. The core shall be securely grounded externally on the tank. The core ground lead shall be brought out through the tank cover, or through the side of the tank close to the cover, with a 5 KV insulated bushing.

**2.04 WINDINGS**

- A. The transformer windings insulation level shall conform to the latest requirements of IEEE C57.12.00 Table 5, as follows:
  - 1. *High Voltage Requirement*

|    |                           |        |
|----|---------------------------|--------|
| a. | Voltage Class             | 230 KV |
| b. | Low Frequency Test        | 325 KV |
| c. | BIL                       | 750 KV |
| d. | Chopped Wave Impulse Test | 825 KV |

2. *Low Voltage Requirement*

|    |                           |        |
|----|---------------------------|--------|
| a. | Voltage Class             | 69 KV  |
| b. | Low Frequency Test        | 140 KV |
| c. | BIL                       | 350 KV |
| d. | Chopped Wave Impulse Test | 385 KV |

3. *Delta Tertiary Voltage Design*

|    |               |        |
|----|---------------|--------|
| a. | Voltage Class | 15 KV  |
| b. | BIL           | 110 KV |

4. *HOXO Neutral Voltage Design*

|    |     |         |
|----|-----|---------|
| a. | BIL | 110 KV. |
|----|-----|---------|

- B. The transformer windings shall be designed and tested to withstand impulse test voltages in accordance with IEEE Standard C57.12.00. The windings shall be made of copper and assembled in a manner as best suited for the application. Proper consideration shall be given to all factors of service such as high dielectric and mechanical strength of insulation, coil characteristics, and minimum restrictions to free circulation of oil. Coils shall be made up, shaped, and braced to provide for expansion and contraction due to temperature changes in order to avoid abrasion of insulation and to resist movement and distortion caused by abnormal operating conditions. Adequate barriers shall be provided between windings and core, and between high-voltage and low-voltage windings. End turns or section of coils shall have additional insulation protection against abnormal line disturbances. The entire design, construction, and treatment of the windings and their assembly on the core shall embody the latest improvements in the art and conform to best modern practice.

- C. An insulation system suitable for an average winding temperature rise by resistance of 65°C shall be used.
- D. The autotransformer shall have the primary to secondary autotransformer winding wye connected and shall be designed for a power supply of 230,000 to 67,000 volts, nominal. Rated KVA taps shall be provided as stated in Section 1.04.
- E. The tertiary winding shall be suitable for 13.2 KV operation. This delta tertiary stabilizing winding shall be connected in Delta and shall be rated to make the winding self-protecting. The stabilizing winding shall be brought out on four bushings; two of these bushings shall be used for external closing of the Delta and shall be suitable for operating with this corner of the Delta grounded. Deviation from this requirement shall be so stated in the proposal.
- F. The phase-to-neutral voltage of the high voltage winding shall lead by 30° phase-to-neutral voltage of the tertiary winding.
- G. The components of the transformer shall take into account the increased capacity allowed by the 65° insulating system and the ability of the transformer to operate at the higher temperature shall not be limited by any ampacity or other limitations.

## 2.05 INSULATING OIL

Insulating oil and oil preservation equipment are specified in Exhibit B, Appendix 1.

## 2.06 TAP CHANGER REQUIREMENTS

### A. Manual Tap Changer:

1. A manual tap changer shall provide for full capacity range of plus 5% and minus

5% in two steps of 2 ½ % above and below the middle tap position for the particular voltage rating at taps of 241,500; 235,750; 230,000; 224,250 and 218,500 volts.

2. The high voltage windings shall be nominally rated for 230 KV. The low voltage windings shall be capable of delivering 67 KV Wye with grounded neutral.
3. The handle for manual operation of the tap changer for De-energized operation shall be brought out through the tank wall and must provide adequate clearance from any energized part. Preferably the handle shall be located at not more than five (5) feet above top of concrete pad, but may be located at greater height above top of concrete pad if in accordance with manufacturer's standard design. Provisions shall be made for padlocking the handle in the chosen position and for positive visual tap position indication without unlocking. A stainless steel nameplate, which states "**WARNING - Do Not Operate This Tap Changer When Transformer is Energized**", shall be permanently attached to the tank located next to the operating handle. Screws, if used to attach nameplate, shall be stainless steel. This nameplate shall be shown on the outline drawing. This tap changer shall be referred to on the nameplate and at the tap changer handle as "DEENERGIZED TAP CHANGER".

B. Automatic Load Tap Changer (LTC) and Controls:

1. LTC shall be as manufactured by Reinhausen - type RMV-II. (No substitutions).
2. Automatic LTC equipment shall be provided for automatic operation of the low voltage taps and shall provide approximately 10 percent plus and 10 percent minus adjustment of the voltage rating of the low voltage windings. The voltage change shall be in approximately 5/8 percent steps with 16 steps above and 16 steps below rated low voltage.
3. The LTC equipment shall be designed to provide regulation of the low voltage winding, maintaining full capacity KVA at all tap positions above rated voltage and not less than rated current at all tap positions below rated voltage.

4. LTC Windings
  - a. The regulating winding shall be electrically independent or placed on a separate winding tube from the high and low voltage windings and shall be fully distributed.
  - b. Preventive auto and series transformers, if required, shall be constructed to Class 2 autotransformer standards including circular core and coil design and disc or helical type winding construction, using all copper conductors.
5. The LTC equipment shall consist of a tap selector with vacuum interrupting switch, a motor-driven mechanism, and automatic and manual control devices. The LTC equipment shall be capable of a minimum of 500,000 operations before contact replacement is required. A dead-front operating panel shall be provided whereby the gears and mechanism are covered. Only Beckwith #M2001C solid state control with all associated paralleling equipment is acceptable unless specifically identified as an exception and approved in writing. If fuses are used in the control circuits, two sets of spare fuses for each transformer shall be provided by the Contractor and one set shall be stored in a suitable clip next to the control panel.
  - a. The LTC mechanism drive motor shall be located at operator height, if possible, for ease of maintenance and replacement. Draining of the LTC compartment shall not be required for access to the drive motor.
6. LTC operating unit will be reactance vacuum type.
7. Local position indicator shall be calibrated L (lower) - N - R (Raise) from the left end to the right end of the scale. Position indicator shall be located so that it will be visible to an operator at the control switch for the drive motor.

Indicator shall be mechanically driven directly from the drive mechanism without auxiliary devices. Drag hand shall be reset electrically by pushbutton located in the Transformer Control Cabinet.

- a. A stainless-steel nameplate shall be permanently mounted on the outside of the control cabinet housing the manual raise and lower controls so an operator can identify the LTC control housing. A duplicate nameplate shall be mounted inside the cabinet next to the raise and lower controls. The nameplates shall state: "LOAD TAP CHANGER –for Operation with Transformer Energized and Carrying Load". Screws, if used to attach nameplates, shall be stainless steel. The nameplate shall be shown on the outline drawing. The nameplates shall include the following information:
  1. Manufacturer of the mechanism.
  2. Model number of the mechanism.
  3. Year of manufacture.
  4. Maximum rated through current of the mechanism.
  5. Type of transition impedance.
  6. Method of arc interruption (type of mechanism).
  7. Type of drive mechanism, direct or energy spring.
  8. Amount of oil in the mechanism compartment.
8. The LTC equipment shall be suitable for, completely equipped and wired for continuous parallel operation with similar transformers. The Contractor's drawings shall provide complete wiring & schematic diagrams for parallel operation.
9. The automatic LTC equipment shall include:
  - a. A voltage regulating relay and line drop compensator.
  - b. The load tap changer shall be provided with a 17-position switch with 16–80-ohm resistors or with a 33-position switch with 32–40-

ohm resistors for tele-metering of tap position. The switch shall be mechanically connected to the tap changing mechanism and is to switch the taps of the resistor and the moving contacts of the switch are to be wired to terminal blocks for the Owner's remote connections. The circuit is to be insulated for 125 VDC operation. Limit switch and stops to prevent travel beyond extreme tap positions shall be provided.

