OSWEGO COUNTY PURCHASING

Administered by Onondaga County Division of Purchase
421 Montgomery Street, 13th Floor, Syracuse, NY 13202
Phone (315) 435-3458 Fax (315) 435-3424
Email: andrewtrombley@ongov.net

Andrew Trombley
Purchasing Director

Daniel Hammer
Deputy Director

Date: March 22, 2018

LEGAL NOTICE

Sealed bids will be received for Oswego County by the Onondaga County Division of Purchasing 421 Montgomery Street, 13th Floor, Syracuse, NY 13202 until **2:00 p.m., Friday, April 13, 2018** for:

Opacity Meter Upgrade and Replacement

THE COUNTY RESERVES THE RIGHT TO REJECT ANY OR ALL BIDS.

Andrew Trombley
Purchasing Director

County of Oswego Bid # 8893-18

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PART 1- INFORMATION FOR BIDDERS

The County of Oswego is soliciting bids from qualified firms for **Opacity Meter Upgrade and Replacement** for the Department of Solid Waste. The general scope includes the design, manufacture and calibration of two (2) Continuous Opacity Monitoring systems (COMS) that will be installed to replace the existing COMS systems at the Oswego County Energy Recovery Facility.

DEADLINE, RECEIPT AND OPENING OF BIDS

Each Vendor shall submit a **signed original bid and one (1) copy in a sealed opaque envelope indicating the company's name and bid title: "BID #8893-18 - Opacity Meter Upgrade and Replacement". Bids are due on or before 2:00 p.m., Friday, April 13, 2018**. Either mail or deliver bids in person to:

Andrew Trombley, Director
Onondaga County Division of Purchase
421 Montgomery Street 13th Floor, Syracuse NY 13202

The County may consider informal any bid not prepared and submitted in accordance with the provisions hereof and may waive any informalities or reject any or all bids. Any bid may be withdrawn prior to the scheduled time for the opening of bids or authorized postponement thereof. Any bid received after the time and date specified will not be considered and will be returned unopened. Bids may not be withdrawn within sixty (60) days after the actual date of opening. Facsimile transmitted bids are not acceptable and will be rejected.

Bids delivered prior to the scheduled opening date will be deemed received upon the day of the actual opening, and will be retained in the interim only as a courtesy to the Vendor.

VENDOR'S RESPONSIBILITIES

It is the Vendor's responsibility to meet the entire intent of these specifications. Vendors shall carefully examine the terms of this document and shall judge for themselves all the circumstances and conditions affecting their bid. Failure on the part of any Vendor to make such examination and to investigate thoroughly shall not be grounds for any declaration that the Vendor did not understand the terms and conditions herein. The County of Oswego shall not be liable for any costs associated with the preparation, transmittal, or presentation of any response or materials submitted in response to the BID.

It is the responsibility of each Vendor to:

- Examine the BID documents thoroughly;
- Consider federal, state and local laws and regulations that may affect the bid;
- Study and carefully correlate Vendor's observations with the BID document;
- Visit the site and examine schematics to become familiar with local conditions that may affect the bid.

COMMUNICATIONS

Communications with the County from release of the bid documents through the award shall be solely through the Specification Writer listed below. Vendors are specifically directed not to contact any other County officials or employees in any fashion regarding this BID, without prior approval from the County Purchasing Director. **Unauthorized communications may result in the rejection of the bid.** The County will not be responsible for any oral representations or instructions.

Terry Woodfork
Specification Writer
Onondaga County
terrywoodfork@ongov.net

PREBID MEETING

A pre-bid meeting will be held on Friday, March 30, 2018, at 10:00am in the first floor lobby (inside the front door) at the Energy Recovery Facility, 2801 State Route 481, Fulton, New York 13069. Bidder's attendance at this meeting is strongly recommended to understand the scope of the project.

SPECIFICATIONS DISCREPANCY

Should a Vendor find a discrepancy in, or omissions from the specifications, requirements for contract, or BID form, or be in doubt as to their meaning, the Vendor shall at once notify in writing the County Purchasing Director. Written instructions will be sent to all Vendors. All such addenda shall become a part of the contract and all Vendors shall be bound by such addenda, whether or not received by the Vendors. The County will not be responsible for any oral representations or instructions.

BID SECURITY

No bid security is required

PERFORMANCE BONDS

No performance bond is required

SCOPE PARAMETERS

If a Vendor identifies an additional element not included in this BID, which in its judgment would be essential to accomplish the intended objectives as articulated in this BID, the Vendor should identify this element in its bid and explain in detail why the County should consider including this element within the specifications. Conversely, if a Vendor identifies a task within the BID that it believes could be modified or deleted without impacting the objectives of the BID, the Vendor should provide an explanation as to why the task should be deleted or modified. The County reserves the right to accept or reject all additions, deletions or modifications recommended.

VENDOR'S QUALIFICATIONS & ELIGIBILITY

The County may make such investigation as it deems necessary to determine the qualifications and ability of a Vendor, and the Vendor shall promptly furnish the County all such information and data as the County may request for this purpose. The County reserves the right to reject any bid where an investigation of the available evidence or information does not satisfy the County that the Vendor is properly qualified or able to carry out the obligations of the contract and to provide the services or goods contemplated herein.

AWARD

The contract, if awarded, will be awarded to the lowest responsive and responsible bidder or bidders whom, in part or in total, meet all of the terms and conditions of the specifications. The County reserves the right to reject any and all bids. Oswego County reserves the right to permit political subdivisions and eligible fire companies/districts under County Law §408-a and General Municipal Law §103(3), as amended, to participate in the County's bid award. Unless otherwise stated the bid specifications, the participation of third-party political subdivisions and/or fire companies/districts shall also be upon the consent of the vendor.

The award will be based in part on an analysis of the following criteria: technical and esthetic qualities of the bid, reliability, vendor's ability and facilities to provide the service called for, evaluation of the vendor's proper understanding of the County's needs, and price. The contract shall be awarded to the responsible firm who best meets the BID's criteria in the opinion of the County.

Additional selection factors may be included under the SPECIFICATIONS section of this BID.

The Vendor must provide unquestionable evidence of sustained capability of providing the goods requested such as can be demonstrated in existing or previous operations.
The County may award a contract based upon the bids received, without discussion of such bids with Vendors. **Each bid should, therefore, be submitted in the most favorable terms the Vendor can make to the County.** The County of Oswego does, however, reserve the right to request additional data or an oral presentation in support of the written bid. Submission of a bid does not automatically qualify a Vendor for a presentation. The County reserves the right to negotiate with all qualified Vendors.

The County of Oswego, in accordance with the provisions of Title VI of the Civil Rights Act of 1964 and New York State Executive Law affirmatively ensures that the contract will be awarded without discrimination on the grounds of race, creed, color, disability, martial status, age, sexual orientation or natural origin.

All bids over $5,000 are subject to final review and acceptance by the Oswego County Legislature before any award of contract may be made. Receipt of bids by the County shall not be construed as authority to bind the County.

All bids shall be firm for a period of forty-five (45) days after the opening date in order for the County to determine which bid best meets the public interest. The County reserves the right to extend said period.

At the discretion of the County, the successful Vendor must provide Letter of Commitment within thirty (30) days of acceptance.

COMMENCEMENT OF WORK
Upon execution and delivery of the contract and delivery of any required performance bonds, including the required Certificates of Insurance and the approval thereof by the County Attorney, the successful Vendor will be notified to proceed with the work of the contract. Such notification will be in the form of a letter to proceed from the County's Purchasing Office.

CANCELLATION
The County reserves the right to cancel the contract at will. If the Vendor fails to perform under the contract, fails to meet specifications, or fails to make satisfactory progress so as to endanger the overall contract performance, they may be determined to be in breach and the contract may be terminated by giving written notice to the Vendor of such termination and specify the effective date thereof, at least five days before the effective date of such termination. In such event, all finished or unfinished documents, data, and reports prepared by the Vendor under this contract shall, at the option of the County, become County property and the Vendor shall be entitled to receive just and equitable compensation for any work satisfactorily completed hereunder.

The Vendor shall not be relieved of liability to the County for damages sustained by the County by virtue of any breach of the contract by the Vendor, and the County may withhold any payments to the Vendor for the purpose of determining the exact amount of damages due the County.

The Vendor understands that the contract may be terminated due to non-appropriation of funds.

PRICING
All prices are to be lump sum and quoted firm against increase for the duration of the contract. Travel and incidental expenses cannot be separately invoiced. The County shall not be responsible for any additional costs.

TERM
This is a one time purchase.

METHOD OF PAYMENT
Payment shall be made at the contract price for the goods provided and verified by the Oswego County Department of Solid Waste. Payment schedule is negotiable for completed work. Oswego County does not pay in advance. Invoices shall be sent to the address below:

Oswego County Energy Recovery Facility
Department of Solid Waste
2801 State Route 481
Fulton, NY 13069
Office: 315-591-9280

PART 2- SPECIFICATIONS

Please see the following attached bid specifications:

1) 2-11-18 Opacity Specification Final (2)

    a. Oswego County Department of Solid Waste Specification & Requirements, Cover Letter (6 pages)

    b. Opacity Stack Mounting – Current Opacity Monitor, Figure 13, Mounting Flanges, Dwg (1 sheet)

    c. Figure 14, Flange Mounting Methods, Dwg (1 sheet)

    d. Installed Purge Blower –Nameplate, Photo (1 sheet)

2) Specifications and Drawings 20180214110455899 (35 pages)

PART 3- BID FORMAT

All bids must be in accordance with the format specified below. Please submit one signed original and three (3) copies of your bid in a sealed envelope marked **BID # 8893-18 - Opacity Meter Upgrade and Replacement.**

Vendor Reply Cover Sheet (attached)
Vendor Information Sheet (attached)
Non-Collusion Certification (attached)
Resolution for Corporations (attached)
IRS W-9 Form (attached)
Bid Body. Please include the following:

Describe how you will fulfill the scope of work as identified in this BID. Include a tentative time schedule.

Identify the staff that would be assigned to work on this project. Define the capacity in which each person would be working, and describe the qualifications, education, training, expertise, and experience that qualifies these individuals to work on this project.

Describe in detail your organization's experience with similar projects. Include:

1. A listing of any current projects of this same type and the client's names;
2. Any proposed projects of this same type and the client's names;
3. A listing of completed projects over the past five (5) years of this same type and the client's names.

PART 4- GENERAL PROVISIONS

ARTICLE 1. SCOPE OF WORK

Proposer agrees to perform the services in accordance with the terms and conditions of this agreement. It is specifically agreed to by the Proposer that the County will not compensate the Proposer for any services provided not within the scope of this agreement without prior authorization, evidenced only by a written change order or addendum to this agreement executed by the Oswego County Legislative Chairman after consultation with the Oswego County Legislature.

ARTICLE 2. TERM OF AGREEMENT

The contract resulting from this RFP shall be for _____ (X) years from the date of award (or a date mutually agreed upon by both parties). The County reserves the right to renew the contract for up to two (2) additional one (1) year periods, at the sole option of the County and under all terms and conditions of the original RFP.

ARTICLE 3. COMPENSATION

The County will audit and pay the proper amounts due the Proposer within sixty (60) days after receipt by the County of a claimant's certification form or invoice and, if the either is objectionable, will notify the Proposer in writing of the County's reasons for objecting to all or any portion of the invoice submitted by the Proposer.

ARTICLE 4. EXECUTORY CLAUSE

The County shall have no liability under this agreement to the Proposer or to anyone else beyond funds appropriated and available for this agreement.

ARTICLE 5. PROCUREMENT OF AGREEMENT

The Proposer represents and warrants that no person or selling agent has been employed or retained by the Proposer to solicit or secure this agreement upon an agreement or upon an understanding for a commission, percentage, a brokerage fee, contingent fee or any other compensation. The Proposer further represents and warrants that no payment, gift or thing of value has been made, given or promised to obtain this or any other agreement between the parties. The Proposer makes such representations and warranties to induce the County to enter into this agreement and the County relies upon such representations and warranties in the execution hereof.

For a breach or violation of such representations or warranties, the County shall have the right to annul this agreement without liability, entitling the County to recover all monies paid hereunder and the Proposer shall not make claim for, or be entitled to recover, any sum or sums otherwise due under this agreement. This remedy, if elected, shall not constitute the sole remedy afforded the County for such falsity or breach, nor shall it constitute a waiver of the County's right to claim damages or otherwise refuse payment to or to take any other action provided for by law or pursuant to this agreement.

ARTICLE 6. CONFLICT OF INTEREST

The Proposer represents and warrants that neither it nor any of its directors, officers, members, partners or employees, have any interest nor shall they acquire any interest, directly or indirectly which would or may conflict in any manner or degree with the performance or rendering of the services herein provided. The Proposer further represents and warrants that in the performance of this agreement no person having such interest or possible interest shall be employed by it and that no officer or employee of the County, nor any person whose salary is payable, in whole or in part, by the County, or any corporation, partnership, limited liability company or association in which such official, officer or employee is, directly or indirectly interested, shall have any such interest, direct or indirect, in this agreement or in the proceeds thereof.

For a breach or violation of such representations or warranties, the County shall have the right to annul this agreement without liability, entitling the County to recover all monies paid hereunder and the Proposer shall not make claim for, or be entitled to recover, any sum or sums otherwise due under this agreement. This remedy, if elected, shall not constitute the sole remedy afforded the County for such falsity or breach, nor shall it constitute a waiver of the County's right to claim damages or otherwise refuse payment to or to take any other action provided for by law or pursuant to this agreement.

ARTICLE 7. FAIR PRACTICES

The Proposer and each person signing on behalf of the Proposer represents, warrants and certifies under penalty of perjury, that to the best of their knowledge and belief:

A The prices in this agreement have been arrived at independently by the Proposer without collusion, consultation, communication, or agreement with any other Proposer or with any competitor as to any matter relating to such prices which has the effect of, or has as its purpose, restricting competition;

B Unless otherwise required by law, the prices which have been quoted in this agreement and on the proposal or quote submitted by the Proposer have not been knowingly disclosed by the Proposer prior to the communication of such quote to the County or the proposal opening directly or indirectly, to any other Proposer or to any competitor; and

C. No attempt has been made or will be made by the Proposer to induce any other person, partnership, corporation or entity to submit or not to submit a proposal or quote for the purpose of restricting competition.

The fact that the Proposer (i) has published price lists, rates, or tariffs covering items being procured (ii) has informed prospective customers of proposed or pending publication of new or revised price lists for such items, or (iii) has provided the same items to the other customers at the same prices being proposed or quoted, does not constitute, without more, a disclosure within the meaning of this article.

ARTICLE 8. INDEPENDENT CONTRACTOR

In performing the services and incurring expenses under this agreement the Proposer shall operate as, and have the status of, an independent contractor and shall not act as agent, or be an agent, of the County. As an independent contractor, the Proposer shall be solely responsible for determining the means and methods of performing the services and shall have complete charge and responsibility for the Proposer's staff engaged in the performance of the same.

In accordance with such status as independent contractor, the Proposer covenants and agrees that neither it nor its employees or agents will hold themselves out as, nor claim to be officers or employees of the County, or of any department, agency or unit thereof by reason hereof, and that they will not, by reason hereof, make any claim, demand or application to or for any right or privilege applicable to an officer or employee of the County including, but not limited to, Workers' Compensation coverage, health coverage, unemployment insurance benefits, Social Security coverage, or employee New York State Retirement System membership or credit.

ARTICLE 9. ASSIGNMENT AND SUBCONTRACTING

Pursuant to general municipal law§ 109, the Proposer shall not assign any of its rights, interests or obligations under this agreement, or subcontract any of the services to be performed by it under this agreement, without the prior express written consent of the President of the County. Any such subcontract, assignment, transfer, conveyance or other disposition without such prior consent shall be void and any services provided thereunder will not be compensated. Any subcontract or assignment properly consented to by the County shall be subject to all of the terms and conditions of this agreement.

Failure of the Proposer to obtain any required consent to any assignment, shall be grounds for termination for cause, at the option of the County and if so terminated, the County shall thereupon be relieved and discharged from any further liability and obligation to the Proposer, its assignees or transferees, and all monies that may become due under this agreement shall be forfeited to the County except so much thereof as may be necessary to pay the Proposer's employees for past service.

The provisions of this clause shall not hinder, prevent, or affect any assignment by the Proposer for the benefit of its creditors made pursuant to the laws of the state of New York.