- c. Auxiliary control.
  - d. Current transformer for the line-drop compensator with a 0.2 ampere or other suitably rated secondary.
  - e. Reversing switch for reactance portion of the line-drop compensator.
  - f. Auxiliary current transformers to permit parallel operation by the circulating current method with other units in the same substation.
  - g. Provisions for Owner's wiring for supervisory control of the LTC equipment.
  - h. All other features standard on manufacturer's LTC equipment.
  - i. Note: It shall be possible for others to install complete supervisory control and indication. All necessary terminals, etc., shall be provided at this time. Drawings indicating modifications required and facilities provided as part of original manufacture shall be provided.
10. Control equipment shall be mounted in a NEMA 4X (304 stainless steel) suitable outdoor weatherproof compartment on the transformer, designed to provide protection against windblown dust and rain. The control equipment shall be accessible by an operator at ground level and shall be a maximum of 5 feet above top of concrete pad. The control equipment shall include the following:

- a. Remote-Local switch for enabling remote LTC Raise-and-lower operations from control building panel.
  - b. Raise-and-lower switch for manual control at the transformer.
  - c. Selector switch for automatic or manual control of the LTC.
  - d. Selector switch for independent or parallel operation.
  - e. Position indicator with drag hands to indicate maximum tap position travel, with electrical reset in control cabinet.
  - f. On-position indicator.
  - g. Electrically actuated operation counter in cabinet.
  - h. Power supply switch.
  - i. Resistors mounted and wired to an analog transducer producing a 4-20ma output connected to an SEL-2414 for position indication. (See Paragraph 2.06.B.9.b)
  - j. Hand-wheel for use during maintenance, interlocked with motor control.
  - k. Light and G.F.C.I. convenience outlet.
  - l. 120 or 240 VAC space heaters and fused switch with personnel barrier.
  - m. Local voltmeter test connection.
11. The tap selector switch and contactor mechanisms shall be located in a compartment mounted on the transformer and filled with oil separate from the oil in the main transformer tank. This tap changer compartment shall be sealed from the main transformer tank so there can be no transfer of oil between the two and shall have the capability of being completely drained or filled, under vacuum, without dropping the oil level in the main transformer

tank. The LTC compartment shall be capable of withstanding full vacuum in the main tank without damage to the LTC compartment or components. This compartment shall be provided with the following accessories:

- a. Non-corrosive hinged doors with oil-resistant gaskets and stainless-steel hinges and hardware.
  - b. A combination oil drain, sampling and lower filter press valve, and an upper filter press valve.
  - c. An automatic reset pressure relief device shall be furnished for relief of excessive internal pressure. The design of this device shall minimize discharge of oil and exclude the weather after operation and shall be equipped with alarm contacts.
  - d. Weatherproof cabinet breather
  - e. Magnetic liquid level oil gauge with low level alarm contacts.
12. The 120 VAC reference voltage regulating relay will be obtained from an Owner-supplied voltage transformer in the substation, and the power required to drive the LTC mechanism will be obtained from the auxiliary power transformer. All internal wiring required to interface with external wiring shall be terminated on terminal blocks. Each individual function shall be supplied by a separate circuit which shall be individually protected by an approved circuit breaker device. Outline drawings shall completely indicate internal and external wiring.

## 2.07 THERMAL PROTECTION

- A. Cooling equipment shall be provided for the transformer and shall be fully automatic, operating in response to winding or top-level oil temperature, the means being optional with the manufacturer. Manually operable switches connected in parallel with the automatic control contacts shall be included and may be in the control compartment. Auxiliary cooling equipment shall be complete up to incoming supply terminal box. All equipment shall be coordinated for operation at single phase, 120 or 240 VAC.
- B. The cooling equipment shall be fabricated so that water cannot collect on the outside, oil flow will not be impeded inside, and maintenance painting will be facilitated.
- C. The transformer shall be provided with a sufficient number of radiators to provide adequate cooling with average ambient air temperature of 30°C, with 12 hours at 40° C, over a 24-hour period.
  - 1. The radiator shall be attached to flanges welded into the case wall and the joints shall be made tight by means of suitable gaskets.
  - 2. Radiator metal wall thickness shall not be less than 18 gauge.
  - 3. Radiators or groups of radiators shall be attached to the flanges welded to the tank wall by means of approved valves, (pressure seal type butterfly or flapper valve type) which may be used to isolate or remove sections of radiators without decreasing the capacity of the transformer by more than one-sixth (1/6) at any stage of cooling.
  - 4. Radiators shall be provided with drain plugs.
  - 5. Radiators shall be galvanized after fabrication. Radiators shall be painted as described in Exhibit A, Article 2.03.
- D. The cooling and control equipment shall be self-contained for the unit. Two Stages of auxiliary cooling shall be provided, with each of the two auxiliary stages subsequently increasing the transformer rating by a minimum of 33.33% over the

Base rating. Control equipment for the cooling equipment shall be furnished and shall be fully automatic, in operation, with facilities provided for continuous manual run control, if desired. In the fully automatic operation mode, the control equipment shall be designed to start and stop the fans, and/or oil pumps, as the oil or transformer winding temperature requires. To equalize wear, selection of the cooling fan bank which operates on first stage shall be manually selectable by the Operator. The control equipment shall be supplied as a unit, complete with all necessary protective devices and accessories. Each fan circuit shall be individually protected. Fans supplied as cooling equipment which have blades that are riveted to their rotating base mount are not acceptable. However, cast aluminum blades are acceptable. Fan blades shall be encased in an OSHA approved safety screen. The number of fans provided in each cooling bank shall be as required to meet the required design cooling capacity for the stage, plus an additional 10% of the cooling bank's design rating.

- E. An additional fan starting contact shall provide for local/remote control of air-cooling equipment.
- F. A dial type "Thermal Load" indicator gauge shall be furnished and attached to the tank at eye level which will indicate the percent thermal loading of the transformer at all times. In addition, the "Thermal Load" indicator shall be equipped with a red maximum hand (re-settable locally) which will show highest condition of thermal loading which occurred since last observed and reset. Auxiliary contacts completely wired to terminal blocks shall be provided to telemeter 55°C and 65° oil temperatures and operation of first and second stage cooling equipment.
- G. The circuit from the "Thermal Load" indicator current transformer to the "Thermal Load" indicator gauge shall be brought through a test switch in the transformer control cabinet. This test switch shall be capable of shorting the "Thermal Load" indicator current transformer circuit before it terminates at the "Thermal Load" indicator gauge giving warning to short out the "Thermal Load" current transformer via the test switch before removing the cannon plug from the "Thermal Load" indicator gauge.

- H. If pumps are provided as part of the cooling system, necessary valves and fittings shall be installed to make it possible to remove a pump for service and continue to operate the transformer at a load level no less than 133% of its self-cooled rating.

## 2.08 TRANSFORMER PROTECTION

A. Surge Protection:

1. Three Station-Class Gray surge arresters, G.E. Co. 180 KV "Tranquell", Cat. No. 9L11XPA180, or approved equal, shall be mounted adjacent to the high voltage bushings; three Station-Class Gray G.E. Co. 60 KV surge arresters "Tranquell", Cat. No. 9L11XPA060, or approved equal, shall be mounted adjacent to the low voltage bushings. Surge arrester mounting brackets shall be an integral part of the sides of the transformer tank or the double wall enclosure. Rating of arresters shall be fully coordinated with BIL level of the transformer.
2. A ¼" x 1 ½" copper bus arrangement shall be provided as a means to ground surge arresters to ground pads at the base of the tank. One bus arrangement for each set of arresters shall be secured to tank wall or structural members with removable fasteners.

B. Winding Thermal Protection:

Thermal protection shall be provided consisting of one 3-element thermal load indicating relay calibrated to operate on duration and magnitude of the transformer winding temperature (ANSI Device 49). This relay shall be equipped with one set each of four sequence contacts set for controlling the fans as required for alarm, shall automatically operate a remote annunciator when winding temperature approaches the maximum safe operating value, and will be used to alarm annunciator and lock out the circuit breakers if this temperature is exceeded.

An additional fan starting contact shall provide for automatic control of air-cooling equipment. The thermal load relay shall include a remote reset switch in the transformer control cabinet.

C Fault Detection:

1. The transformer shall be provided with a Qualitrol 900 or equivalent oil-operated fault pressure relay (ANSI Device 63) responsive to rate of rise of pressure. Contacts shall be rated for 125 Vdc operation and shall be suitable to operate a remote auxiliary seal-in relay.
2. The oil-operated fault pressure relay shall be furnished and properly installed in strict accordance with the manufacturer's recommendations. A suitable valve shall be supplied between the tank and the relay.
3. Provide a certified test report to demonstrate that the relay has been fully tested and is properly calibrated. A copy of the test report shall be included with the transformer test reports.
4. Pressure relief devices shall be provided for the transformer main tank and LTC compartments. Suitably sized pressure relief devices manufactured by Qualitrol shall be supplied with local operation indication and output contacts suitable for alarm of operation.

2.09 CURRENT TRANSFORMERS

- A. Current transformers shall be designed for the appropriate classification accuracy rating. The basic impulse insulation level, multi-ratio current rating, secondary taps, continuous rating, and short-time current ratings shall be in accordance with IEEE C57.13.
- B. Unless noted, all current transformers shall be multi-ratio, five (5) tap minimum, with industry standard tap configuration and ratios. All taps shall be brought out

and terminated on shorting type terminal blocks located in the control compartment. ANSI classification shall be as noted.

Note: Current transformer ranges may be adjusted by Owner at or prior to the time of shop drawing review at no additional cost to the Owner.

C. C.T.'s required for autotransformer:

1. High Voltage Bushing – One per bushing (three) 1200:5 MR (C800) and one per bushing (three) 2000:5 MR (C800). (Installation Note: The 2000:5 MRCT shall be the bottom set). All current transformers shall be of Relaying Accuracy Class with a Thermal Rating Factor of 2.0.
2. Low Voltage Bushing - One per bushing (three), 1200/5 MR (C800) and two per bushing (six), 2000:5 MR (C800). (Note: The 1200:5 MRCT shall be the bottom set and shall be thermally rated for continuous 10 amperes secondary). All current transformers shall be of Relaying Accuracy Class with a Thermal Rating Factor of 2.0.
3. HOXO Neutral Bushing - One per bushing 2000:5 MR (C800). The current transformer shall be of Relaying Accuracy Class with a Thermal Rating Factor of 2.0.
4. Tertiary Winding – Two, 2000:5 MR (C800). Each current transformer shall be of Relaying Accuracy Class with a Thermal Rating Factor of 2.0.

D. Bushing C.T. information shall be shown on separate nameplate or main nameplate and shall be per IEEE C57.13, Paragraph 6.8.

E. Polarity marks on bushing CT's shall be toward external bushing terminals.

- F. The tertiary current transformers are to be located on the tertiary bushings between the  $Y_1$  and  $Y_3$  winding points with the polarity mark toward the  $Y_3$  (based on tertiary winding having standard ANSI 30° lag from the high voltage winding).

## 2.10 BUSHINGS

- A. The insulation level of line bushings shall be equal to or greater than the insulation level of the windings to which they are connected.
- B. All windings leads (including the neutral) and core ground(s) shall be brought out and connected to terminal bushings. The bushings shall be designed, and terminations so made that no undue stressing of the bushings shall occur due to conductor expansion or temperature changes.
- C. The bushing porcelain shall be gray glaze and manufactured by the wet process method and shall be homogenous, free from laminations, cavities or other flaws affecting its mechanical strength or dielectric qualities. The porcelain shall be well vitrified, tough, and impervious to moisture. The glazing shall be free of imperfections such as blisters or burns. High voltage bushings shall be paper-oil condenser bushings interchangeable with ANSI Standard bushings for power circuit breakers in the same voltage classes. Bushings shall be as manufactured by ABB or Lapp. (No substitutions).
- D. High voltage bushings shall be located in Segment 3 and low voltage bushings shall be located in Segment 1, HOXO neutral bushing shall be located in Segment 2, per IEEE C57.12.10, Figures 7 and 8. The low voltage X2 bushing shall be on the same centerline with the high voltage H2 bushing.
- E. Power factor test terminals shall be provided on all cover mounted high voltage bushings.

- F. All necessary connectors and hardware shall be furnished for connecting the core ground bushings to the transformer ground.
- G. Terminal stud connectors shall be provided as follows for the bushing and surge arrester studs:

|                 |                                   |
|-----------------|-----------------------------------|
| High Voltage    | Lapp-Doble Test Terminals, 4 hole |
| Low Voltage     | Lapp-Doble Test Terminals, 4 hole |
| Neutral (HOXO)  | Spade Terminals, 4 hole           |
| Core Ground     | Spade Terminals, 2 hole           |
| Surge Arresters | Spade Terminals, 4 hole           |
| Tertiary        | Spade Terminals, 2 hole           |

1. On 69 KV and below, the  $X_1$ ,  $X_2$  and  $X_3$  bushings shall be supplied with bronze Lapp-Doble test terminal stud connectors to tin plated, 4-hole flat pad, vertical take-off. (No substitutions).
2. On 230 KV bushings, the Lapp-Doble test terminal stud connectors shall be bronze to tin plated, 4-hole flat pad, vertical take-off. (No substitutions).
3. On transformers with Delta connected tertiary windings, the winding shall be brought out on four bushings; two of these bushings shall be used for external closing of the Delta as specified in Section 2.04. All necessary connectors and hardware shall be furnished for connecting neutral and/or core ground bushings to the transformer ground.

H. Bushing Ratings:

Bushings shall comply with the dimensions, performance, and test requirements of IEEE C57.19.00 and IEEE C57.19.01 and shall have ratings as follows:

| Quantity/<br>Type | Insulation<br>Class KV | Current          | BIL &           | Withstand      |                | Min.              |
|-------------------|------------------------|------------------|-----------------|----------------|----------------|-------------------|
|                   |                        | Rating<br>Ampere | Full Wave<br>KV | 60 Sec.<br>Dry | 10 Sec.<br>Wet | Creep<br>Dist.-In |
| 3 – H.V.          | 196                    | 600              | 900             | 465 KV         | 385 KV         | 135               |
| 3 - H.V.          | 69                     | 1600             | 350             | 160 KV         | 140 KV         | 48                |
| 3 - L.V.          | 15                     | 2000             | 110             | 50 KV          | 45 KV          | 11                |
| 1 - Neut.         | 15                     | 2000             | 110             | 50 KV          | 45 KV          | 11                |
| 1 - Core          |                        |                  |                 |                |                |                   |
| Ground            | 5                      | 600              | 75              | 27 KV          | 24 KV          | 6                 |

## 2.11 CONTROL WIRING

- A. All control wiring shall be type SIS No. 12 AWG minimum, stranded copper, and shall be terminated in the control compartment on terminal strips with markings in accordance with wiring diagrams. This shall include termination of wiring for all control relays and devices, auxiliary switches, safety switches and device interconnections. Connectors shall be nylon-insulated ring tongue Burndy Type YAEV of appropriate size, (No substitutions). All conductors shall be identified by shrink fit or wrap-on sleeve with legible black characters on a white background to denote the destination terminal point of the conductor.
- B. All taps from five tap multi-ratio current transformers shall be brought to shorting type terminal blocks in the control compartment.
- C. **Auxiliary Control Wiring**  
All control wire runs on the outside of the transformer shall be installed in hot dip galvanized rigid steel conduit. Drain fittings shall be provided at the lowest points and breather fittings at upper points such that all moisture that collects will be drained. Control wires may be run in the transformer bracing but must be readily accessible for maintenance. Leads to fans may be made with open cable with PVC jacket and connected to a suitable outdoor waterproof box next to the fan. Fan supply cables shall not exceed six feet in length. Stainless steel

terminal studs shall be supplied in the enclosure box so that a motor may be disconnected and repaired with all other equipment in operation.

## **2.12 TERMINAL BLOCKS**

Wiring shall be terminated on terminal blocks clearly marked for circuit identification as follows:

- A. All mechanism control wiring shall be terminated on Teledyne/Penn-Union Cat. No. 6012 terminal blocks, (No substitutions).
- B. C.T. secondaries shall be terminated on Teledyne/Penn-Union Cat. No. 6006-SC shorting type terminal blocks, (No substitutions).
- C. Transformer auxiliary power supply terminal blocks shall be as follows:
  - 1. Terminal blocks for loads more than 80 amperes shall be Class 9080, Square D, Unit Construction, Type V or equal, suitable for wire range of #6 AWG-250 kc mil.
  - 2. Terminal blocks for loads less than 80 amperes shall be Class 9080, Square D, Unit Construction, Type U or equal, suitable for lug size range of #10 - #1/0 AWG.

## **2.13 ANNUNCIATOR PANEL**

An annunciator panel shall be installed in the transformer control cabinet. Annunciator shall be a Schweitzer Engineering Laboratories SEL-252302H100XC1XX relay shall be installed in the transformer control panel and be wired to all alarm points. All alarm points shall be properly labeled on the front of the annunciator. Programming of the SEL-2523 will be done by others.

Manufacturer: Schweitzer Engineering Laboratories  
Model: SEL-252302H100XC1XX  
NO SUBSTITUTIONS.

**2.14 NEUTRAL GROUND CONDUCTOR**

The transformer neutral will be connected to the substation ground grid. A minimum of two insulated mounting supports shall be provided on the transformer tank. The mounting supports shall be secured to the transformer tank and be provided with copper conductor clamps suitable for securing conductors up to 1000 kc mil.