This agreement may be assigned by the County to any corporation, agency, municipality or instrumentality having authority to accept such assignment.

ARTICLE 10. BOOKS AND RECORDS

The Proposer agrees to maintain separate and accurate books, records, documents and other evidence and accounting procedures and practices which sufficiently and properly reflect all direct and indirect costs of any nature expended in the performance of this agreement.

ARTICLE 11. RETENTION OF RECORDS

The Proposer agrees to retain all books, records and other documents relevant to this agreement for six (6) years after the final payment or termination of this agreement, whichever later occurs. The County, or any state and/or federal auditors, and any other persons duly authorized by the County, shall have full access and the right to examine any of said materials during said period.

ARTICLE 12. AUDITS BY THE OSWEGO COUNTYAND OTHERS

All claimant's certification forms or invoices presented for payment to be made hereunder, and the books, records and accounts upon which said claimant's certification forms or invoices are based are subject to audit by the County. The Proposer shall submit any and all documentation and justification in support of expenditures or fees under this agreement as may be required by the County so that it may evaluate the reasonableness of the charges, and the Proposer shall make its records available to the County upon request. All books claimant's certification forms, records, reports, cancelled checks and any and all similar material may be subject to periodic inspection, review and audit by the County, the State of New York, the federal government, and/or other persons duly authorized by the County. Such audits may include examination and review of the source and application of all funds whether from the County and State, the federal government, private sources or otherwise. The Proposer shall not be entitled to any interim or final payment under this agreement if any audit requirements and/or requests have not been satisfactorily met.

ARTICLE 13. INSURANCE AND STATUTORY COMPLIANCE

In acceptance of this agreement, the Proposer covenants and certifies that it will comply, in all respects, with all federal and state laws which regarding work for public authority corporations including, but not limited to, Workers' Compensation and employer's liability insurance, hours of employment, wages and human rights, and the provisions of general municipal law§§ 103(a) and 103(b) and state finance law §§139-a and 139-b.

Pursuant to General Municipal Law §108, the parties hereto agree that this agreement contract shall be void and of no effect unless the Proposer shall secure Workers' Compensation for the benefit of, and keep insured during the life of the contract, such employees, in compliance and as may be necessary with the provisions of the Workers' Compensation Law

For all of the services set forth herein and as hereinafter amended, the Proposer shall maintain or cause to be maintained, in full force and effect during the term of this agreement, at its expense, a workers' compensation insurance, liability insurance covering personal injury and property damage, and other insurance with stated minimum coverage, all as listed below. Such policies are to be in the broadest form available on usual commercial terms and shall be written by insurers of recognized financial standing satisfactory to the County who has been fully informed as to the nature of the services to be performed. Except for Workers' Compensation and professional liability, the County shall be an additional insured on all such policies with the understanding that any obligations imposed upon the insured (including, without limitation, the liability to pay premiums) shall be the sole obligation of the Proposer and not those of the County. Notwithstanding anything to the contrary in this agreement, the Proposer irrevocably waives all claims against the County for all losses, damages, claims or expenses resulting from risks commercially insurable under this insurance described in this Article 13. The provisions of insurance by the Proposer shall not in any way limit the Proposer's liability under this agreement.

Insurance Requirements

I. Notwithstanding any terms, conditions or provisions, in any other writing between the parties, the Proposer hereby agrees to effectuate the naming of the County as an unrestricted, additional insured on the contractor's insurance policy(ies), with the exception of Workers' Compensation. If the contractor is self-insured, evidence of its status as a self-insured entity shall be provided to the County Purchasing Department. If requested, the contractor must describe its financial condition and the self-insured funding mechanism(s).

II. The policy naming the County as an additional insured shall, without exception:

- Be an insurance policy from an A.M. Best rated "secured" New York State licensed insurer.
- Contain a 30-day notice of cancellation.

State that the insurer's coverage shall be primary coverage for the County, its officers, and employees.

- The County shall be listed as an additional insured by using endorsement CG 201 01085 or broader. The certificate must state that this endorsement is being used. If another endorsement is used, a copy shall be included with the certificate of insurance.

III. The contractor agrees to indemnify the County for any applicable deductibles.

IV. Required insurance minimums:

- Commercial general liability insurance $1,000,000 per occurrence/$2,000,000 aggregate.
- General aggregate to apply on a per project basis.
- Automobile liability $1,000,000 CSL for owned, hired and borrowed and non-owned motor vehicles.
- Excess/umbrella insurance $3,000,000 each occurrence and aggregate.
- Workers' Compensation and NYS Disability Statutory Workers' Compensation, employers' liability and NYS. Disability Benefits insurance for all employees.
- Performance and Labor &Material bonds. If required in the specifications, these bonds shall be provided by a New York state admitted surety company, in good standing.
- Professional liability/malpractice $1,000,000 aggregate (if commercially available for your profession)/$1,000,000 per claim.

V. The Proposer acknowledges that failure to obtain such insurance on behalf of the County constitutes a material breach of this contract. The Proposer is to provide the County with a certificate of insurance, evidencing the above requirements have been met, prior to the commencement of work or use of facilities. The failure of the County to object to the contents of the certificate or the absence of same shall not be deemed a waiver of any and all rights held by the County.

The Proposer shall attach to this agreement a certificate of insurance evidencing the Proposer's compliance with these requirements.

Each policy of insurance shall contain clauses to the effect that (i) such insurance shall be primary without right of contribution of any other insurance carried by or on behalf of the County with respect to its interests, (ii) it shall not be cancelled, including, without limitation, for non- payment of premium, or materially amended, without thirty (30) days prior written notice to the County, directed to the County Attorney and the department head and the County shall have the option to pay any necessary premiums to keep such insurance in effect and charge the cost back to the Proposer.

To the extent it is commercially available, each policy of insurance shall be provided on an “occurrence” basis. If any insurance is not so commercially available on an “occurrence” basis it shall be provided on a “claims made” basis, and all such “claims made” policies shall provide that:

a. Policy retroactive dates coincide with or precede the Proposer’s start of the performance of the services (including subsequent policies purchased as renewals or replacements);

b. The Proposer will maintain similar insurance for at least six (6) years following final acceptance of the services;

c. If the insurance is terminated for any reason, the Proposer agrees to purchase an unlimited extended reporting provision to report claims arising from the services performed for the County; and

d. Immediate notice shall be given to the County through the department head and the County Attorney of circumstances or incidents that might give rise to future claims with respect to the services performed under this agreement.

ARTICLE 14. INDEMNIFICATION

The Proposer agrees to defend, indemnify and hold harmless the County, including its officials, employees and agents, against all claims, losses, damages, liabilities, costs or expenses (including, without limitation, reasonable attorney fees and costs of litigation and/or settlement) whether incurred as a result of a claim by a third party or any other person or entity, arising out of the services performed pursuant to this agreement which the County, or its officials, employees or agents, may suffer by reason of any negligence, fault, act or omission of the Proposer, its employees, representatives, subcontractors, assignees, or agents.

In the event that any claim is made or any action is brought against the County arising out of the negligence, fault, act or omission of an employee, representative, subcontractor, assignee or agent of the Proposer either within or without the scope of his respective employment, representation, subcontract, assignment or agency, or arising out of the Proposer’s negligence, fault, act or omission, then the County shall have the right to withhold further payments hereunder for the purpose of set-off in sufficient sums to cover the said claim or action. The rights and remedies of the County provided for in this clause shall not be exclusive and are in addition to any other rights and remedies provide by law or this agreement.

ARTICLE 15. PROTECTION OF OSWEGO COUNTYPROPERTY

The Proposer assumes the risk of and shall be responsible for, any loss or damage to County property, including property and equipment leased by the County, used in the performance of this agreement and caused, either directly or indirectly by the acts, conduct, omissions or lack of good faith of the Proposer, its officers, directors, members, partners, employees, representatives or assignees, or any person, firm, company, agent or others engaged by the Proposer as an expert consultant specialist or subcontractor hereunder.

In the event that any such County property is lost or damaged, except for normal wear and tear, then the County shall have the right to withhold further payments hereunder for the purposes of set-off in sufficient sums to cover such loss or damage.

The Proposer agrees to defend, indemnify and hold the County harmless from any and all liability or claim for loss, cost, damage or expense (including, without limitation, reasonable attorney fees and costs of litigation and/or settlement) due to any such loss or damage to any such County property described in this article.

The rights and remedies of the County provided herein shall not be exclusive and are in addition to any other rights and remedies provided by law or by this agreement.

ARTICLE 16. TERMINATION

The County may, by written notice to the Proposer effective upon mailing, terminate this agreement in whole or in part at any time (1) for the County's convenience, (2) upon the failure of the Proposer to comply with any of the terms or conditions of this agreement, or (3) upon the Proposer becoming insolvent or bankrupt.

Upon termination of this agreement, the Proposer shall comply with any and all Oswego County closeout procedures, including, but not limited to:

A. Accounting for and refunding to the County within thirty (30) days, any unexpended funds which have been paid to the Proposer pursuant to this agreement; and

B. Furnishing within thirty (30) days an inventory to the County of all equipment, appurtenances and property purchased by the Proposer through or provided under this agreement, and carrying out any County directive concerning the disposition thereof.

In the event the County terminates this agreement, in whole or in part, as provided in this article, the County may procure upon such terms and in such manner as deemed appropriate, services similar to those so terminated, and the Proposer shall continue the performance of this agreement to the extent not terminated hereby. If this agreement is terminated in whole or in part for other than the convenience of the County, any services procured by the County to complete the services herein will be charged to the Proposer and/or set off against any sums due the Proposer.

Notwithstanding any other provisions of this agreement, the Proposer shall not be relieved of liability to the County for damages sustained by the County by virtue of the Proposer's breach of the agreement or failure to perform in accordance with applicable standards, and the County may withhold payments to the Proposer for the purposes of set-off until such time as the exact amount of damages due to the County from the Proposer is determined.

The rights and remedies of the County provided herein shall not be exclusive and are in addition to any other rights and remedies provided by law or by this agreement.

ARTICLE 17. GENERAL RELEASE

The acceptance by the Proposer or its assignees of the final payment under this agreement, whether by claimant's certification form, judgment of any court of competent jurisdiction, or administrative means shall constitute and operate as a general release to the County from any and all claims of the Proposer arising out of the performance of this agreement.

ARTICLE XX. SET-OFF RIGHTS

The County shall have all of its common law, equitable and statutory rights of set-off. These rights shall include, but are not limited to, the County's right to withhold for the purposes of set-off any monies otherwise due to the Proposer (i) under this agreement, (ii) under any other agreement or contract with the County, including any agreement or contract for a term commencing prior to or after the term of this agreement, or (iii) from the County by operation of law.

ARTICLE 19. NO ARBITRATION

Any and all disputes involving this agreement, including the breach or alleged breach thereof, may not be submitted to arbitration unless specifically agreed thereto in writing by the Oswego County Legislative Chairman, but must instead only be heard in the supreme court of the State of New York, with venue in Oswego County or if appropriate, in the federal district court with venue in the northern district of New York, Syracuse division.

ARTICLE 20. GOVERNING LAW

This agreement shall be governed by the laws of the state of New York. The Proposer shall render all services under this agreement in accordance with applicable provisions of all federal, state and local laws, rules and regulations as are in effect at the time such services are rendered.

ARTICLE 21. ACCEPTANCE OF SUBSTITUTED SERVICE

The Proposer hereby consents and agrees to accept to substituted service of process via first class mail to the above referenced address of any summons, process or pleading pertaining to or arising from litigation concerning this agreement in lieu of any other methods authorized by the New York civil practice law and rules. Service of process shall be deemed to be complete upon mailing same. This provision shall survive the termination of this agreement and shall not be construed requiring substituted service, should the County elect to commence litigation by other means provided for by law. The County does not waive personal service herein and will require service of process in conformity with CPLR§311(4).

ARTICLE 22. TAXES

The County is exempt from the payment of sales and compensating use taxes, manufacturer's excise taxes and all other taxes imposed by the State of New York and the federal government. Taxes shall not be included in any contract or proposed price. A tax exempt certificate will be executed upon the Proposer's request.

ARTICLE 24. ENTIRE AGREEMENT

The rights and obligation of the parties and their respective agents, successors and assignees shall be subject to and governed by this agreement, including any attachments, which supersede any other understandings or writings between or among the parties.

ARTICLE 25. MODIFICATION

No changes, amendments or modifications of any of the terms and/or conditions of this agreement shall be valid unless reduced to writing and signed by the party to be bound. Changes in the scope of services covered by this agreement shall not be binding, and no payment shall be due in
connection therewith, unless prior to the performance of any such services, the Oswego County Legislative Chairman, after consultation with the County Legislature, executes an addendum or change order to this agreement, which addendum or change order shall specifically set forth the scope of such extra or additional services and the amount of compensation and the extension of the time for performance, if any, for any such services. Unless otherwise specifically provided for therein, the provisions of this agreement shall apply with all force and effect to the terms and conditions contained in such addendum or change order.

ARTICLE 26. EQUAL EMPLOYMENT OPPORTUNITIES FOR MINORITIES AND WOMEN

In accordance with Section 312 of the Executive Law and 5 NYCRR 143, if this contract is: (i) a written agreement or purchase order instrument, providing for a total expenditure in excess of $25,000.00, whereby a contracting agency is committed to expend or does expend funds in return for labor, services, supplies, equipment, materials or any combination of the foregoing, to be performed for, or rendered or furnished to the contracting agency; or (ii) a written agreement in excess of $100,000.00 whereby a contracting agency is committed to expend or does expend funds for the acquisition, construction, demolition, replacement, major repair or renovation of real property and improvements thereon; or (iii) a written agreement in excess of $100,000.00 whereby the owner of a State assisted housing project is committed to expend or does expend funds for the acquisition, construction, demolition, replacement, major repair or renovation of real property and improvements thereon for such project, then the following shall apply and by signing this agreement the Contractor certifies and affirms that it is Contractor's equal employment opportunity policy that:

(a) The Contractor will not discriminate against employees or applicants for employment because of race, creed, color, national origin, sex, age, disability or marital status, shall make and document its conscientious and active efforts to employ and utilize minority group members and women in its work force on State contracts and will undertake or continue existing programs of affirmative action to ensure that minority group members and women are afforded equal employment opportunities without discrimination. Affirmative action shall mean recruitment, employment, job assignment, promotion, upgradings, demotion, transfer, layoff, or termination and rates of pay or other forms of compensation;

(b) at the request of the contracting agency, the Contractor shall request each employment agency, labor union, or authorized representative of workers with which it has a collective bargaining or other agreement or understanding, to furnish a written statement that such employment agency, labor union or representative will not discriminate on the basis of race, creed, color, national origin, sex, age, disability or marital status and that such union or representative will affirmatively cooperate in the implementation of the Contractor's obligations herein; and

(c) the Contractor shall state, in all solicitations or advertisements for employees, that, in the performance of the State contract, all qualified applicants will be afforded equal employment opportunities without discrimination because of race, creed, color, national origin, sex, age, disability or marital status.

Contractor will include the provisions of "a", "b", and "c" above, in every subcontract over $25,000.00 for the construction, demolition, replacement, major repair, renovation, planning or design of real property and improvements thereon (the "Work") except where the Work is for the beneficial use of the Contractor. Section 312 does not apply to: (i) work, goods or services unrelated to this contract; or (ii) employment outside New York State. The State shall consider compliance by a contractor or subcontractor with the requirements of any federal law concerning equal employment opportunity which effectuates the purpose of this section. The contracting agency shall determine whether the imposition of the requirements of the provisions hereof duplicate or conflict with any such federal law and if such duplication or conflict exists, the contracting agency shall waive the applicability of Section 312 to the extent of such duplication or conflict. Contractor will comply with all duly promulgated and lawful rules and regulations of the Department of Economic Development's Division of Minority and Women's Business Development pertaining hereto.