**2.15 TRANSFORMER ACCESSORIES**

Other accessories shall include, but not be limited to, the following:

A. Control Cabinet:

1. A.C. Power

- a. Power Supply Switch (Source by Owner).
- b. Light and G.F.C.I. Convenience Outlet.
- c. Space Heater and Switch.

B. Gauges shall be equipped with ungrounded alarm contacts suitable for 125 VDC operation.

C. Magnetic liquid level oil gauge with low level alarm contacts. Qualitrol only.

D. Combination Pressure - Vacuum gauge with alarm contact

E. Dial type thermometer to indicate liquid temperature, attached to the tank at eye level, closed oil well design, with maximum reading pointer (re-settable locally) and alarm contacts. This gauge is in addition to the thermal load indicator of Article 2.07. Qualitrol only.

F. Winding temperature gauge, with heater and thermometer bulb mounted in a leakproof well, calibrated to indicate the transformer's hot spot winding temperature. Qualitrol only.

- G. Gas sampling valves.
- H. Automatic reset pressure relief devices on the LTC and main tank covers with alarm contacts. To be designed for minimum discharge of oil and to exclude air and water after opening.
- I. Upper filter press connections with 2-inch (min.) valve.
- J. Lower filter press connections with 2-inch (min.) valve and sampling device.
- K. Drain valves.
- L. A minimum of two copper-faced ground pads, diagonally opposite with two 0.50-13 tapped holes on 1.75-inch centers equipped with clamp-type grounding connectors equal to Anderson Electric Co. No. SWH-025-B for No. 2/0 AWG-250 kc mil copper cable.
- M. Conduit entrance provisions, current transformer connections including wiring, conduit, and test switches; controls, accessories and auxiliaries, and related wiring as specified elsewhere in this specification.

## 2.16 SPARE PARTS

The Contractor shall furnish (2) complete power transformers as described above, plus a complete set of spare parts as follows:

- A. Three (3) low voltage (69KV) bushings
- B. One (1) core ground bushing
- C. Two (2) sets of gaskets
- D. Four (4) sets low voltage fuses for LTC
- E. Two (2) 1-quart cans of touch-up paint for base coat

- F. Two (2) 1-quart cans of touch-up paint for finish coat
- G. Four (4) High voltage (230KV) surge arresters.
- H. Four (4) Low voltage (69KV) surge arresters.

### PART 3-EXECUTION

#### 3.01 FACTORY TESTS

- A. The following transformer tests shall be performed. The following standards shall be used for completing the test: IEEE C57.12.00, IEEE C57.12.10, IEEE C57.12.90, IEEE C57.91, IEEE C57.98, IEEE C57.109, IEEE C57.113 and IEEE C57.131.
  - 1. Resistance measurement of all windings on the full winding tap position of each unit. Use 2,500 V test equipment and correct to 20°C temperature reference.
  - 2. Ratio tests on the rated voltage connection and on all tap connections.
  - 3. Polarity and phase relation tests on the rated voltage connection.
  - 4. No-load (excitation) loss at rated frequency and at 100 percent and 110 percent of rated voltages.
  - 5. Total loss at rated self-cooled KVA and rated forced-cooled KVA(s) at rated voltages and frequency.
  - 6. Fan and/or pump power requirements for each rating.
  - 7. Regulation at unity power factor and 80 percent power factor lagging.
  - 8. Percent impedance, resistance, and reactance on rated self-cooled KVA base.
  - 9. Impedance and load loss at rated current and rated frequency on the rated voltage connection and at the tap extremes of each unit.

10. Exciting current at rated frequency in percent at 100 percent and 110 percent of rated voltages.
11. Hottest spot temperature rise at rated self-cooled KVA and forced-cooled KVA(s).
12. Temperature rise test data shall be on minimum and maximum ratings or may be given from a "thermal duplicate" unit.
13. Applied voltage tests.
14. High potential and induced voltage tests - ANSI Standard.
15. Bushing Tests: Power factor of bushing shall be furnished both as individual units and as installed in tank.
16. Terminal bushing test and flashover voltages -ANSI Standard.
17. IEEE C57.113 Partial Discharge (Corona) Tests: Test on completed unit based on one hour at 150% of maximum operating voltage to demonstrate satisfaction of a guaranteed level of 150 micro-volts.
18. Audible Sound Level Tests: Results of sound level tests shall be provided on each unit at the self-cooled rating and all forced-cooled ratings.
19. Resistance Measurement of Insulation: Use 5KV test equipment and correct to 20°C temperature reference to establish basis for future comparisons.
  - Measurements shall be made between windings and all windings and ground.
20. Insulation Power Factor: Record data shall state test method and specify style and serial number of test equipment and shall include temperature reference to establish basis for future comparisons. Tests shall be performed using a minimum test voltage of 10 kV. Results shall include separate values for CH, CL, and CHL. These values shall not be combined, and a value above 0.5%, corrected to 20°C, will not be acceptable.

21. The tests shall include a quality control impulse series in accordance with IEEE C57.98. The leakage impedance measured after the test series shall not differ from that measured before the test series by more than two percent of its former value.
  22. Fault Pressure Relay Test: A report for the fault pressure relay shall be obtained from the original manufacturer. The test report shall verify that the relay has been fully tested at the manufacturer's test laboratory and that it is properly calibrated. A copy of this test report shall be included with the transformer test report.
  23. Current transformer tests, (ratio, saturation and excitation, polarity) with curves.
  24. A Sweep Frequency Response Analysis (SFRA) test shall be performed on the transformer at the factory prior to shipment. SFRA test equipment and testing procedures, as recommended by Doble Engineering, shall be used for the tests. This test shall be performed with the transformer main tank filled with oil and all bushings installed. Transformer radiators may not be installed for this test. Response curves measured shall be provided to the Owner for comparison with subsequent SFRA field tests taken after the unit has been installed at the final substation site (See Section 16-000, 3.04G).
- B. Owner reserves the right to witness testing. The Contractor shall notify Owner, in writing, no less than 3 weeks prior to the scheduled starting date of the factory tests to allow Owner to witness testing. Testing shall take place within the United States of America to prevent international travel for personnel.
- C. The Contractor shall notify Owner of any unusual event or damage occurring during the fabrication of the transformer and of all tests which do not meet the specified standard values. Owner reserves the right at its option to inspect such damages or test failures. Corrective measures to overcome such damage or failure shall be subject to acceptance by Owner

### 3.02 CERTIFIED FACTORY TEST REPORTS

The Contractor is expressly advised that certified test reports on the unit(s) delivered must include values to permit determination of No Load and Load Losses and other power requirements. In the event such losses or requirements exceed the values guaranteed at time bids will be assessed as liquidated damages an amount to be determined as follows:

- |                                                |                                                                                                                                                                                                                                      |
|------------------------------------------------|--------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| A. No Load Losses                              | For each kW or fraction thereof that actual test losses exceed guaranteed losses, the Contractor will be assessed amount computed based on \$9,171 per kW.                                                                           |
| B. Load Losses                                 | For each kW or fraction thereof that actual test loss exceeds guaranteed losses, the Contractor will be assessed an amount computed based on \$2,943 per kW.                                                                         |
| C. Power Requirements<br>For Cooling Equipment | For each kW or fraction thereof that actual power requirements as established by test exceeds the approximate power requirements furnished with the bid, the Contractor will be assessed an amount computed based on \$9,171 per kW. |

### 3.03 AUXILIARY POWER TRANSFORMER

- A. A single phase, 150 KVA, 60 Hertz auxiliary power supply transformer shall be supplied. Connections from the main autotransformer tertiary winding shall be

brought through the main tank by suitable oil-filled bushings into a separate fuse compartment. This compartment shall totally enclose two suitable current limiting SPST fuse switches and suitable connections to the auxiliary transformer. The auxiliary transformer shall be bolted to the fuse compartment in such a manner that the auxiliary transformer can be easily removed if repairs are required.

- B. This compartment shall have a hinged door with suitable door stops and with a latch-type handle that is lockable. Breakers (see Section 3.03G) or surge suppressors (see Section 3.03 I) shall NOT be mounted in this compartment.
- C. The high voltage winding of the auxiliary power supply transformer shall be connected ungrounded on the high voltage side. The low voltage side shall be connected single-phase 240/480 volts with the center tap grounded. The low voltage bushings and the leads to the breakers in the control cabinet shall be totally enclosed but constructed such that the auxiliary transformer can be easily removed. A disconnect switch or other visual means shall be provided so that field personnel at ground level can be positive that voltage is not supplied to the auxiliary power supply secondary from alternate power sources. The Contractor shall determine if surge arresters are required to protect the primary of the auxiliary transformer. Low voltage transformer leads shall be terminated on a suitable terminal strip, in the control cabinet, with lug connections for the Owner to terminate cable leads to be installed between the control cabinet lugs and an externally located and mounted, station transfer switch provided by the Owner.
- D. The auxiliary transformer details including ratings, winding and connection diagram, polarity and vector phasing diagrams shall be included with the approval drawings.
- E. The auxiliary power supply ground shall be connected to ground separately from the main transformer tank ground.
- F. Magnetic air circuit breakers having front adjustable magnetic trip units shall be supplied on the low voltage side. The breakers shall be rated 600 VAC with a minimum of 65,000 amperes asymmetrical interrupting capacity at 240 VAC. Suitable auxiliary transformer impedance, breaker frame sizes, ampere ratings, and

coordination with primary current limiting fuses shall be determined by the Contractor. In sizing these breakers, consideration shall be given to ambient temperature. Heaters in the cabinets plus the hot wires connected in parallel shall be terminated in an appropriate type of multiple conductor terminal lug such as the Burndy Type Q2A or Q3A connector. Under no circumstances shall two or more cables be terminated in any type of terminal connector not specifically designed for such. i.e., Burndy Type QA, QQA or equivalent. Breakers must be coordinated such that a fan or motor fault does not trip the main breaker but rather trips the breaker feeding the faulted circuit, so far as possible with this type of breaker.

- G. Surge suppressors shall be supplied for the 240/480-volt secondary windings and shall be General Electric Tranquell Model TD240S2050RMP or approved equal. Device shall be rated at 550 MCOV minimum for 480V L-L and 275 MCOV L-Gnd.

PROPOSED RATINGS AND GUARANTEED LOSSES

Manufacturer:

PTI Transformers LP

Location of Plant:

Winnipeg, Manitoba

Guaranteed losses for Autotransformer 230 KV-67KV, as described in Exhibit C - Technical Specifications included in the proposal, are as follows:

All losses are for the basic transformer at the MVA rating indicated, on "Neutral" LTC position and 230,000 volt no-load tap position, are to be stated "per transformer". Losses are to be for the basic transformer unit only and are not to include load tap-change equipment or other voltage regulating equipment.

Guaranteed No Load Loss, 105 MVA, LTC at N

51 KW                      guaranteed

Guaranteed Load Loss, 105 MVA, LTC at N

182 KW including LTC reactor              guaranteed  
171 KW without LTC reactor              approximate

Guaranteed Load Loss, 105 MVA, LTC at 4 Raise

183.4 KW including LTC reactor              calculated

Guaranteed Load Loss, 105 MVA, LTC at 5 Raise

183.7 KW including LTC reactor              calculated

Approximate Power Required by Cooling Equipment, 140 MVA (watts)

1080W

Approximate Power Required by Cooling Equipment, 175 MVA (watts)

2268W

Approximate Dimensions (inches); see Sheet 3 (Figure AA-2):

"A" and "B" are as measured from the centerline of the H2 bushing

A 250"                      B 196"                      C 128"

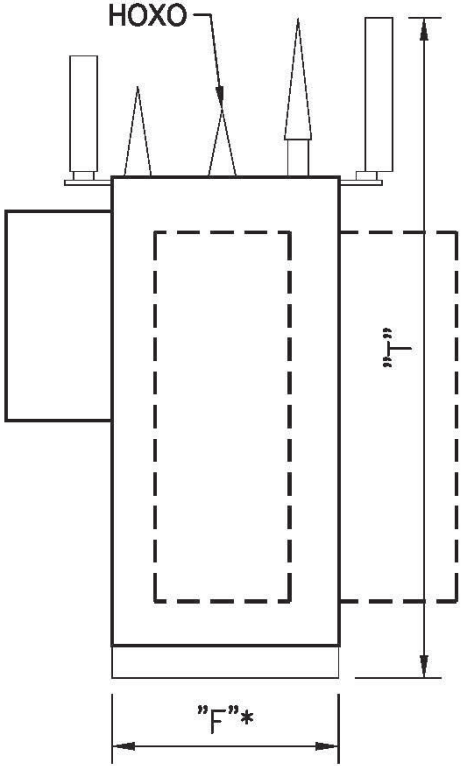
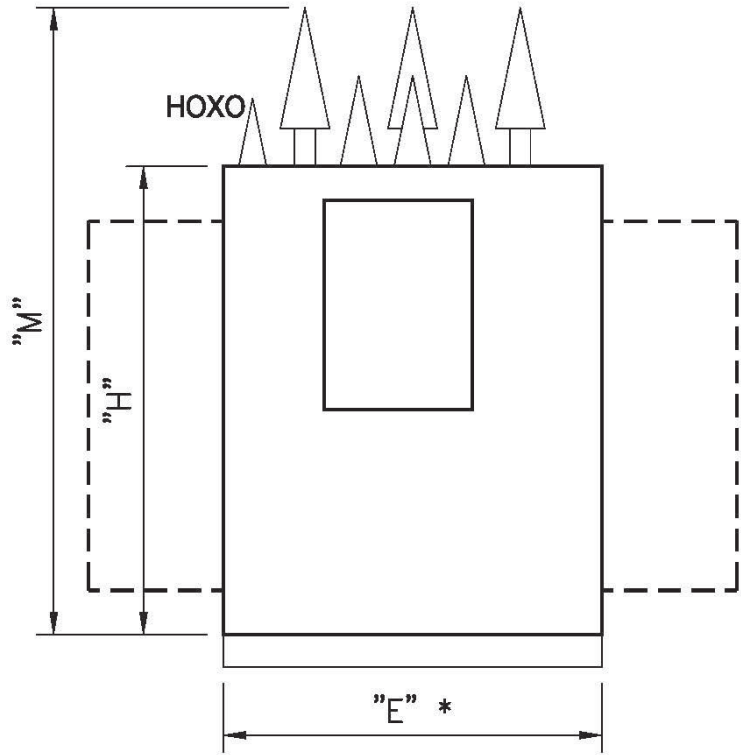
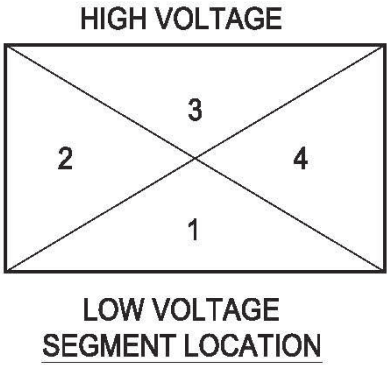
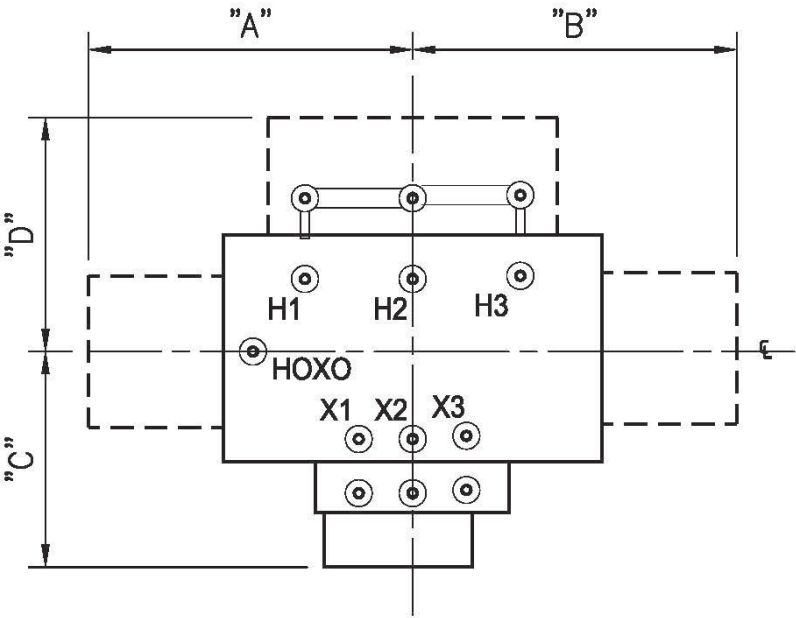
"E" and "F" are without radiators and with other normally demountable equipment removed.