ARTICLE 27. IRANIAN ENERGY SECTOR DIVESTMENT

27.1 Contractor/Proposer hereby represents that said Contractor/Proposer is in compliance with New York State General Municipal Law Section 103-g entitled "Iranian Energy Sector Divestment", in that said Contractor/Proposer has not:
(a) Provided goods or services of $20 Million or more in the energy sector of Iran including but not limited to the provision of oil or liquefied natural gas tankers or products used to construct or maintain pipelines used to transport oil or liquefied natural gas for the energy sector of Iran; or
(b) Acted as a financial institution and extended $20 Million or more in credit to another person for forty-five days or more, if that person's intent was to use the credit to provide goods or services in the energy sector of Iran.
27.2 Any Contractor/Proposer who has undertaken any of the above and is identified on a list created pursuant to Section 165-a (3)(b) of the New York State Finance Law as a person engaging in investment activities in Iran, shall not be deemed a responsible proposer pursuant to Section 103 of the New York State General Municipal Law.
27.3 Except as otherwise specifically provided herein, every Contractor/Proposer submitting a bid/proposal in response to this Request for Proposals must certify and affirm the following under penalties of perjury:
(a) "By submission of this bid, each bidder and each person signing on behalf of any bidder certifies, and in the case of a joint bid, each party thereto certifies as to its own organization, under penalty of perjury, that to the best of its knowledge and belief, that each bidder is not on the list created pursuant to NYS Finance Law Section 165-a (3)(b)."
The County will accept this statement electronically in accordance with the provisions of Section 103 of the General Municipal Law.
27.4 Except as otherwise specifically provided herein, any Bid/Proposal that is submitted without having complied with subdivision (a) above, shall not be considered for award. In any case where the Bidder/Proposer cannot make the certification as set forth in subdivision (a) above, the Bidder/Proposer shall so state and shall furnish with the bid a signed statement setting forth in detail the reasons therefore. The County reserves its rights, in accordance with General Municipal Law Section 103-g to award the Bid/Proposal to any Bid/Proposer who cannot make the certification, on a case-by-case basis under the following circumstances:
(1) The investment activities in Iran were made before April 12, 2012, the investment activities in Iran have not been expanded or renewed after April 12, 2012, and the Bidder/Proposer has adopted, publicized and is implementing a formal plan to cease the investment activities in Iran and to refrain from engaging in any new investments in Iran; or
(2) The County has made a determination that the goods and services are necessary for the County to perform its functions and that, absent such an exemption, the County would be unable to obtain the goods or services for which the Bid/Proposal is offered. Such determination shall be made by the County in writing and shall be a public document.

VENDOR REPLY COVER SHEET

Sealed bids are due by **2:00 p.m., Friday, April 13, 2018** at the Onondaga County Division of Purchasing, 421 Montgomery Street, 13th Floor, Syracuse, NY 13202.
THE COUNTY RESERVES THE RIGHT TO REJECT ANY OR ALL BIDS

The undersigned hereby certifies that he/she has examined and fully comprehends the requirements and intent of the Notice, Information, Specifications and Bid for **BID # 8886-18 – Opacity Meter Upgrade and Replacement** and offers to fulfill the activities as shown on the attached bid for the cost listed below.

1. **Design, manufacture and calibration of two (2) Continuous Opacity Monitoring systems (COMS) that will be installed to replace the existing COMS systems at the Oswego County Energy Recovery Facility per specifications.**

Stack #1:
Lot Price ____ $____________
(words) (figures)

Stack #2:
Lot Price ____ $____________
(words) (figures)

Total Price: ____ $____________
(words) (figures)

Federal ID Number: ____________________

______________________________ ______________________________
Type or Print Name Company

______________________________ ______________________________
Title Address

______________________________ ______________________________
Authorized Signature

______________________________ (_____)__________/ (_____)__________
Date Telephone Number / Fax

<u>Please attach additional bid information to this sheet</u>.

VENDOR INFORMATION SHEET

Proposing Organization: ____

Address: ____

Phone: (__________)____

Fax: (__________)____

Invoices Will Be From:

Address: ____

____

Person To Contact In Reference To Contract:

Name: ____

Title: ____

Address: ____

Phone: (__________)____

Fax: (__________)____

E-mail: ____

Signatory Authority: ____

"In consideration of the limitations of this BID, I hereby certify that the information in this bid is correct to the best of my knowledge, and that I am an official of the above organization authorized to sign and submit this bid."

____

Name/Title

____

Signature

____

Date

NON-COLLUSION CERTIFICATION

General Municipal Law § 103-d

(a) By submission of this bid, each Vendor and each person signing on behalf of any Vendor certifies, and in the case of a joint bid each party thereto certifies as to its own organization, under penalty of perjury, that to the best of knowledge and belief:

(1) The prices in this bid have been arrived at independently without collusion, consultation, communication, or agreement, for the purpose of restricting competition, as to any matter relating to such prices with any other Vendor or with any competitor;

(2) Unless otherwise required by Law, the prices which have been quoted in this bid have not been knowingly disclosed by the Vendor and will not knowingly be disclosed by the Vendor prior to opening, directly or indirectly, to any other Vendor or to any competitor;

(3) No attempt has been made or will be made by the Vendor to induce any other person, partnership or corporation to submit or not to submit a bid for the purpose of restricting competition.

(b) A bid shall not be considered for award nor shall any award be made where (a)-(1), (2) and (3) have not been complied with; provided however, that if in any case the Vendor cannot make the foregoing certification, the Vendor shall so state and shall furnish with the bid a signed statement which sets forth in detail the reasons therefore. Where (a)-(1), (2) and (3) have not been complied with, the bid shall not be considered for award nor shall any award be made unless the head of the purchasing unit of the political subdivision, public department, agency or official thereof to which the bid is made, or his designee, determines that such disclosure was not made for the purpose of restricting competition.

The fact that a Vendor (a) has published price lists, rates or tariffs covering items being procured, (b) has informed prospective customers of proposed or pending publication of new or revised price lists for such items, or (c) has sold the same items to other customers at the same time prices being proposed, does not constitute, without more, a disclosure within the meaning of paragraph (a) of this certification.

By submission of this bid, the undersigned hereby affirms the truth of the foregoing certification under the penalties of perjury.

____________________	____________________
Company	Type or Print Name
____________________	____________________
Date	Title
	____________________
	Authorized Signature

RESOLUTION FOR CORPORATIONS ONLY

Resolved that ____(individual) is authorized to sign and submit the bid or bid of this corporation for the following project:

BID # 8893 -18 - Opacity Meter Upgrade and Replacement

and to include in such bid or bid the certificate as to non-collusion required by Section 103-D of the General Municipal Law as the act and deed of such corporation and for any inaccuracies or misstatements in such certificate this corporate bidder shall be liable under the penalties of perjury, and to enter into the contract if awarded to this corporation:

____

The foregoing is a true and correct copy of the resolution adopted by __________________________________

_________________________ Corporation at a meeting of its Board of Directors held on the _______________

day of ___________________ , ___________, and is still in force on this ______________ day of ____________

____________ , 2018.

____
Secretary

(Seal of Corporation)

NON-VENDOR RESPONSE

The Oswego County Purchasing Department is interested in the reasons why prospective Vendors fail to submit bids. Failure to submit a bid without explanation may result in removal of your firm from our Vendors' list. If you are NOT submitting a bid, please indicate the reason(s) by checking off one or more of the items below and return this form to the Oswego County Purchasing Office; 46 East Bridge Street; Oswego, NY 17126.

______ 1. Unable to make a bid at this time, but would like to receive future BIDs.

______ 2. Items or material not ______ manufactured, ______ distributed, ______ stocked, _____ furnished.

______ 3. Services, materials or items we have to offer do not fully meet all the requirements of standards specified.

______ 4. Specifications not clearly understood or applicable as follows: (ex.: too vague, too rigid, etc.)

______ 5. We cannot meet the time of delivery of items or materials specified.

______ 6. Insufficient time allowed for preparation and submission of bid.

______ 7. Other reasons: ____
____
____

You may remove our name from the bid list for:

______ This Commodity Group ______ This Item or Material ______ All Bids

______________________________	______________________________
Type or Print Name	Company
______________________________	______________________________
Title	Address
______________________________	______________________________
Authorized Signature	
______________________________	(______)________________________
Date	Telephone Number

WAGE RATES

The minimum hourly rates of pay are hereby established in accordance with Federal and State laws and regulations.

In the event that the contractor shall fail to pay the prevailing wages and supplements in accordance with the applicable articles of the New York State Labor Law, Section 220 Et Seq., and as described in this contract, it shall be considered a material breach of contract. For the breach or violation of this provision, without limiting any other rights, remedies or recovery to which the County or any individual may be entitled or any civil or criminal penalty for which any violator may be liable, the County shall have the right, in its discretion, to terminate this agreement immediately upon notice. In such event, the contractor shall be liable to the County for any additional costs or expenses incurred by the County in the completion of the project, and for any other recovery, costs and expenses to which the County may be entitled.

It is the responsibility of every prospective bidder to disclose whether the bidder has been found in willful violation of the New York State Labor Law for failure to pay prevailing wages and supplements, as those terms are defined by New York State Labor Law, within the three years immediately preceding the submission of the bid. This disclosure must be included with their proposal.

Original copy of the Prevailing Wage rates will be found at www.labor.state.ny.us.

Please refer to PRC #____2018002436____

Oswego County Energy Recovery Facility
Opacity Monitor Specification February 11, 2018

The Oswego County Energy Recovery Facility (ERF) is a municipal Waste-to-Energy plant with electrical generation in Fulton, New York. The plant is part of the Oswego County Department of Solid Waste Department, and uses four Consumat Municipal Solid Waste incinerators (200 tons-per-day / 50 tons per day per incinerator) to produce approximately 60,000 pounds per hour of steam. The 250 psig (406 F) steam is used as process steam by a local manufacturer (Interface Solutions, Inc) or to generate electricity (4 megawatts @ 5 kV) for sale to the NYSISO. The plant is organized into two independent trains – each Train consists of the following:

1. Two Incinerators
2. One Heat Recovery Steam Generator (250 psig / 406 F saturated steam).
3. One Air Pollution Control System:
   a. One Spray Dry Absorbent Scrubber
   b. One Baghouse (three modules with 256 bags per module / each bag is approximately 14 feet long / 6.5 inches in diameter).
   c. One 42 inch stack (the two stacks are enclosed in common 8 foot housing).
4. Each Train has a Continuous Emissions Monitoring System comprised of the following monitors:
   a. CO Monitor
   b. SO_2 Monitor
   c. Two O_2 Monitors – one Wet O_2 and one Dry O_2
   d. Stack Flow

The ERF is replacing two Thermo Environmental Instruments Model 400B / Optical Attenuation due to obsolescence – lack of product support in parts, material, etc. The two Opacity Meters will be replaced in 2018.

This specification covers the technical requirements for the design, manufacture and calibration of two Continuous Opacity Monitoring Systems (COMS) that will be installed to replace the existing COMS at the County of Oswego ERF Plant in Oswego, NY. The new COMS systems will be of new manufacturer, with an anticipated minimum of 10 years of manufacturer support in parts, materials, and technical support.

The new COMS packages will provide the same functionality as the currently installed Model 400B, at minimum, and shall provide a common trouble alarm to the Modicom PLC (control system) and local (APC Control Room) alarms and indications per this specification. The Wonderware Graphic User Interface (GUI / HMI) shall be updated to display Stack Opacity in the same fashion as is currently displayed, and interfaced with the Calibration system currently controlled by the Modicom PLC.

The system shall consist of two (2) complete COMS packages. Currently installed purge blowers will be used in the new system, and will be adapted to the new COMS system by Plant Personnel, unless specifically excluded from the Contractors Bid.

Bidders shall have extensive experience in installing COMS systems in New York State, and be familiar with, and comfortable with interfacing with the NYS DEC.

Potential bidders will be required to perform a site visit at the Energy Recovery Facility in Fulton, NY prior to bidding this project.

The Opacity Meters will be accomplished during plant shutdowns in the summer of 2018 such that the COMS systems will be fully commissioned and operational prior to a stack test in mid-September 2018.

1.0 CODES AND STANDARDS

The COMS shall be designed, constructed and tested in accordance with the applicable sections of the following Codes and Standards:

1. U.S. Environmental Protection Agency (EPA), 40 CFR Part 60, Performance Spec 1.
2. NY DEC
3. ASTM D-6216-98
4. All applicable Federal, state, county, or municipal codes, laws, or ordinances of the place of installation.
5. It shall be the Seller and/or Manufacturer's responsibility to be, or to become, knowledgeable of the requirements of these Codes and Standards. Any changes or alterations to the equipment to meet the Codes and Standards requirements shall be at the expense of the Seller.
6. Whenever the COMS, proposed by the Bidder, cannot fully meet the requirements of this specification, such exceptions must be clearly stated by the Bidder. No exceptions shall be allowed, unless approved by the Buyer in writing.

2.0 SCOPE OF SUPPLY

1. Provide two (2) COMS packages, comprised of the following as a minimum:
    a. Base Equipment
    b. Transceiver
    c. Reflector
    d. Stack Mounted Controller
    e. CEMS Cabinet Mounted Controller (with 19” Rack Mount Plate) to replace the currently installed controller.
    f. Required Mating/Flange Adaptors for Existing 4” Flanges (per attached plant drawings).
    g. Certified Filters for Quarterly Audit.
    h. Alignment Tool(s)
    i. Startup and commissioning spare parts, if required, defined as parts and consumables required for replacement during the period starting from the shipping date and ending on the date that the COMS successfully passes initial certification testing.
    j. Start-up services including installation support, clear stack certification testing and Training to ERF Staff (Staff Engineer, Shift Supervisor, and Plant Management).
    k. Documentation to include digital and hard copy manuals, test protocols, installation and as-built drawings, and final certifications. Engineering Data consisting of but not limited to, descriptive scope of supply, drawings, equipment makes and models (nameplate data including serial numbers), equipment data sheets, and miscellaneous design based information. Operation and maintenance manuals shall be furnished as well.
    l. Life cycle maintenance projections including daily, weekly, monthly, quarterly, and annual maintenance to include pricing for one year maintenance required parts shall be included in the bid documents.

m. Interface with the NYS Department of Environmental Conservation (NYSDEC Region 7) for approval of installation, test protocols, and final acceptance including all required test reports.

2. Supplied by others:
   a. Remove the old opacity equipment as required.
   b. Adapt currently installed Purge blowers to the new Opacity Monitors at the Stack (Bidder will provide installation sketches / drawings / plant personnel shall complete the installation).
   c. Run new communication cable ***(as specified in bid documents as provided from bidder)*** from the stack transceiver enclosure to the remote controller location.
   d. PLC programming support (Modicom / Quantum).
   e. The current Opacity Monitors outputs are 0-10 mA non-linear signal to the Modicom PLC drops at the APC Building Control room; the bidder will provide a 4 to 20 mA linear signal to the Modicom as part of this project. The bidder shall co-ordinate with ERF personnel and Modicom to install and calibrate the PLC inputs.

3. Seller shall perform the following:
   a. Make final terminations of all signal wiring.
   b. Mount transceiver and reflector on stack flanges.
   c. Startup and checkout the COMS.
   d. Perform Clear Stack Certification Testing.
   e. Train the buyers personnel on operation and maintenance of the COMS (Shift Supervisors, Staff Engineer, Instrument and Control Technician, and Plant Management)
   f. Ensure all pre-installation items are complete per industry standards and as required by the NYS DEC.

3.0 EXISTING OPACITY DETAILS

1. Currently there are Thermo Environmental Model 400 opacity units mounted on two stacks inside a stack liner / enclosure. The bidder is responsible to ensure clearance is available on the current stack to encompass specified opacity equipment (vertically and horizontally around the ports).

2. Stack details are as follows (SEE ATTACHED DRAWINGS):
   a. Mounting Flange off stack: 4" Flange, bolt pattern is 11:00 and 1:00 o'clock (or 12 o'clock top dead center).
   b. Current Flange to Flange distance is: 273.5" & 273.8".
   c. Stack Correction: diameter at stack / duct exit to atmosphere is 42".
   d. Stack Pressure: -0.5" - +0.5" water column.

3. The on-stack equipment is accessible via a work platform consisting of non-enclosed grating and handrails. The Stack Mounted Equipment is housed inside the stack housing, which shields the equipment from the elements. The access to the stack is approximately 70 feet from the ground. The stack is easily accessible via staircases inside the plant, and a small bridge crane (500 pounds) is available for lifting material.

4.0 DESIGN REQUIREMENTS

1. The Bidder will denote, in the bid documents, what supplied equipment provided per this specification is:

a. Indoor mounted equipment shall be suitable for operation in dry locations in a temperature controlled environment.
b. Outdoor mounted equipment shall be suitable for the extreme temperature and climatic data called out in the above referenced specification, including operation in direct sunlight and under rain, snow and ice conditions.
c. Seismic qualifications per the NYS and local codes.