D 150"                      E 309"                      F 142"

|                                                                                                                                                     |                                                                                          |
|-----------------------------------------------------------------------------------------------------------------------------------------------------|------------------------------------------------------------------------------------------|
| "H" is height of tank without bushings; "M" is to top of HV bushings; "T" is to highest point above grade, either bushing or lightning arrester     | H <u>155"</u> M <u>291"</u> T <u>291"</u>                                                |
| High Voltage Phase Spacing (inches)                                                                                                                 | <u>See drawing</u>                                                                       |
| Low Voltage Phase Spacing (inches)                                                                                                                  | <u>See drawing</u>                                                                       |
| Approximate Weights (pounds)                                                                                                                        | <u>365,914</u>                                                                           |
| Core and Coils/ Tank and Fittings                                                                                                                   | <u>74,184 Kg / 44,482 Kg</u>                                                             |
| Liquid                                                                                                                                              | <u>55,136 L</u> ( <u>12,128</u> gallons)                                                 |
| Total Weight / Shipping Weight                                                                                                                      | <u>165,977 Kg / 100,506 Kg</u>                                                           |
| Description of Core and Coil Design:                                                                                                                | <u>3 leg core type, Winding layout- TV Helix -LTC Helix - CV Disc- SV Disc-DTC Helix</u> |
| <p>Load Tap Changer (LTC): The LTC proposed to be furnished as an integral part of the Autotransformer will have the following characteristics.</p> |                                                                                          |
| LTC Manufacturer                                                                                                                                    | <u>MR</u>                                                                                |
| LTC Model Identification                                                                                                                            | <u>RMVII 2000 69kv</u>                                                                   |
| LTC Transition Impedance Type                                                                                                                       | <u>Reactor Type</u>                                                                      |
| LTC Arc Interruption Method                                                                                                                         | <u>Vacuum interrupters</u>                                                               |
| LTC Drive Mechanism Type                                                                                                                            | <u>MD-III</u>                                                                            |
| LTC Continuous Current Rating                                                                                                                       | <u>2000 A</u>                                                                            |
| LTC Ratio of Series Transformer (if any)                                                                                                            | <u>N/A</u>                                                                               |
| LTC Operations before Initial Maintenance                                                                                                           | <u>500000</u>                                                                            |
| LTC Guaranteed Operations Total Life                                                                                                                | <u>500000</u>                                                                            |

|                                                    |                      |               |
|----------------------------------------------------|----------------------|---------------|
| Radiator Manufacturer                              | Menk, USA            |               |
| Cooling System Fan (Pump) Motor Manufacturer/ Type | Krenz, USA           |               |
|                                                    |                      |               |
| Fan (Pump) Motor hp / First Stage Quantity         | 1/3 hp fan           | 10            |
| Fan (Pump) Motor hp / Second Stage Quantity        | 1/3 hp fan           | 20            |
| Current Transformer Manufacturer                   | POLY CAST            |               |
| Maximum CT Quantity in HV Space                    | 6                    |               |
| Maximum CT Quantity in LV Space                    | 11                   |               |
| Maximum CT Quantity in Tertiary Space              | 2                    |               |
|                                                    | High Voltage:        | Low Voltage:  |
| Bushing Manufacturer                               | Hitachi (ABB)        | Hitachi (ABB) |
| Bushing Type / Designation                         | Oil Condenser        | Oil Condenser |
| Permissible safe cantilever loading (lb)           | IEEE                 | IEEE          |
| Lightning Arrester Manufacturer                    | Copper or Equivalent |               |
| High Voltage Lightning Arrester Type               | Station Class        |               |
| Low Voltage Lightning Arrester Type                | Station Class        |               |

(Figure AA-2)



Proposed Delivery Date & Subcontractors

SUBCONTRACTORS

Please list below where subcontractors will be used to complete certain phases of work, the name and address of each proposed subcontractor are required. The Bidder has fully investigated each subcontractor and has evidence on file that each subcontractor has engaged successfully in their respective line of work for a reasonable period of time, maintains a fully equipped organization capable, technically and financially, of performing the work required, and has made similar installations in a satisfactory manner. The Bidder acknowledges and accepts responsibility for the performance of any subcontractor.

| <u>WORK PHASE</u>                                              | <u>SUBCONTRACTOR – NAME &amp; ADDRESS</u> |
|----------------------------------------------------------------|-------------------------------------------|
| Off-Loading                                                    | <u>PTI Transformers LP</u>                |
| Hauling                                                        | <u>Winnipeg, Manitoba</u>                 |
| Site Installation,<br>Service and Testing<br>(Autotransformer) | <u></u>                                   |
| Other (Please Identify):                                       |                                           |
| <u></u>                                                        | <u></u>                                   |
| <u></u>                                                        | <u></u>                                   |
| <u></u>                                                        | <u></u>                                   |

## PROPOSED DELIVERY DATE

Ocala Electric Utility requires Delivery of equipment, as defined in Exhibit B – Required Specifications within the following date:

| Qty. | Description                         | Delivery Required                       |                        |
|------|-------------------------------------|-----------------------------------------|------------------------|
|      |                                     | Not Later Than                          | Proposed Delivery Date |
| 2    | Autotransformers<br>105/140/175 MVA | <u>78 weeks</u> (4 weeks later (Tx #2)) | <u>Q2, 2026</u>        |

***Including as per specifications:***

- Autotransformer 105/140/175-spare parts
- Autotransformers 105/140/175-installation and testing

The Bidder proposes to complete Delivery of Items, as listed below, including an allowance for review of shop drawings (see Exhibit A). The bidder understands proposed delivery times longer than stated above may be grounds for rejection of bid.

The Bidder agrees to deliver equipment to the designated site. Exact access requirements shall be established by on-site investigation by the Bidder. Delivery shall be completed between the hours of 7:30 a.m. and 12:00 noon, or 1:00 p.m. and 3:30 p.m. Local Time, Monday through Friday, but shall not be made on legal holidays.

The Bidder acknowledges and accepts the responsibility to place the equipment on permanent foundations furnished by the Owner. The Bidder acknowledges and accepts the responsibility to conduct the required field testing, after external connections are made and prior to final acceptance by the Owner. The Bidder acknowledges there may be a delay between the date the equipment arrives at the substation site and the date field testing can begin.

## AUTOTRANSFORMER LOSS EVALUATION

- A. Proposals will be evaluated to determine the cost of losses over the useful life of the unit. Evaluation will include the following factors: Transformer no load losses, transformer load losses, and power requirements for transformer cooling equipment.

|    | <u>Item</u>                              | <u>Base</u>                                   | <u>Factor</u>                     |
|----|------------------------------------------|-----------------------------------------------|-----------------------------------|
| 1. | No Load Losses                           | Lowest Value of No Load Losses as per Bid     | \$9,171 per kW of No Load Losses  |
| 2. | Load Losses                              | Lowest Value of Load Losses as per Bid        | \$2,943 per kW of Load Losses     |
| 3. | Power Requirements for Cooling Equipment | Lowest Value of Power Requirements as per Bid | \$9,171 per kW Power Requirements |

- B. The above value of losses will be computed at rated voltage and frequency at each rating as applicable. Evaluation calculations will be based on the following transformer operating cycle:

1. 1/2 Total Time at ONAN Rating, 1/3 Total Time at ONAF or OFAF Rating (First Stage), 1/6 Total Time at ONAF or OFAF Rating (Second Stage).
2. 1/3 Total Time at Neutral LTC Position, 1/3 Total Time at 4 Raise LTC Position, 1/3 Total Time at 5 Raise LTC -Position.

- C. The use of guaranteed losses in evaluation of low overall bid establishes basis for liquidated damages as described in Section 16-003, Article 3.02.

**Exhibit G – PTI Proposal**

PTI Proposal (G-1 through G-109):

Available for inspection and copying at

**1805 NE 30th Avenue, Bldg. 400, Ocala, Florida 34470**

Exhibit H

# Letter of Confirmation

PTI Transformers is a manufacturer and is not required to have an Electrical Contractors License.