2. Electrical suppression / current and voltage protection as appropriate for Stack-mounted equipment (lightning protection) – note protection in the bid document. The COMS system shall have suppression from stack mounted material and the Plant PLC input such that a lightning strike shall not damage plant controls (PLC input signals shall be isolated from the COMS system). There is a 120/240 VAC lighting panel in the stack enclosure, and water and air is available in close proximity to the stack enclosure (at the same elevation).

3. Monitoring Requirements and Regulations.

   The COMS shall satisfy applicable performance specifications and other requirements contained in 40 CFR Part 60, Performance Specifications and NYS DEC Title V requirements.

4. Continuous Opacity Monitoring System (two continuous opacity monitoring systems / /one per stack). The monitors shall meet requirements of EPA 40CFR60 Performance Specification 1 as well as the regulatory requirements of NYS DEC, and ASTM D-6216-98.
   a. The COMS shall utilize a double-pass transmissometer consisting of a transceiver and passive reflector.
   b. The transceiver shall utilize an electronically chopped LED or Diode light source and shall have no sensitivity to any level of ambient light. Systems with chopper motors or halogen light sources are not acceptable.
   c. Each monitoring system shall include a remote controller mounted in the CEMS system analyzer rack. The opacity monitors shall output dual linear 4-20 mA signals.
   d. The transceiver shall communicate via serial communication to the electronics located in the CEMS Cabinet.
      1. The opacity shall be capable of communicating the following status to the CEMS / PLC as a minimum:
         A. Opacity in Calibration
         B. Zero Calibration
         C. Span Calibration
         D. Common Fault Alarm
         E. Light source failure / dirty window.
         F. COMS failure
         G. Purge failure
      2. The opacity monitors outputs shall be wired to the ERF Modicom PLC. Means of checking calibration of the instruments from the remote panel shall be provided. CEMS control (Modicom PLC) shall be used to initiate automatic calibration and to collect data from the opacity monitor for inclusion in reporting and other data acquisition functions. Periodic zero and reference calibration values shall be recorded to provide a record of zero and span drift with time.
      3. The COMS shall utilize the existing purge blower equipment (nameplate below).
      4. Transceiver and reflector shall be housed in a NEMA 4X enclosures.
      5. An on-stack controller will be included which provides a read-out and allows for remote zero and span calibrations.

6. Opacity transceiver will utilize a built-in audit filter jig for simple quarterly audits. No separate calibration/audit jig will be accepted unless approved by ERF Management as part of the Contractors bid documents.

5.0 SERVICES – Start -up and Testing

1. The Seller shall furnish the services of a qualified field engineer(s) to start up the COMS following installation of the equipment. Start-up support shall include the following, as a minimum:
   a. Final terminations shall be made and stack mounted reflector and transceiver mounted.
   b. An installation checklist shall be reviewed and a walk-down performed to ensure that all equipment is ready for activation.
   c. Power up the system and perform a thorough test of all system functions per a site-specific checklist.
   d. The price for start-up services shall include all on-site time as well as travel time & all expenses.

2. Certification Testing

   a. The Seller shall be responsible for the COMS successfully passing the following certification tests:
      i. 7-day drift test (Seller can monitor test remotely if desired and does not need to stay on site for the entire 7 days – buyer will supply documentation of values during test).
      ii. Filter Audit Test
      iii. Clear-Stack Test (seller to provide test stands)
   b. Certification tests shall be performed in accordance with 40 CFR Part 60 requirements and the NYS DEC Air Quality Permit (attached). The certification testing shall be conducted using written protocol vetted by the NYS DEC.
      i. A report summarizing the results of Certification testing will be written by the Seller and provided to the Buyer after testing is complete. This report will be suitable for submittal to the appropriate regulatory agencies.

   c. Training

      1. The Seller shall provide a complete, standard training program for the Owner's operating and maintenance personnel that meets the following minimum requirements:

      2. The Seller's training program shall consist of hands-on sessions designed to train plant personnel in proper operation and maintenance of all equipment furnished by the Seller, including equipment provided by sub-vendors.
      3. The training program will be given at the job site.

      4. The Seller will provide a minimum of one half day of training.

      5. Training can be conducted during the same time as Start-up and Certification Testing.

6.0 OPTIONAL EQUIPMENT/Pricing

Option pricing for additional equipment recommended by bidder shall be included with each Bidder's quotation.

Option pricing for an annual support contract for the COMS including one year of 24/7 Telephone Support.

7.0 Installation Dates

The Opacity Monitors shall be installed and fully operational and certified prior to the Stack Test in September of 2018. The stack flow meters / systems may be installed during single Train shutdowns:

Train 1 – April 28th- May 7th, July 28th – August 7th 2018
Train 2 – June 2nd-11th, August 31st-September 10th, 2018

Stack testing is scheduled September 24th-28th, 2018. All acceptance testing must be done prior to 9-24-18.

The bidder will provide field service support during the annual stack tests in September, and provide a one-year warranty for equipment installed for this bid.

Questions or for a site visit, please contact:

Patrick Ryan
Chief Facility Operator
Oswego County Energy Recovery Facility
2801 State Route 481
Fulton, NY 13069
patrick.ryan@oswegocounty.com

Opacity Stack Mounting – Current Opacity Monitors

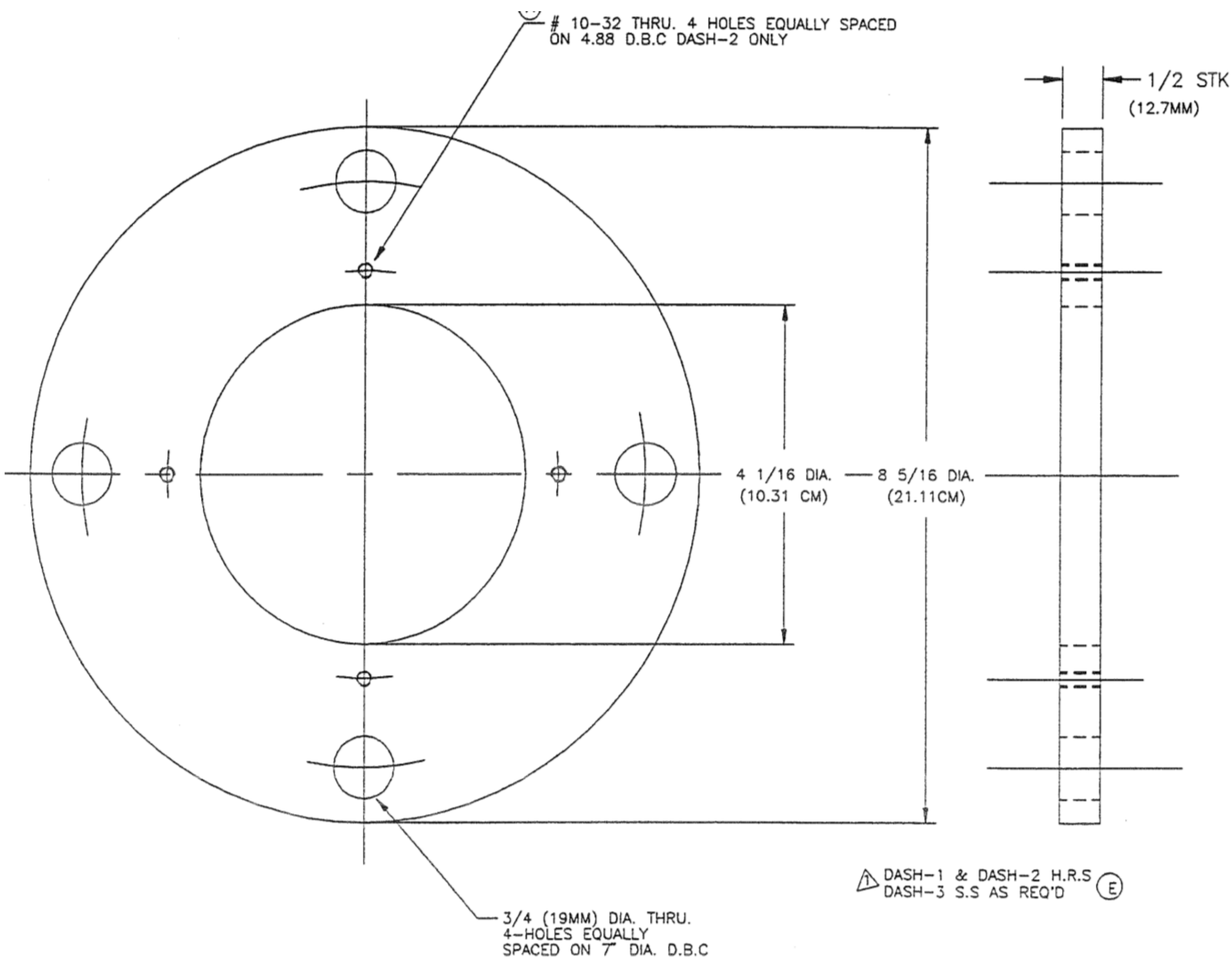


Figure 13

Mounting Flanges

35

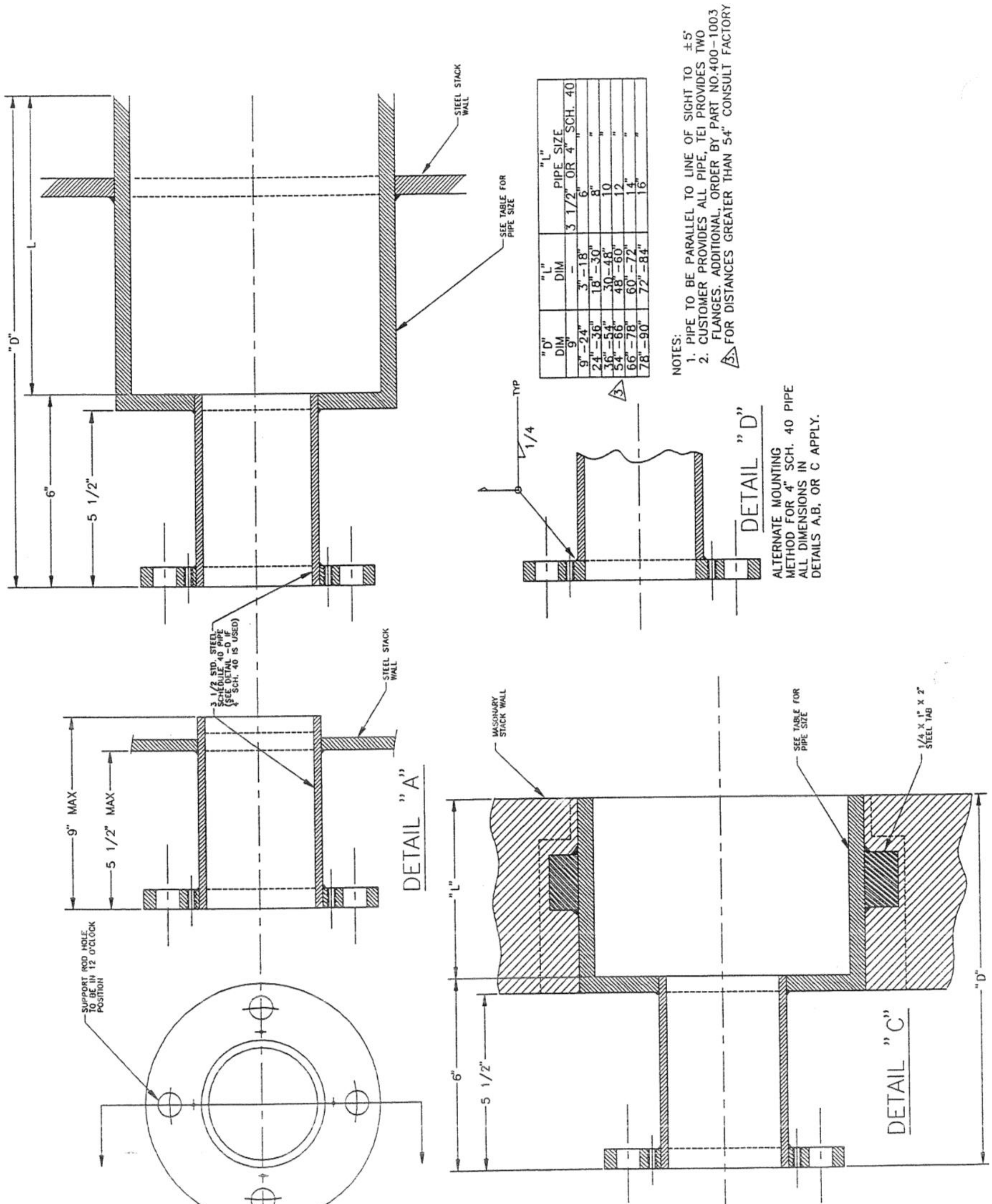
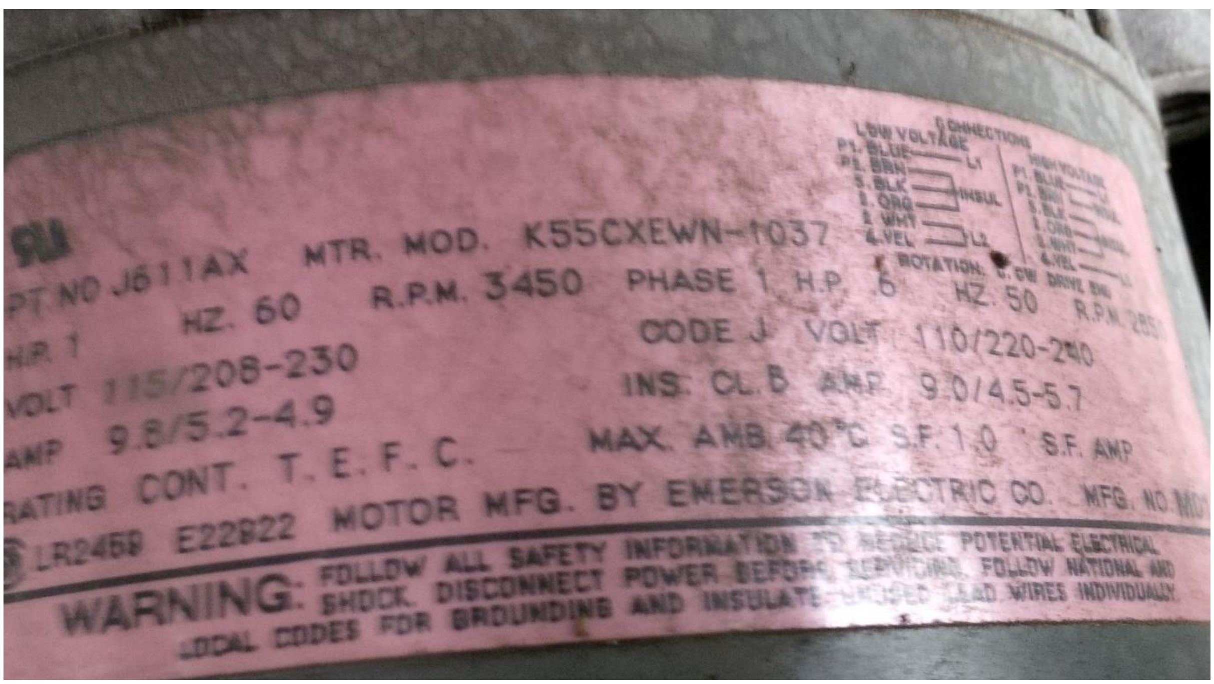


Figure 14
Flange Mounting Methods

36

Installed Purge Blowers - Nameplate



CEMS ANALOG OUTPUTS

CO	0 - 10VDC	POWER FROM MONITOR
SO_2	0 - 10VDC	POWER FROM MONITOR
O_2	4 - 20mA	POWER FROM MONITOR
STACK FLOW 1	4 - 20 mA	POWER FROM PLC/DCS
STACK FLOW 2	4 - 20 mA	POWER FROM MONITOR
OPACITY	0 - 10 mA	POWER FROM MONITOR

* THE OPACITY MONITOR SIGNAL IS A NONE LINIER SIGNAL AND AS OF NOW IS LINIERIZED IN THE PLC. USE TABLE ON PAGES 3+4.

* THE STACK FLOW FOR STACK # 2 IS MASS FLOW CALCULATED IN THE PLC/DCS.