Truly,

M. W. Cleveland

Cell: (336)337-3900



## SECTION 1: PRICING INFORMATION

### 1.1. Pricing Schedule

We are pleased to submit our quotation on the following equipment. Additional details can be found in the relevant technical and commercial portions of the bid document.

| Ref.     | Qty | Description                                             | Unit Price             | Extended Price         |
|----------|-----|---------------------------------------------------------|------------------------|------------------------|
| Q100773R | 2   | 105/140/175 MVA, 230 – 67 – 13.2 kV, Autotransformer    | \$ 3,635,000.00        | \$ 7,270,000.00        |
|          | 2   | Estimated Transformer & Oil Freight                     | \$ 148,000.00          | \$ 296,000.00          |
|          | 2   | Estimated Offloading                                    | \$ 93,000.00           | \$ 186,000.00          |
|          | 2   | Estimated Field Assembly, Oil Filling, and Site Testing | \$ 95,000.00           | \$ 190,000.00          |
|          |     | <b>TOTAL</b>                                            | <b>\$ 3,971,000.00</b> | <b>\$ 7,942,000.00</b> |

**Note:** Freight will be invoiced on cost + 5% and Field services is budgetary and firm quote will be provided 6 months prior to delivery.

### 1.2. Spare Parts Required

| Item                                           | Qty          | Unit Price         | Extended Price     |
|------------------------------------------------|--------------|--------------------|--------------------|
| LV Bushing (69 kV)                             | 3            | \$5,380.00         | \$16,140.00        |
| Core Ground Bushing                            | 1            | \$560.00           | \$560.00           |
| Gaskets                                        | 2            | \$8,250.00         | \$16,500.00        |
| LV Fuses for LTC                               | 4            | \$1,500.00         | \$6,000.00         |
| 1-Quart cans of touch-up paint for base coat   | 2            | \$935.00           | \$1,870.00         |
| 1-Quart cans of touch-up paint for finish coat | 2            | \$935.00           | \$1,870.00         |
| HV (230 kV) Surge Arresters                    | 4            | \$4,000.00         | \$16,000.00        |
| LV (69 kV) Surge Arresters                     | 4            | \$1,100.00         | \$4,400.00         |
|                                                | <b>TOTAL</b> | <b>\$22,660.00</b> | <b>\$63,340.00</b> |



### 1.3. Bid Summary

|                     |                                                                                                                     |
|---------------------|---------------------------------------------------------------------------------------------------------------------|
| Currency:           | Net in USD, Taxes not included and extra when applicable                                                            |
| Bid Validity:       | 30 days from date of original submittal.                                                                            |
| Delivery Lead Time: | Q2-2026 (units spaced 4 weeks apart), Subject to Prior Sale and confirmation at time of order.                      |
| Drawing Lead Time:  | Drawing package will be submitted approximately 50 - 60 weeks prior to ship date, to be confirmed at time of order. |
| INCO Terms:         | DDP to Site                                                                                                         |
| Warranty Period:    | 66 months after delivery / 60 months after energization                                                             |
| Warranty Type:      | In/Out coverage will be capped at 25% of the Unit Price of the transformer.                                         |
| Payment Terms:      | Milestones, Net 30 days                                                                                             |

### 1.4. Price Adjustment Policy

Transformer ex-work price to be adjusted based on the FRED Electric Power and Specialty Transformer Manufacturing Index (link: <https://fred.stlouisfed.org/series/PCU335311335311>)

Price will be adjusted using the following methodology  $[\text{Current Index} / \text{Base Index}] * \text{Quoted Transformer Price}$  where:

- Based Index is the value of FRED in the month of quote
- Current Index is the value of FRED 6 months prior to the Delivery Date

Price adjustment upwards or downwards will be applied to the last payment milestone.



## 1.5. Bid Bond Letter

|                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      |                                                           |                                                                                       |
|----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|-----------------------------------------------------------|---------------------------------------------------------------------------------------|
|                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     | <p><b>BID BOND</b></p>                                    | <p>Bond Number: <u>904202242-23-01</u></p>                                            |
| <p>KNOW ALL MEN BY THESE PRESENTS: That we, <u>PTI TRANSFORMERS LP</u>, as Principal, and <u>ATLANTIC SPECIALTY INSURANCE COMPANY</u> as Surety, are held and firmly bound unto the City of Ocala, a Municipal Corporation of Marion County, Florida (hereinafter City of Ocala); in the full and just sum of <u>FIVE PERCENT (5%) of the actual total bid amount, or FIVE PERCENT (5%) of the public construction bond amount for continuing contracts</u>; for the Bid referred to herein, in lawful money of the United States of America, to be paid to the City of Ocala, to which payment will and truly to be made we bind ourselves, our heirs, executors, administrators, successors and assignees, jointly and severally and firmly be these presents:</p> |                                                           |                                                                                       |
| <p>WHEREAS, the said Principal is herewith submitting a bid to the City of Ocala for the project known as <u>OCALA ELECTRIC UTILITY</u>, and as identified by Bid/Contract Number <u>ELE/230196</u>.</p>                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             |                                                           |                                                                                       |
| <p>NOW, THEREFORE, the condition of the above obligation is such that, if the said Principal shall execute a contract and give bond or bonds, as required by the bid documents thereof within twenty (20) days after being notified in writing of the award of such contract to Principal, or if the Surety shall pay the City of Ocala the full amount of this bond, then this obligation shall be void; otherwise it shall remain in full force and effect.</p>                                                                                                                                                                                                                                                                                                    |                                                           |                                                                                       |
| <p>SIGNED, SEALED AND DATED THIS <u>23RD</u> day of <u>MAY</u>, <u>2023</u></p>                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      |                                                           |                                                                                       |
| <p><b>PRINCIPAL</b></p>                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              | <p><b>SURETY</b></p>                                      |                                                                                       |
| <p><u>PTI Transformers LP</u> (Seal)</p>                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             | <p><u>ATLANTIC SPECIALTY INSURANCE COMPANY</u> (Seal)</p> |                                                                                       |
| <p>Principal's Name and Corporate Seal</p>                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           | <p>Surety's Name and Corporate Seal</p>                   |                                                                                       |
| <p>By: <u>Dan Boyd</u> <span style="font-size: small;">Dan Boyd<br/>2023.05.25 08:52:50<br/>-05'00'</span></p>                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                       | <p>By: <u>[Signature]</u></p>                             |  |
| <p>(Signature)</p>                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   | <p>(Signature - Attach Power of Attorney)</p>             |                                                                                       |
| <p>Title: <u>Product Sales Manager</u></p>                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           | <p>Title: <u>THERESA HEDBERG, ATTORNEY-IN-FACT</u></p>    |                                                                                       |
| <p>Attest: <u>[Signature]</u></p>                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                    | <p>Attest: <u>[Signature]</u></p>                         |                                                                                       |
| <p><small>NOTE: Power of Attorney showing authority of representative of surety must be furnished with this form.</small></p>                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        |                                                           |                                                                                       |



## Power of Attorney

KNOW ALL MEN BY THESE PRESENTS, that ATLANTIC SPECIALTY INSURANCE COMPANY, a New York corporation with its principal office in Plymouth, Minnesota, does hereby constitute and appoint: **Paul Hollingworth, Greg Forsythe, Theresa Hedberg, Chelsea Fish, Irene LeBlanc, Kari Morton, Megan Quinlan, Theresa Newton, Sandra Dey, Cam Forbes, Ron Fraser, Branislav Ivica, Niki Jalali, Peter Panufnik, Scott Peberdy, Trent Percy, Betty Shellnutt, Hafis Ligali, Shella San Diego, Kimberly Basaraba, Peter Hoeg, Mario Markmann**, each individually if there be more than one named, its true and lawful Attorney-in-Fact, to make, execute, seal and deliver, for and on its behalf as surety, any and all bonds, recognizances, contracts of indemnity, and all other writings obligatory in the nature thereof; provided that no bond or undertaking executed under this authority shall exceed in amount the sum of: **unlimited** and the execution of such bonds, recognizances, contracts of indemnity, and all other writings obligatory in the nature thereof in pursuance of these presents, shall be as binding upon said Company as if they had been fully signed by an authorized officer of the Company and sealed with the Company seal. This Power of Attorney is made and executed by authority of the following resolutions adopted by the Board of Directors of ATLANTIC SPECIALTY INSURANCE COMPANY on the twenty-fifth day of September, 2012:

Resolved: That the President, any Senior Vice President or Vice-President (each an "Authorized Officer") may execute for and in behalf of the Company any and all bonds, recognizances, contracts of indemnity, and all other writings obligatory in the nature thereof, and affix the seal of the Company thereto; and that the Authorized Officer may appoint and authorize an Attorney-in-Fact to execute on behalf of the Company any and all such instruments and to affix the Company seal thereto; and that the Authorized Officer may at any time remove any such Attorney-in-Fact and revoke all power and authority given to any such Attorney-in-Fact.

Resolved: That the Attorney-in-Fact may be given full power and authority to execute for and in the name and on behalf of the Company any and all bonds, recognizances, contracts of indemnity, and all other writings obligatory in the nature thereof, and any such instrument executed by any such Attorney-in-Fact shall be as binding upon the Company as if signed and sealed by an Authorized Officer and, further, the Attorney-in-Fact is hereby authorized to verify any affidavit required to be attached to bonds, recognizances, contracts of indemnity, and all other writings obligatory in the nature thereof.

This power of attorney is signed and sealed by facsimile under the authority of the following Resolution adopted by the Board of Directors of ATLANTIC SPECIALTY INSURANCE COMPANY on the twenty-fifth day of September, 2012:

Resolved: That the signature of an Authorized Officer, the signature of the Secretary or the Assistant Secretary, and the Company seal may be affixed by facsimile to any power of attorney or to any certificate relating thereto appointing an Attorney-in-Fact for purposes only of executing and sealing any bond, undertaking, recognizance or other written obligation in the nature thereof, and any such signature and seal where so used, being hereby adopted by the Company as the original signature of such officer and the original seal of the Company, to be valid and binding upon the Company with the same force and effect as though manually affixed.

IN WITNESS WHEREOF, ATLANTIC SPECIALTY INSURANCE COMPANY has caused these presents to be signed by an Authorized Officer and the seal of the Company to be affixed this first day of January, 2023.

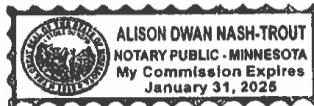
STATE OF MINNESOTA  
HENNEPIN COUNTY



By

  
Sarah A. Kolar, Vice President and General Counsel

On this first day of January, 2023, before me personally came Sarah A. Kolar, Vice President and General Counsel of ATLANTIC SPECIALTY INSURANCE COMPANY, to me personally known to be the individual and officer described in and who executed the preceding instrument, and she acknowledged the execution of the same, and being by me duly sworn, that she is the said officer of the Company aforesaid, and that the seal affixed to the preceding instrument is the seal of said Company and that the said seal and the signature as such officer was duly affixed and subscribed to the said instrument by the authority and at the direction of the Company.



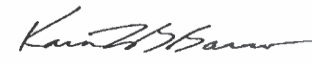
  
Notary Public

I, the undersigned, Secretary of ATLANTIC SPECIALTY INSURANCE COMPANY, a New York Corporation, do hereby certify that the foregoing power of attorney is in full force and has not been revoked, and the resolutions set forth above are now in force.

Signed and sealed. Dated 23rd day of May, 2023.



This Power of Attorney expires  
January 31, 2025

  
Kara L.B. Barrow, Secretary

Please direct bond verifications to [surety@intactinsurance.com](mailto:surety@intactinsurance.com)

**Note:** The Performance & Payment Bond price adder is **\$65,000 USD**.



## 1.6. Exhibit E – PROPOSED DELIVERY DATE & SUBCONTRACTORS Form

### Exhibit E

CONTRACT# ELE/230196

#### Proposed Delivery Date & Subcontractors

#### SUBCONTRACTORS

Please list below where subcontractors will be used to complete certain phases of work, the name and address of each proposed subcontractor are required. The Bidder has fully investigated each subcontractor and has evidence on file that each subcontractor has engaged successfully in their respective line of work for a reasonable period of time, maintains a fully equipped organization capable, technically and financially, of performing the work required, and has made similar installations in a satisfactory manner. The Bidder acknowledges and accepts responsibility for the performance of any subcontractor.

| WORK PHASE                                                     | SUBCONTRACTOR – NAME & ADDRESS |
|----------------------------------------------------------------|--------------------------------|
| Off-Loading                                                    | TBA                            |
| Hauling                                                        | TBA                            |
| Site Installation,<br>Service and Testing<br>(Autotransformer) | TBA                            |
| Other (Please Identify):                                       |                                |
|                                                                |                                |
|                                                                |                                |
|                                                                |                                |



## Exhibit E

CONTRACT# ELE/230196

## PROPOSED DELIVERY DATE

Ocala Electric Utility requires Delivery of equipment, as defined in Exhibit B – Required Specifications within the following date:

|      |                                                                                                                                                                                                                                      | Delivery Required               |                        |
|------|--------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|---------------------------------|------------------------|
| Qty. | Description                                                                                                                                                                                                                          | Not Later Than                  | Proposed Delivery Date |
| 2    | Autotransformers<br>105/140/175 MVA<br><i>Including as per specifications:</i> <ul style="list-style-type: none"><li>Autotransformer 105/140/175-spare parts</li><li>Autotransformers 105/140/175-installation and testing</li></ul> | 78 weeks (4 weeks later (Tx #2) | Q2, 2026               |

The Bidder proposes to complete Delivery of Items, as listed below, including an allowance for review of shop drawings (see Exhibit A). The bidder understands proposed delivery times longer than stated above may be grounds for rejection of bid.

The Bidder agrees to deliver equipment to the designated site. Exact access requirements shall be established by on-site investigation by the Bidder. Delivery shall be completed between the hours of 7:30 a.m. and 12:00 noon, or 1:00 p.m. and 3:30 p.m. Local Time, Monday through Friday, but shall not be made on legal holidays.

The Bidder acknowledges and accepts the responsibility to place the equipment on permanent foundations furnished by the Owner. The Bidder acknowledges and accepts the responsibility to conduct the required field testing, after external connections are made and prior to final acceptance by the Owner. The Bidder acknowledges there may be a delay between the date the equipment arrives at the substation site and the date field testing can begin.



### 1.7. Shipping Details

INCO terms considered are per Bid Summary.

Cost based on:

- Shipping under dry air by rail to nearest rail siding
- Getting rail clearance on regular train only.
- Having clear access to the substation with road trailer used to move from nearest rail siding to site.
- Getting road trailer within 30 feet from the pad for offloading;
- Not transloading the transformer to a shorter highway trailer due to lack of access within the substation to the pad.
- Having clear access to the pad for offloading, not jacking up the transformer more than 2 feet to skid it off the trailer to the pad.
- Not rotating the transformer on site or pad.
- Having good ground conditions within the substation to withstand the highway trailer with transformer and skidding system.
- Does not include route survey, route engineering study, repair of roads, and utilities and police escorts. This, if required, are at costs plus 15% Adm fee.
- Does not included engineering stamped offloading drawings/lift plan. These, if required, will be at costs plus 15%.

Please note extra charges, if we need to drop the oil tanker.

- Two free hours for offloading on site. Thereafter a charge of CAD 150.00 per hour will apply.
- Trailer detention costs: CAD 250.00 per day/per tank
- Layover fee - CAD 1,300.00 per day/ per tank



## 1.8. Standard Field Service Rates

The following rates are applicable for personnel working within North America. Prices are subject to change.

- Per Diem:** \$2,050.00 per workday. This rate includes all time worked or traveled during a normal eight (8) hour work day or fraction thereof. A work day is considered any consecutive eight-hour period Monday to Friday (holidays excluded) with an allowance for lunch. Per Diem rate includes local traveling and living expenses only. It does not include the cost of airfare or transportation to/from the job site and personnel headquarters. All hours worked or traveled in excess of eight hours per weekday and all hours on Saturdays, Sundays, and holidays will be billed at the applicable hourly/overtime rates.
- Hourly:** \$190.00 per hour or any fraction thereof. The hourly rate is applicable to all regular workday time, including travel time 00 and time at the job site whether worked or not. A weekday is considered any consecutive eight-hour period Monday to Friday (holidays excluded) with an allowance for lunch.
- Overtime:** \$285. per hour or any part thereof. This rate is applicable to all hours worked in excess of eight (8) hours on weekdays (holidays excluded), and all time worked or traveled on Saturdays.
- Sunday & Holiday:** \$385.00 per hour or any part thereof. This rate is applicable to all hours worked or traveled on Sundays or holidays.
- Standby:** When personnel are prevented or unable to perform the services requested on the jobsite because of circumstances beyond their control, the purchaser will be billed at the applicable rate.
- Time Off:** The minimum time off for personnel during one 24-hour period shall be eight (8) hours.
- Travel:** Traveling time and expenses for each service person includes leaving and returning to headquarters. The maximum billing for traveling time at the applicable rate shall be eight (8) hours per individual for any one calendar day.

### TRAVEL & LIVING EXPENSES

Hourly rates do not include any travel or living expenses.

Transportation costs to/from the jobsite and personnel headquarters shall be billed at cost.

Auto travel to/from the jobsite and headquarters, will be billed at a rate of \$0.75 per kilometer.

Copies of invoices shall be supplied.