* THE STACK FLOW FOR STACK #1 IS A LINIER SIGNAL ALL MASS DONE IN THE TRANSMITTER.

Single Pass Transmittance t	Optical Density O.D.	Double Pass Transmittance t^2	Signal Relationship $1 - t^2$	Output Signal ma	Opacity $1 - t$
0.00	∞	0.0000	1.0000	10.000	1.00
0.01	2.000	0.0001	0.9999	9.999	0.99
0.05	1.3010	0.0025	0.9975	9.975	0.95
0.10	1.0000	0.0100	0.9900	9.900	0.90
0.15	0.8239	0.0225	0.9775	9.775	0.85
0.20	0.6990	0.0400	0.9600	9.600	0.80
0.25	0.6021	0.0625	0.9375	9.375	0.75
0.30	0.5229	0.0900	0.9100	9.100	0.70
0.35	0.4559	0.1225	0.8775	8.775	0.65
0.40	0.3979	0.1600	0.8400	8.400	0.60
0.45	0.3468	0.2025	0.7975	7.975	0.55
0.50	0.3010	0.2500	0.7500	7.500	0.50
0.55	0.2596	0.3025	0.6975	6.975	0.45
0.60	0.2218	0.3600	0.6400	6.400	0.40
0.65	0.1871	0.4225	0.5775	5.775	0.35
0.70	0.1549	0.4900	0.5100	5.100	0.30
0.75	0.1249	0.5625	0.4375	4.375	0.25
0.80	0.0969	0.6400	0.3600	3.600	0.20
0.85	0.0706	0.7225	0.2775	2.775	0.15
0.90	0.0458	0.8100	0.1900	1.900	0.10
0.95	0.0223	0.9025	0.0975	0.975	0.05
1.00	0.0000	1.0000	0.0000	0.000	0.00

Table 1

Transmittance, Optical Density, Signal, and Opacity Relationships

1.2 INSTRUMENT UNITS OF MEASUREMENT AND APPLICATIONS

A beam of light, generated in the Optical Head is directed across the stack to the Retroreflector that returns the beam back on itself to the Optical Detector System. Because the beam traverses the stack twice, the Transmissometer is a double-pass instrument and the basic electrical output signal from the detector is proportional to t^2, the square of the single-pass stack transmittance. Subsequent electronics process and condition the signal with the output appearing as a 0 to 10 milliampere current proportional to $1 - t^2$. Because opacity is defined as $1 - t$, where t is a single-pass transmittance, the scale on the display meter is non-linear. Table 1 shows the relationship between single-pass transmittance t, optical density (O.D.), t^2, $1 - t^2$, and $1 - t$ (opacity). The graph in Figure 2 shows the relationship between the $1 - t^2$ signal and $1 - t$.

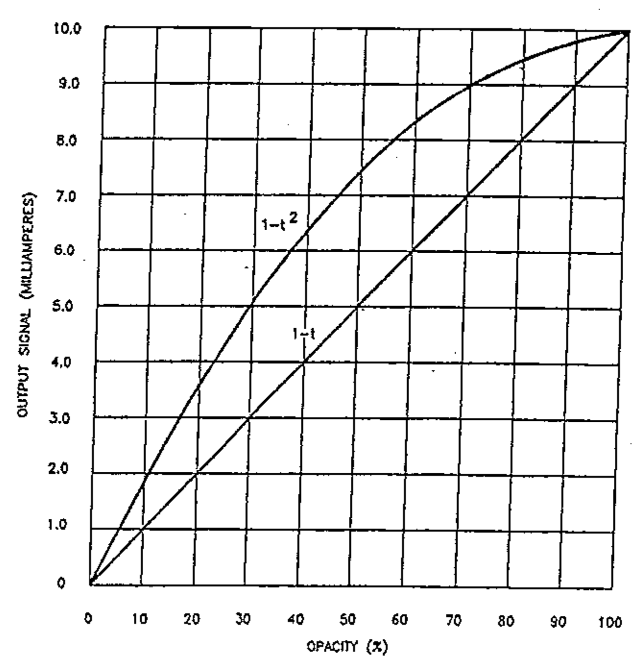


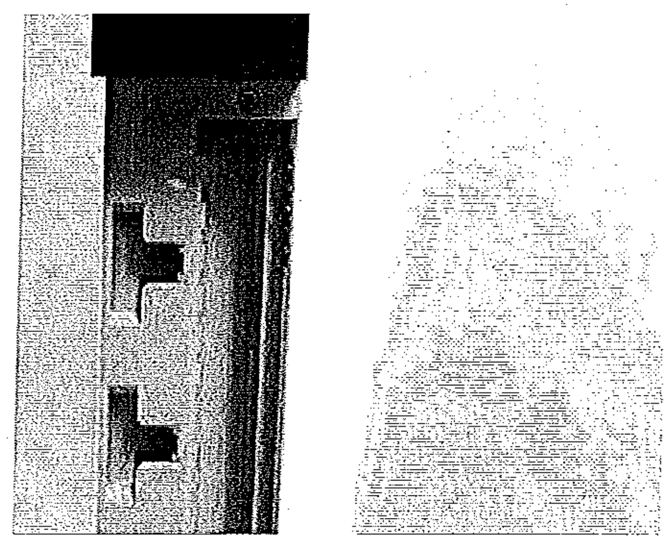
Figure 2

Output Signal vs. Opacity

MRO Blog

Applications of PLCs, CNCs, and more!

Tag Archives: 140-avi-030-00



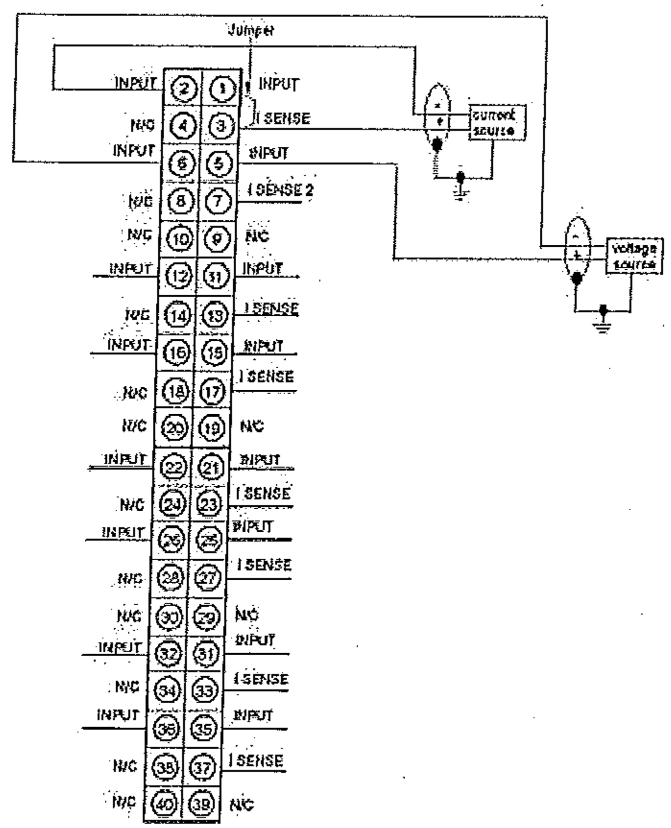
Modicon Quantum 140AVI03000 – Product Spotlight

February 21, 2017 Modicon Quantum, PLC Applications, Product Information, Schneider Electric 140-avi-030-00, 140avi03000, 140avi03000 wiring

The 140AVI03000 is a Analog Mixed Current/Voltage Input Modules that is part of the Modicon Quantum series. This Analog In 8 Channel Bipolar Modules accepts a mix of current and voltage inputs. Jumpers are required between the input and sense terminals for current inputs. The 140-AVI-030-00 contains a total of 18 LEDs. The "Active" LED remains on and green when Bus communication is currently present. The "F" indicator will light up red when an error external to the module has been detected. The green LEDs 1 through 8 will turn on when the indicated point or channel is ON. The red 1 through 8 LEDs when light up for two reasons. Either the indicated channel is out of range (1 – 5 Volts), or a broken wire condition has been detected (4 – 20 mA).

To prevent improper fault indications, unused inputs should have the + (plus) and – (minus) inputs tied together and be configured for a bipolar input range. Unwired inputs can cause invalid readings. When configured for voltage inputs (no jumper is installed between Input (+) and ISENSE terminals), a broken field wire can cause readings to be non-zero and unpredictable. The field wiring terminal must not be removed when the module is in operation.

The following figure shows the 140-AVI-030-00 Wiring Diagram.

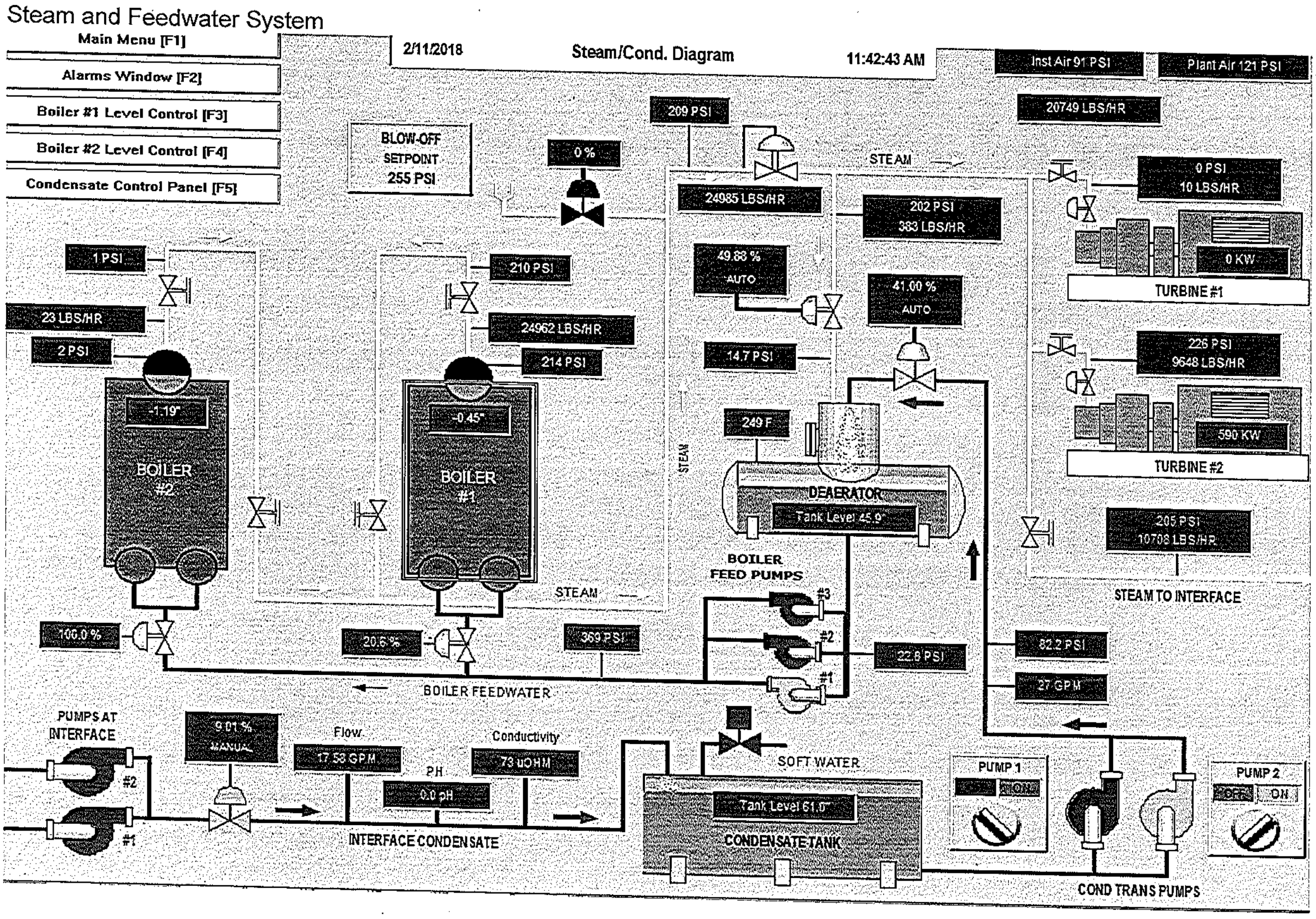


140AVI03000 Wiring Diagram

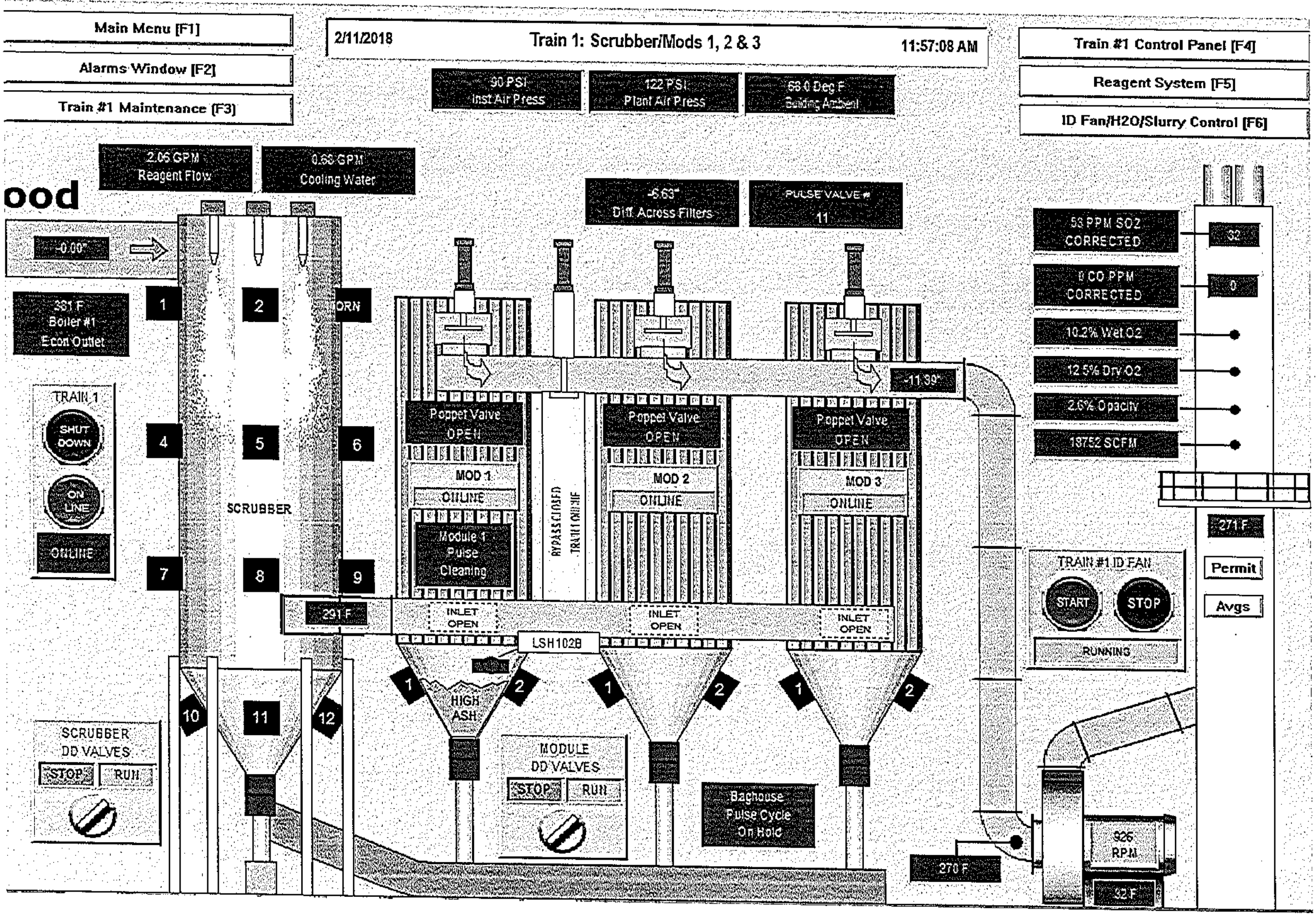
For external wiring, the user should supply the current and voltage sources, and installation and calibration of the fuses are at the discretion of the user. It is recommended that shielded cables are used, and twisted shielded cables should be used in noisy environments. The shielded cables should be connected to the PLC's ground. A shield bar should be used to connected the shielded cable to the ground. If you are field wiring the 140AVI03000, the maximum wire size is 1-14 AWG or 2-16 AWG and the minimum wire size is 20 AWG.

Wonderware Screens:

Steam and Feedwater System



Emissions Train – Train 2 is identical



CEMS - Emissions Control and Display

Train 1 and 2 OVERVIEW SCREEN

Show CEM 1 CALIB. | Show CEM 1 QUALITY | Show CEM 2 CALIB. | Show CEM 2 QUALITY | Close Window

CEM Room Temperature: 5.0

Train 1 Alarms	Train 1	HIGH Alarm SetPoint	Parameter	HIGH Alarm SetPoint	Train 2	Train 2 Alarms
SO2 Corrected HIGH Alarm	33.79	77	SO2 @ 7% O2 (ppm)	77	0.00	SO2 Corrected HIGH Alarm
Wet O2 General Alarm	10.53		O2 Wet (%)		20.40	Wet O2 General Alarm
Dry O2 General Alarm	13.32		O2 Dry (%)		20.89	Dry O2 General Alarm
OP Monitor Gen ALARM / Opacity HIGH Alarm	2.57	10	Opacity (%)	10	2.60	OP Monitor Gen ALARM / Opacity HIGH Alarm
CO Corrected HIGH Alarm	9.26	50	CO @ 7% O2 (ppm)	50	137.85	CO Corrected HIGH Alarm
	20005.62		Stack Flow (sfm)		3765.00	
	3.68		SO2 Mass (lbs/hr)		0.00	
Sample Conditioner Water Intrusion Alarm	20.31		Moisture (%)		2.43	Sample Conditioner Water Intrusion Alarm
	282.00		Sample Temp (Deg F)		322.00	
	271.29		Stack Temp (Deg F)		88.84	

Train 1:
- Verifying Analyzers ●
- Verifying Flow ●
- BLOWBACK ON ●
- QC Mode ON ●
- Process ON ○

Cal. FAIL

Cal. Passed

Train 2:
- Verifying Analyzers ●
- Verifying Flow ●
- BLOWBACK ON ●
- QC Mode ON ●
- Process ON ●

Analyzer Cabinet Temp

CEMS - Emissions Control and Display – Train 2 is identical

Train 1 Calibration and Setup

Show CEM OVERVIEW | Show CEM1 QUALITY | Close Window

Train 1 Calibration and Setup

Auto Calibration	ON
Current PLC Time	12 : 40 : 53
Auto Calibration Hour	6
Auto Calibration Minute	0
Stabilization Time* (sec)	150

* For both calibration gas and opacity.

Train 1 Analyzer Values

	Range	Drift Limits		
SO2 (ppm)	50	5.0	PPM	Zero
		15.0	%	Span
CO (ppm)	100	5.0	PPM	Zero
		15.0	%	Span
O2 (%)	25	1.0	%	Zero
		20.0	%	Span
Opacity (%)	100.0	10.0	%	
Flow (scfm)	50000	20.0	%	

Train 1 Blowback Parameters

Blowback Frequency (mins)	1440
Blowback Duration (secs)	20

QC Mode OFF

Cal. FAIL

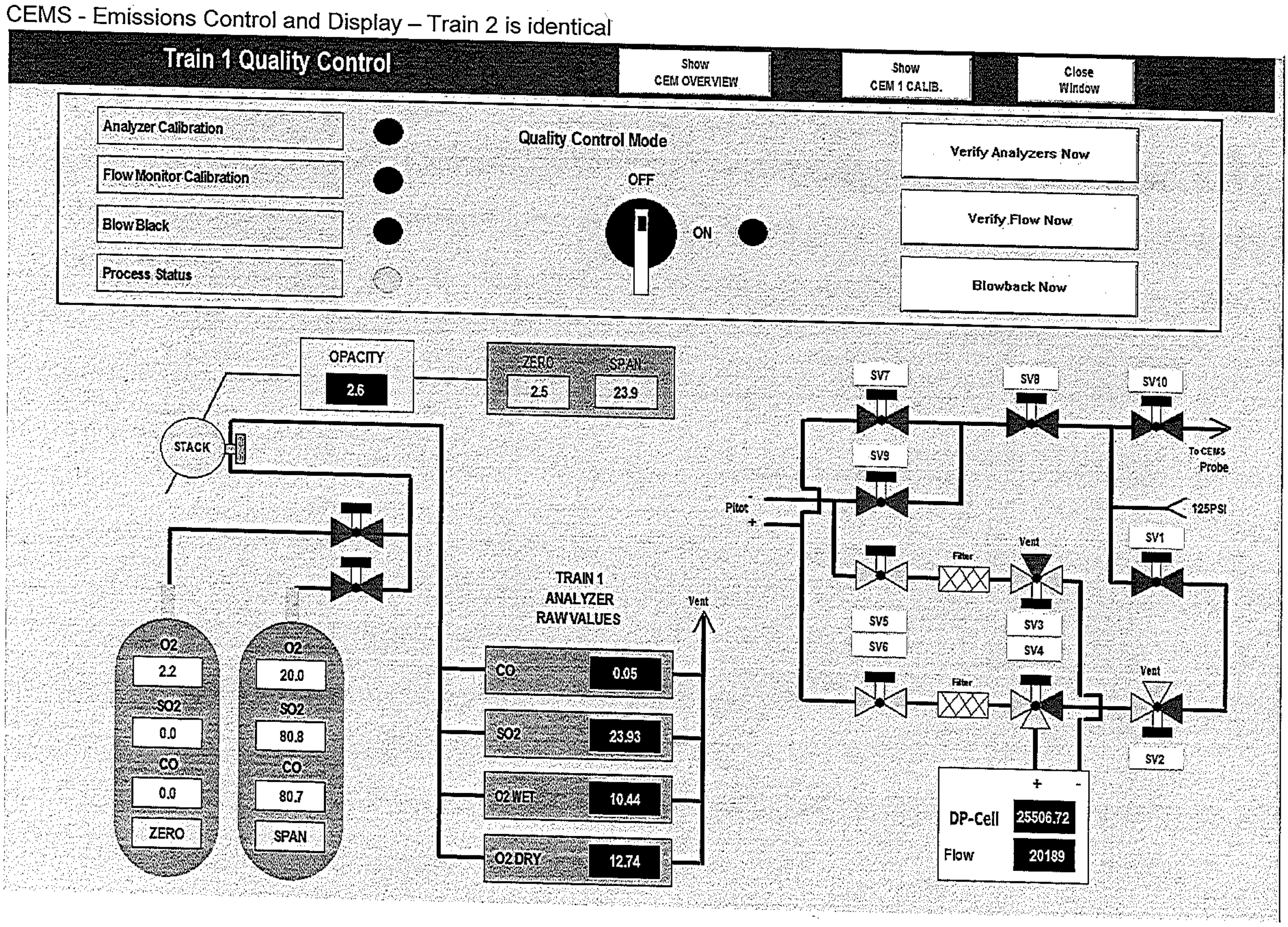
Verify Analyzers Now

Verify Flow Now

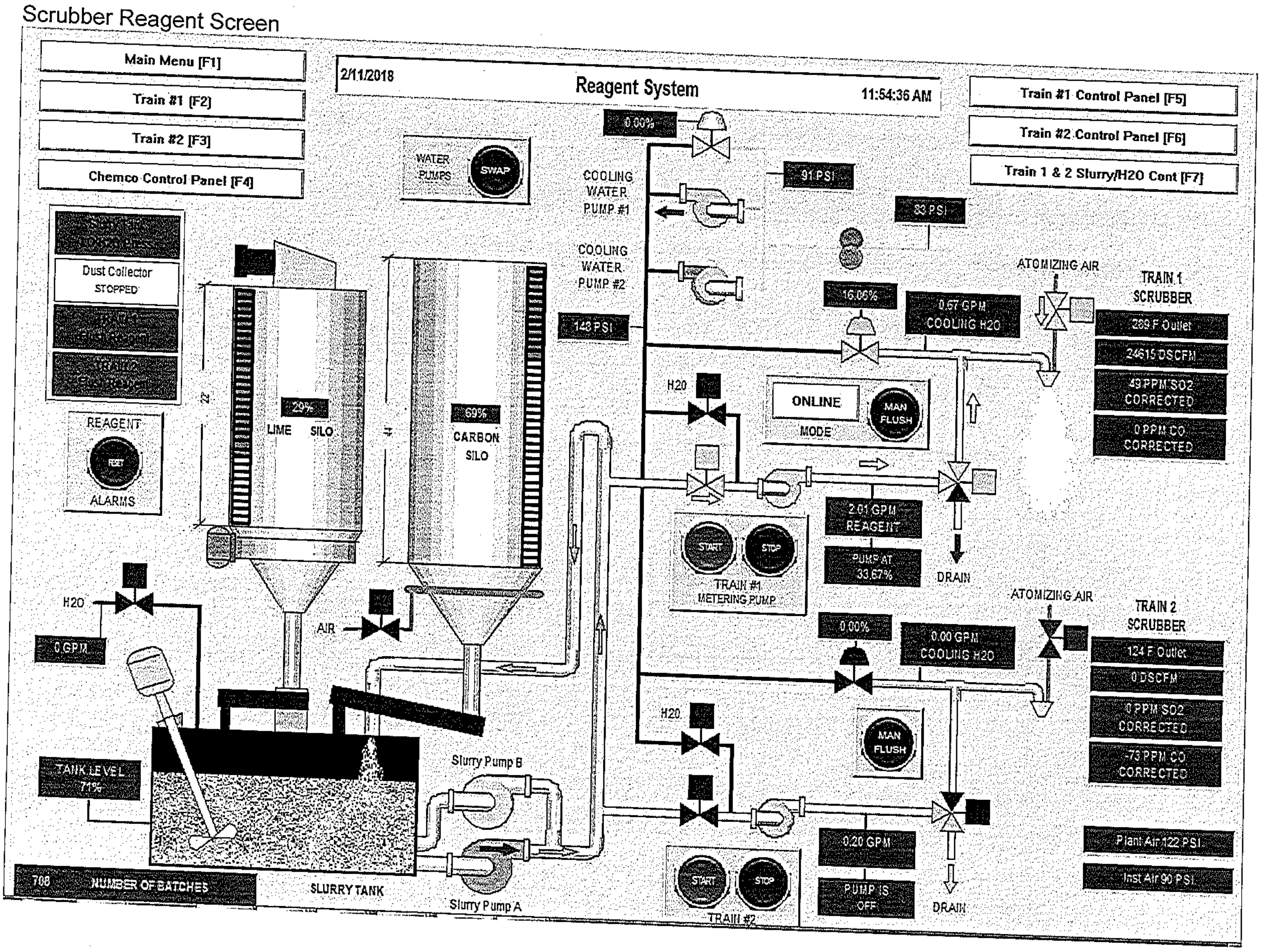
Blowback Now

CURRENT VALUE			TARGET	RESPONSE	DRIFT	FAIL
SO2 Raw	17.3	SO2 Zero	0.00	0.1	0.1 PPM	
		SO2 Span	80.8	82.1	1.6 %	
CO Raw	2.4	CO Zero	0.00	0.3	0.3 PPM	
		CO Span	80.7	67.9	15.9 %	
O2 Wet	11.29	Wet O2 Zero	2.17	1.8	0.4 %O2	
		Wet O2 Span	20.0	19.9	0.5 %	
O2 Dry	13.94	Dry O2 Zero	2.17	2.1	0.0 %O2	
		Dry O2 Span	20.0	20.0	0.2 %	
Opacity	2.62	Opacity Zero	2.54	2.6	0.1 %OP	
		Opacity Span	23.9	23.5	0.4 %OP	
Flow Rate	24774	Flow Zero	0	0	0.0	
		Flow Span	46800	45665	2.3	

CEMS - Emissions Control and Display – Train 2 is identical



Scrubber Reagent Screen



4.1.1 TRANSMISSOMETER SYSTEM ON-STACK POWER

Power to the Transmissometer Optical Head Assembly should terminate at a point within easy reach of the 6 foot (1.83 meter) long power cord supplied with the unit. Two 115 volt, single phase, 50/60 Hz, 20.0 ampere circuits are required to properly operate the Transmissometer and both Blower Assemblies with sufficient overload protection, one circuit for each side. The Optical Head and one blower are powered by one circuit; the retro blower is powered by the second circuit.

The Transmissometer and Blower Assemblies can also operate on 230 volt power; however, this requirement must be known at the time the Transmissometer System is ordered from the factory. For this configuration, two 230 volt, single phase, 50/60 Hz, 10.0 ampere circuits are required to properly operate the Transmissometer and Blower Assemblies with sufficient overload protection.

Lighting PANEL Available W/IN 20 FEET of Monitor 4" stack Flanges

CAUTION

Both sides must be hard wired or warranty will be voided. The Purge Blowers, when supplied as part of the system, must be installed and operating prior to mounting the Optical Head or Retro.

4.1.2 MOUNTING FLANGES

Two mounting flanges are required to mount the Blower Assemblies, Optical Head, and Retro Assemblies to the stack. No other mechanical connections or mounting points are required to place the Transmissometer System in operating position. The flange is a steel ring with an eight hole mounting bolt pattern as shown in Figure 13.

These flanges are welded to a 4 inch (10.16 cm) diameter section of Schedule 40 steel pipe, supplied by the customer, which is in turn welded or fixed to the stack wall. The flanges only need to be aligned visually so that there is an unobstructed view from either side.

Two basic mounting methods, one for a steel wall and one for a masonry wall, are shown in Figure 14. Larger diameter mounting pipe will be required whenever the distance between the stack inner wall and the Transmissometer flange exceeds one foot. This prevents reflections from the pipe walls from affecting the Transmissometer readings. Consult the factory for details.

4.1.3 FLANGE TO FLANGE DISTANCE 4' 2" Flange to Flange
50 INC

The stack outside diameter at the point of installation must be determined and the actual distance from the stack wall to the mounting surface of each flange measured. The sum of these three measurements is the flange to flange distance that must be known to properly select the Retroreflector type, the correct aperture size, and to focus the optical system for a given installation. (Refer to Figure 14 which illustrates typical mounting methods for metal stack and a masonry stack.)

4.1.4 STACK TAPER RATIO

If the stack is tapered and exit plume opacity is the governing parameter for regulatory compliance, the inside diameter of the stack at the point of measurement (l_m) and the inside diameter of the stack exit point (l_e) must be determined. The value of l_e/l_m (stack taper ratio) must be known to develop the proper stack exit point opacity curve for manual data correction or to properly adjust the Remote Control Unit.

4.1.5 DATA CABLE LENGTH AND CONTROL CENTER POWER

The distance from the Transmissometer site to a control center, if the Remote Control Unit is to be used, must be determined to properly select the length of the optional Data Cable. Power for the Remote Control Unit must be 115 volt, single phase, 50/60 Hz, 10 watts (230 volt special order).

The minimum recommended conduit size for housing the Data Cable is 1 inch.

4.1.6 INSTALLATION TOOLS

No special equipment or tools are needed to install the Transmissometer System other than the Retro Assembly Alignment Tool described in Section 2.7. However, for the convenience of installation personnel, the following basic hand tools are recommended and are sufficient for all installation and/or maintenance functions described in this manual.

a. Two 3/4" Open End Wrenches
b. Two 9/16" Open End Wrenches
c. One 5/16" Open End Wrench
d. One Large Type Screwdriver
e. One Small Blade-Type Screwdriver
f. One Instrument-Size, Blade-Type Screwdriver (for adjustment of electronics, potentiometers)
g. One Large Phillips Screwdriver
h. One Small Phillips Screwdriver
i. A set of Allen Wrenches (ranging in size from 1/16" to 3/16")
j. Retro Alignment Tool
k. Calibration Test Kit (with filters)

4.2 BLOWER ASSEMBLY

After the mounting flanges have been installed, the Blower Assembly is bolted directly to the face of the mounting flange with four 1" bolts complete with flat washers, lock washers, and hex nuts, and **located at the 45 degree position holes.** Four 1/2" - 13 x 8" long threaded rods are inserted in the remaining four mounting holes and locked in place with washers and hex nuts. These threaded rods should extend out from the face of the blower mounting plate approximately 6 1/2 inches (16.51 cm). Two other 1/2" -12 threaded rods are inserted through the holes along the lower edges of the blower mounting plate and adjusted with washers and hex nuts to steady the assembly against the stack wall. The completed blower plate installation with the cover removed is shown in Figures 33 and 34. The installation for the Optical Head and Retro Assembly Blower Systems is identical and all hardware required is provide with the units.

CAUTION

The Purge Blowers, when supplied as part of the Transmissometer System, must be installed and operating prior to installing the Optical Head or Retro Assemblies. Failure to comply will void the warranty.

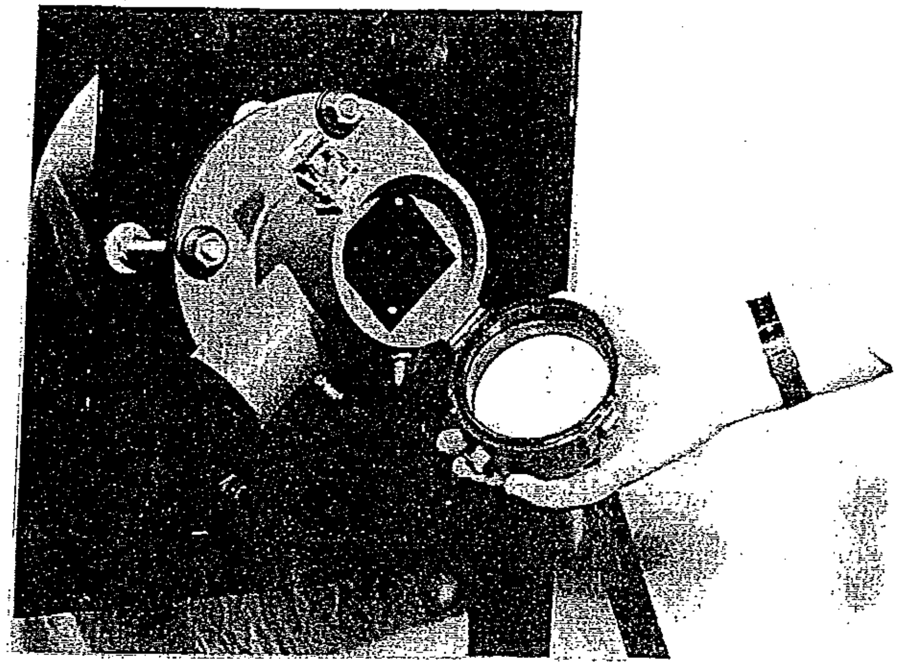


Figure 33. Installation Complete
(Retro Assembly without Cover)

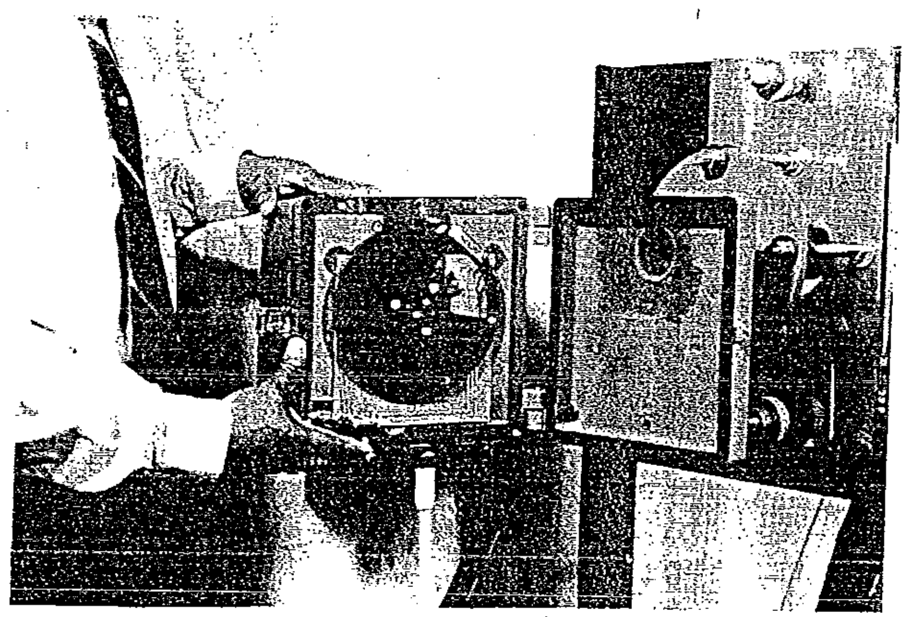


Figure 34. Installation Complete
(Optical Head Assembly without Cover)

INSTALLED OPACITY METERS 2-11-18

DIMENSIONS

Optical Head Assembly	16" L x 9.5 W x 9.5" D
Retroreflector Assembly	8.375" dia. x 8" L

WEIGHT

Optical Head	31 pounds
Retroreflector	6 pounds

ELECTRICAL REQUIREMENTS

Standard System	115/230V, 50/60 Hz, 35W single phase
Optional Blower (ea.)	115V (230V special order), single phase, 700W
Opacity Range	0 to 100%
Calibration Error	≤3% opacity
Zero Drift (24 Hours)	≤1% opacity
Calibration Drift (24 Hours)	≤1% opacity
Spectral Response	500 - 600 nm peak **
Angle of Projection	5 degrees, maximum
Angle of View	5 degrees, maximum
Optical System Aperture	1.5" diameter
Allowable Alignment Drift	+/-0.5 degree
Allowable Line Voltage Variation	105-130/210-260 VAC

RESPONSE TIMES

Normal	5 seconds (factory set)
Maximum	10 seconds
Minimum	1 second
Ambient Light Sensitivity	None

AUTOMATIC CALIBRATION CYCLES

Internal Calibration Data	~ 0.1 second
External Output "Zero" and "Span" Value	~ every 2 hours standard (other values by adjustment)
Ambient Temperature Range	-22 degrees to +125 degrees F
Operational Distance	0 to 50 feet (flange to flange)
Output (as $1 - t^2$)	0 to 10 mA at head or remote location or 4 to 20 mA from Remote Control Unit (t = transmittance)
Output Form	0 to 100% opacity (other expanded ranges available from special Remote Control Unit)
Lamp Life Expectance	30,000 + hours
Alignment	External, threaded with positive locking. Built-in optical alignment check included.
Loss of Transmission Detection	Window status detector is adjustable between 3 to 12% loss. Typically set at the Federal specified value of 4%.

* Expressed as sum of absolute mean value and the 95% confidence interval of a series of tests. Double-Pass.

** Responses below 400 nm or above 700 nm shall be less than 10% of the peak response. The mean spectral response is 500 nm - 600 nm.

CEMS ANALOG OUTPUTS

CO	0 - 10VDC	POWER FROM MONITOR
SO_2	0 - 10VDC	POWER FROM MONITOR
O_2	4 - 20mA	POWER FROM MONITOR
STACK FLOW 1	4 - 20 mA	POWER FROM PLC/DCS
STACK FLOW 2	4 - 20 mA	POWER FROM MONITOR
OPACITY	0 - 10 mA	POWER FROM MONITOR

* THE OPACITY MONITOR SIGNAL IS A NONE LINIER SIGNAL AND AS OF NOW IS LINIERIZED IN THE PLC. USE TABLE ON PAGES 3+4.

* THE STACK FLOW FOR STACK #2 IS MASS FLOW CALCULATED IN THE PLC/DCS.

* THE STACK FLOW FOR STACK #1 IS A LINIER SIGNAL ALL MASS DONE IN THE TRANSMITTER.

Single Pass Transmittance t	Optical Density O.D.	Double Pass Transmittance t^2	Signal Relationship $1 - t^2$	Output Signal ma	Opacity $1 - t$
0.00	∞	0.0000	1.0000	10.000	1.00
0.01	2.000	0.0001	0.9999	9.999	0.99
0.05	1.3010	0.0025	0.9975	9.975	0.95
0.10	1.0000	0.0100	0.9900	9.900	0.90
0.15	0.8239	0.0225	0.9775	9.775	0.85
0.20	0.6990	0.0400	0.9600	9.600	0.80
0.25	0.6021	0.0625	0.9375	9.375	0.75
0.30	0.5229	0.0900	0.9100	9.100	0.70
0.35	0.4559	0.1225	0.8775	8.775	0.65
0.40	0.3979	0.1600	0.8400	8.400	0.60
0.45	0.3468	0.2025	0.7975	7.975	0.55
0.50	0.3010	0.2500	0.7500	7.500	0.50
0.55	0.2596	0.3025	0.6975	6.975	0.45
0.60	0.2218	0.3600	0.6400	6.400	0.40
0.65	0.1871	0.4225	0.5775	5.775	0.35
0.70	0.1549	0.4900	0.5100	5.100	0.30
0.75	0.1249	0.5625	0.4375	4.375	0.25
0.80	0.0969	0.6400	0.3600	3.600	0.20
0.85	0.0706	0.7225	0.2775	2.775	0.15
0.90	0.0458	0.8100	0.1900	1.900	0.10
0.95	0.0223	0.9025	0.0975	0.975	0.05
1.00	0.0000	1.0000	0.0000	0.000	0.00

Table 1

Transmittance, Optical Density, Signal, and Opacity Relationships

UNIVERSAL ANALYZERS INC
1771 S. SUTRO TERRACE
CARSON CITY, NEVADA 89706
PH # 702-883-2500

* STACK SAMPLE PORT ASSM.
* STACK GAS CONDITIONING SYSTEMS

M# 270∅
S# B5941 TRAIN# 1
S# B5942 TRAIN# 2

WE HAVE NO DRAWINGS
OR PARTS FOR THESE S

LOCATION: APC ELECTRICAL ROOM

DROP: APC 1

ADDRESS: 12

Drop 12

OSWEGO COUNTY ENERGY RECOVERY FACILITY

DATE:

REV:

ADDRESS	DEVICE I.D.	DESCRIPTION	SCALE	RACK	MODULE TYPE	SLOT	PT	WIRE#	TB#	PT	WIRE#	TB#	TRANSMITTER/CONTROLLER LOCATION
100732		SPARE											
100733		SPARE		1	DAI543	8 DI	27	SP1-8-27	DIA44				
100734		SPARE		1	DAI543	8 DI	31	SP1-8-31	DIA45				
100735		SPARE		1	DAI543	8 DI	33	SP1-8-33	DIA46				
100736		SPARE		1	DAI543	8 DI	35	SP1-8-35	DIA47				
100929		TRAIN 1 WET O2 SLSTM		1	DAI543	8 DI	37	SP1-8-37	DIA48				
100930		TRAIN 1 DRY 02 ALARM		1	DDI353	9 DI	1	100929					
100931		TRAIN 1 SAMPLE CONDITIONER WATER INTRUSTION		1	DDI353	9 DI	2	100930					
100932		TRAIN 1 OPACITY ALARM		1	DDI353	9 DI	3	100931					
100933		TRAIN 1 WET O2 ZERO		1	DDI353	9 DI	4	100932					
100934		TRAIN 1 WET O2 SPAN		1	DDI353	9 DI	5	100933					
100935		SPARE		1	DDI353	9 DI	6	100934					
100936		SPARE		1	DDI353	9 DI	7	SP1-9-15					
100937		SPARE		1	DDI353	9 DI	8	SP1-9-17					
100938		SPARE		1	DDI353	9 DI	11	SP1-9-21					
100939		SPARE		1	DDI353	9 DI	12	SP1-9-23					
100940		SPARE		1	DDI353	9 DI	13	SP1-9-25					
100941		SPARE		1	DDI353	9 DI	14	SP1-9-27					
100942		SPARE		1	DDI353	9 DI	15	SP1-9-31					
100943		SPARE		1	DDI353	9 DI	16	SP1-9-33					
100944		SPARE		1	DDI353	9 DI	17	SP1-9-35					
100945		SPARE		1	DDI353	9 DI	18	SP1-9-37					
100946		SPARE					21						
100947		SPARE					22						
100948		SPARE					23						
100949		SPARE					24						
100950		SPARE					25						
100951		SPARE					26						
100952		SPARE					27						
100953		SPARE					28						
100954		SPARE					31						
100955		SPARE					32						
100956		SPARE					33						
100957		SPARE					34						
100958		SPARE					35						
100959		SPARE					36						
100960		SPARE					37						
							38						

LOCATION: APC ELECTRICAL ROOM
DROP: APC 1
ADDRESS: 12

Drop 12

OSWEGO COUNTY ENERGY RECOVERY FACILITY

DATE:
REV:

ADDRESS	DEVICE I.D.	DESCRIPTION	SCALE	RACK	MODULE TYPE	SLOT	PT	WIRE#	TB#	PT	WIRE#	TB#	TRANSMITTER/CONTROLLER LOCATION
002000	SV-125P	MOD 3 PULSE CLEANING SOL. VALVE #16		1	DAO842	14 DO	37	SV-125P	DOA80		X2A-2	X2A-2	
003009		TRAIN 1 WET O2 CAL INITIATE		1	DDO843	15 DO	1	003009					
003010	V13	TRAIN 1 CEMS ZERO VALUE		1	DDO843	15 DO	3	003010					
003011	V12	TRAIN 1 CEMS SPAN VALUE		1	DDO843	15 DO	5	003011					
003012		TRAIN 1 OPACITY ZERO		1	DDO843	15 DO	7	003012					
003013		TRAIN 1 OPACITY SPAN		1	DDO843	15 DO	11	003013					
003014	SV1	TRAIN 1 FLOW MONITOR AIR SUPPLY		1	DDO843	15 DO	13	003014					
003015	SV2	TRAIN 1 FLOW MONITOR ATMOS VENT		1	DDO843	15 DO	15	003015					
003016	SV3 & SV4	TRAIN 1 FLOW MONITOR ATMOS VENT		1	DDO843	15 DO	17	003016					
003017	SV5 & SV6	TRAIN 1 FLOW MONITOR PRESS ISOLATION		1	DDO843	15 DO	21	003017					
003018	SV8	TRAIN FLOW MONITOR PURGE		1	DDO843	15 DO	23	003018					
003019	SV9	TRAIN 1 FLOW MONITOR PITOT		1	DDO843	15 DO	25	003019					
003020	SV10	TRAIN 1 CEMS BLOWBACK		1	DDO843	15 DO	27	003020					
003021		OIL		1	DDO843	15 DO	31	SP1-15-31					
003022		OIL		1	DDO843	15 DO	33	SP1-15-33					
003023		OIL		1	DDO843	15 DO	35	SP1-15-35					
003024		OIL		1	DDO843	15 DO	37	SP1-15-37					

Drop 12

LOCATION: APC ELECTRICAL ROOM
DROP: APC 1
ADDRESS: 12

OSWEGO COUNTY ENERGY RECOVERY FACILITY

DATE:
REV:

ADDRESS	DEVICE I.D.	DESCRIPTION	SCALE	RACK	MODULE TYPE	SLOT	PT	WIRE#	TB#	PT	WIRE#	TB#	TRANSMITTER/CONTROLLER LOCATION
300360	DPT-101	TRAIN 1 DIFFERENTIAL PRESSURE ACROSS FABRIC FILTER TRANSMITTER		1	ACI030	3 AI	2	DPT-101+	AIA1	1	DPT-101-	AIA2	
300361	FT-103	TRAIN 1 REAGENT FLOWMETER		1	ACI030	3 AI	6	300361	WH	5	300361	BLK	TOP SCRUBBER #1
300362	TT-100	ID FAN MOTOR TEMPERATURE		1	ACI030	3 AI	12	TT-100+	AIA7	11	TT-100-	AIA8	
300363	SI-100	TRAIN 1 INDUCED DRAFT FAN VFD SPEED FEEDBACK		1	ACI030	3 AI	16	SI-100+	AIA10	15	SI-100-	AIA11	
300364	PT-100	TRAIN 1 DRY SCRUBBER INLET DUCT PRESSURE		1	ACI030	3 AI	22	PT-100+	AIA13	21	PT-100-	AIA14	
300365	FT-101	TRAIN 1 COOLING WATER FLOWMETER		1	ACI030	3 AI	26	FT-101+	AIA16	25	FT-101-	AIA17	
300366	TT-103	AMBIENT BUILDING AIR TEMPERATURE		1	ACI030	3 AI	32	TT-103+	AIA19	31	TT-103-	AIA20	
300367	PT-150	TRAIN 1 ID FAN DRAFT		1	ACI030	3 AI	36	PT-150+	AIA22	35	PT-150-	AIA23	
300369		TRAIN 1 WET O2 CONC		1	ACI030	4 AI	2	300369		1	300369		
300370		TRAIN 1 DRY O2 CONC		1	ACI030	4 AI	6	300370		5	300370		
300371		TRAIN 1 OPACITY CONC		1	ACI030	4 AI	12	300371		11	300371		
300372		TRAIN 1 STACK TEMP		1	ACI030	4 AI	16	300372		15	300372		
300373		TRAIN 1 FLOW RATE		1	ACI030	4 AI	22	300373		21	300373		
300374		TRAIN 1 CO CONC		1	ACI030	4 AI	26	300374		25	300374		
300375		TRAIN 1 SO2 CONC		1	ACI030	4 AI	32	300375		31	300375		
300376		TRAIN 1 REAGENT DENSITY		1	ACI030	4 AI	36	300376		35	300376		
300378	TE-102	TRAIN 1 INDUCED DRAFT FAN INLET TEMPERATURE		1	ATI030	16T/C IN	1	TE-102+		3	TE-102-		
300379		SPARE		1	ATI030	16T/C IN	5			7			
300380	TE-101B	TRAIN 1 DRY SCRUBBER OUTLET DUCT TEMPERATURE		1	ATI030	16T/C IN	11	TE-101B+		13	TE-101B-		
300381		SPARE		1	ATI030	16T/C IN	15			17			
300382		TRAIN 1 SAMPLE LINE TEMP		1	ATI030	16T/C IN	21	300382		23	300382		
300383		CEM ROOM TEMP		1	ATI030	16T/C IN	25	300383		27	300383		CEMS CABINET
300384		SPARE		1	ATI030	16T/C IN	31			33			
300385		SPARE		1	ATI030	16T/C IN	35			37			
402008	SC-100	TRAIN 1 VFD REAGENT PUMP CONTROL		1	ACO020	5 AO	10	SC-100+	AOA49		SC-100-	AOA50	
402009	SC-101	TRAIN 1 VFD INDUCED DRAFT FAN CONTROL		1	ACO020	5 AO	20	SC-101+	AOA52		SC-101-	AOA53	
402010	TCV-101	TRAIN 1 TEMP CONTROL VALVE		1	ACO020	5 AO	30	TCV-101+	AOA55		TCV-101-	AOA56	
402011		SPARE		1	ACO020	5 AO	40	SP1-5-40	AOA58		N/A	AOA59	

LOCATION: APC ELECTRICAL ROOM
DROP: APC 2
ADDRESS: 13

Drol 13

OSWEGO COUNTY ENERGY RECOVERY FACILITY

DATE:
REV:

ADDRESS	DEVICE I.D.	DESCRIPTION	SCALE	RACK	MODULE TYPE	SLOT	PT	WIRE#	TB#	PT	WIRE#	TB#	TRANSMITTER/CONTROLLER LOCATION
100796		SPARE		1	DAI543	8 DI	27	SP1-8-27	DIB44				
100797		SPARE		1	DAI543	8 DI	31	SP1-8-31	DIB45				
100798		SPARE		1	DAI543	8 DI	33	SP1-8-33	DIB46				
100799		SPARE		1	DAI543	8 DI	35	SP1-8-35	DIB47				
100800		SPARE		1	DAI543	8 DI	37	SP1-8-37	DIB48				
100961		TRAIN 2 WET O2 ALARM		1	DDI353	9 DI	1	100961					
100962		TRAIN 2 DRY 02 ALARM		1	DDI353	9 DI	2	100962					
100963		TRAIN 2 SAMPLE CONDITIONER WATER INTRUSION		1	DDI353	9 DI	3	100963					
100964		TRAIN 2 OPACITY ALARM		1	DDI353	9 DI	4	100964					
100965		TRAIN 2 WET O2 ZERO		1	DDI353	9 DI	5	100965					
100966		TRAIN 2 WET O2 SPN		1	DDI353	9 DI	6	100966					
100967		SPARE		1	DDI353	9 DI	7	SP1-9-15					
100968		SPARE		1	DDI353	9 DI	8	SP1-9-17					
100969		SPARE		1	DDI353	9 DI	11	SP1-9-21					
100970		SPARE		1	DDI353	9 DI	12	SP1-9-23					
100971		SPARE		1	DDI353	9 DI	13	SP1-9-25					
100972		SPARE		1	DDI353	9 DI	14	SP1-9-27					
100973		SPARE		1	DDI353	9 DI	15	SP1-9-31					
100974		SPARE		1	DDI353	9 DI	16	SP1-9-33					
100975		SPARE		1	DDI353	9 DI	17	SP1-9-35					
100976		SPARE		1	DDI353	9 DI	18	SP1-9-37					
100977					DDI353	9 DI	21						
100978					DDI353	9 DI	22						
100979					DDI353	9 DI	23						
100980					DDI353	9 DI	24						
100981					DDI353	9 DI	25						
100982					DDI353	9 DI	26						
100983					DDI353	9 DI	27						
100984					DDI353	9 DI	28						
100985					DDI353	9 DI	31						
100986					DDI353	9 DI	32						
100987					DDI353	9 DI	33						
100988					DDI353	9 DI	34						
100989					DDI353	9 DI	35						
100990					DDI353	9 DI	36						
100991					DDI353	9 DI	37						
100992					DDI353	9 DI	38						

LOCATION: APC ELECTRICAL ROOM
DROP: APC 2
ADDRESS: 13

Drop 13

OSWEGO COUNTY ENERGY RECOVERY FACILITY

DATE:
REV:

ADDRESS	DEVICE I.D.	DESCRIPTION	SCALE	RACK	MODULE TYPE	SLOT	PT	WIRE#	TB#	PT	WIRE#	TB#	TRANSMITTER/CONTROLLER LOCATION
002093	SV-131M	MOD 3 PULSE CLEANING SOL. VALVE #13		1	DAO842	14 DO	31	SV-131M	DOB77		X2B-2	X2B-2	
002094	SV-131N	MOD 3 PULSE CLEANING SOL. VALVE #14		1	DAO842	14 DO	33	SV-131N	DOB78		X2B-2	X2B-2	
002095	SV-131O	MOD 3 PULSE CLEANING SOL. VALVE #15		1	DAO842	14 DO	35	SV-131O	DOB79		X2B-2	X2B-2	
002096	SV-131P	MOD 3 PULSE CLEANING SOL. VALVE #16		1	DAO842	14 DO	37	SV-131P	DOB80		X2B-2	X2B-2	
003025		TRAIN 2 WET O2 CAL INITIATE		1	DDO843	15 DO	1	003025					
003026	V13	TRAIN 2 CEMS ZERO VALUE		1	DDO843	15 DO	3	003026					
003027	V12	TRAIN 2 CEMS SPAN VALUE		1	DDO843	15 DO	5	003027					
003028		TRAIN 2 OPACITY ZERO		1	DDO843	15 DO	7	003028					
003029		TRAIN 2 OPACITY SPAN		1	DDO843	15 DO	11	003029					
003030	SV1	TRAIN 2 FLOW MONITOR AIR SUPPLY		1	DDO843	15 DO	13	003030					
003031	SV2	TRAIN 2 FLOW MONITOR ATMOS VENT		1	DDO843	15 DO	15	003031					
003032	SV3 & SV4	TRAIN 2 FLOW MONITOR ATMOS VENT		1	DDO843	15 DO	17	003032					
003033	SV5 & SV6	TRAIN 2 FLOW MONITOR PRESSURE ISOLATION		1	DDO843	15 DO	21	003033					
003034	SV8	TRAIN 2 FLOW MONITOR PURGE		1	DDO843	15 DO	23	003034					
003035	SV9	TRAIN 2 FLOW MONITOR PITOT		1	DDO843	15 DO	25	003035					
003036	SV10	TRAIN 2 CEMS PROBE BLOWBACK		1	DDO843	15 DO	27	003036					
003037		SPARE		1	DDO843	15 DO	31	SP1-15-31					
003038		SPARE		1	DDO843	15 DO	33	SP1-15-33					
003039		SPARE		1	DDO843	15 DO	35	SP1-15-35					
003040		SPARE		1	DDO843	15 DO	37	SP1-15-37					

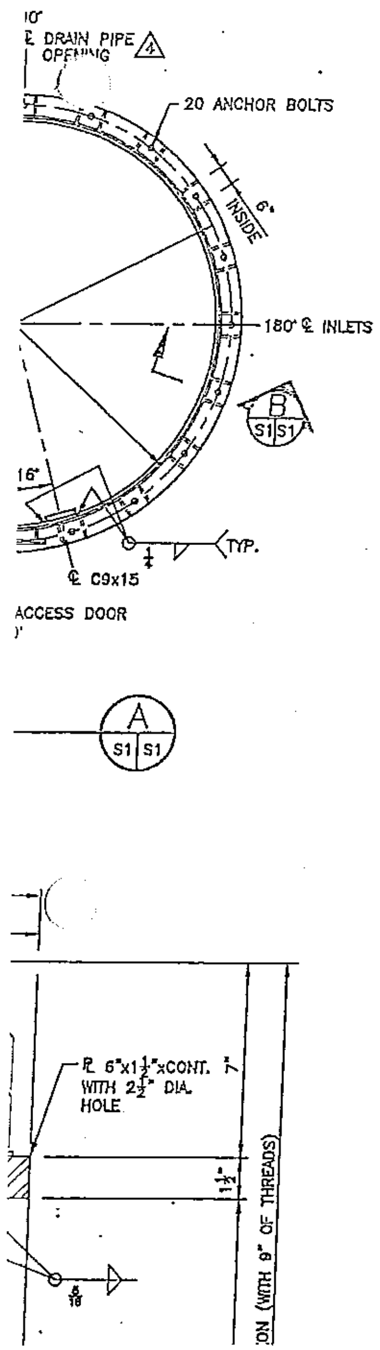
LOCATION: APC ELECTRICAL ROOM
DROP: APC 2
ADDRESS: 13

Drop 13

OSWEGO COUNTY ENERGY RECOVERY FACILITY

DATE:
REV:

ADDRESS	DEVICE I.D.	DESCRIPTION	SCALE	RACK	MODULE TYPE	SLOT	PT	WIRE#	TB#	PT	WIRE#	TB#	TRANSMITTER/CONTROLLER LOCATION
300388	DPT-102	TRAIN 2 DIFFERENTIAL PRESSURE ACROSS FABRIC FILTER TRANSMITTER		1	ACI030	3 AI	2	DPT-102+	AIB1	1	DPT-102-	AIB2	
300389	FT-104	TRAIN 2 REAGENT FLOWMETER		1	ACI030	3 AI	6	300389	WH	5	300389	BLK	TOP SCRUBBER #2
300390	TT-101	ID FAN MOTOR TEMPERATURE		1	ACI030	3 AI	12	TT-101+	AIB7	11	TT-101-	AIB8	
300391	SI-101	TRAIN 2 INDUCED DRAFT FAN VFD SPEED FEEDBACK		1	ACI030	3 AI	16	SI-101+	AIB10	15	SI-101-	AIB11	
300392	PT-101	TRAIN 2 DRY SCRUBBER INLET DUCT PRESSURE		1	ACI030	3 AI	22	PT-101+	AIB13	21	PT-101-	AIB14	
300393	FT-102	TRAIN 2 COOLING WATER FLOWMETER		1	ACI030	3 AI	26	FT-102+	AIB16	25	FT-102	AIB17	
300394	PT-200	TRAIN 2 ID FAN DRAFT		1	ACI030	3 AI	32	PT-200+	AIB19	31	PT-200-	AIB20	
300395		SPARE		1	ACI030	3 AI	36	SP1-3-36	AIB22	35	N/A	AIB23	
300397		TRAIN 2 WET 02 CONC		1	ACI030	4 AI	2	300397	RED	1	300397	BLK	
300398		TRAIN 2 DRY 02 CONC		1	ACI030	4 AI	6	300398	WH	5	300398	BLK	
300399		TRAIN 2 OPACITY CONC		1	ACI030	4 AI	12	300399	GRN	11	300399	BLK	
300400		TRAIN 2 STACK TEMP		1	ACI030	4 AI	16	300400	BLU	15	300400	BLK	
300401		TRAIN 2 FLOW RATE		1	ACI030	4 AI	22	300401	OR	21	300401	BLK	
300402		TRAIN 2 CO CONC		1	ACI030	4 AI	26	300402	YEL	25	300402	BLK	
300403		TRAIN 2 SO2 CONC		1	ACI030	4 AI	32	300403	BR	31	300403	BLK	
300404		TRAIN 2 REAGENT DENSITY		1	ACI030	4 AI	36	300404	RED	35	300404	GRN	TOP SCRUBBER #2
300406	TE-105	TRAIN 2 INDUCED DRAFT FAN INLET TEMPERATURE		1	ATI030	16T/C IN	1	TE-105+		3	TE-105-		
300407		SPARE		1	ATI030	16T/C IN	5			7			
300408	TE-104B	TRAIN 2 DRY SCRUBBER OUTLET DUCT TEMPERATURE		1	ATI030	16T/C IN	11	TE-104B+		13	TE-104B-		
300409		SPARE		1	ATI030	16T/C IN	15			17			
300410		TRAIN 2 SAMPLE LINE TEMP		1	ATI030	16T/C IN	21	300410		23	300410		
300411		SPARE		1	ATI030	16T/C IN	25			27			
300412		SPARE		1	ATI030	16T/C IN	31			33			
300413		SPARE		1	ATI030	16T/C IN	35			37			
402012	SC-102	TRAIN 2 VFD REAGENT PUMP CONTROL		1	ACO020	5 AO	10	SC-102+	AOB49		SC-102-	AOB50	
402013	SC-103	TRAIN 2 VFD INDUCED DRAFT FAN CONTROL		1	ACO020	5 AO	20	SC-103+	AOB52		SC-103-	AOB53	
402014	TCV-108	TRAIN 2 TEMP CONTROL VALVE		1	ACO020	5 AO	30	TCV-108+	AOB55		TCV-108-	AOB56	
402015		SPARE		1	ACO020	5 AO	40	SP1-5-40	AOB58		N/A	AOB59	



GENERAL NOTES

1. MATERIAL
   - A. STACK OUTER SHELL AND INNER FLUE PLATES AND ALL EXTERNAL AND INTERNAL COMPONENT PARTS SUCH AS ANCHOR BOLT CHAIR, STIFFENERS, INNER FLUE GUIDES, INNER FLUE SUPPORTS, TUNED MASS DAMPER AND LIFTING LUGS SHALL CONFORM TO ASTM A-36 CARBON STEEL UNLESS NOTED OTHERWISE.
   - B. THE PLATFORM AND LADDER SHALL BE FABRICATED FROM ASTM A-36 CARBON STEEL AND HOT DIPPED GALVANIZED UNLESS NOTED OTHERWISE.
   - C. ALL FASTENERS FOR ACCESS DOORS, TEST PORTS, FIELD SPLICES, PLATFORM, LADDER AND ANY OTHER BOLTING REQUIREMENTS SHALL BE GALVANIZED ASTM A-325 FASTENERS UNLESS NOTED OTHERWISE.
   - D. THE OUSIDE OF THE INNER FLUES ARE TO BE INSULATED WITH (2) 1 1/2" LAYERS OF MINERAL FIBER INSULATION (ASTM C612-8lb/ft^3).

2. FABRICATION
   ALL WORK SHALL BE FABRICATED IN ACCORDANCE WITH AISC "SPECIFICATIONS FOR STRUCTURAL STEEL BUILDINGS", LATEST EDITION. ALL WELDS SHALL BE MADE ONLY BY WELDING OPERATORS WHO HAVE BEEN PREVIOUSLY QUALIFIED BY TESTS AS PRESCRIBED IN THE AWS "STRUCTURAL WELDING CODE", OR BY THE ASME WELDING CODE, TO PERFORM THE TYPE WORK REQUIRED. ALL BUTT WELDS SHALL BE PRE-QUALIFIED, FULL PENETRATION WELDS AND SHALL DEVELOP THE FULL STRENGTH OF THE SECTION. SHELL GIRTH AND VERTICAL SEAMS SHALL BE COMPLETE PENETRATION BUTT GROOVE WELDS AND TOTALLY WELDED EITHER AUTOMATICALLY OR SEMI-AUTOMATICALLY BY THE SUBMERGED ARC WELDING PROCESS. ALL WELDING ELECTRODES AND FLUX SHALL CONFORM TO THE AWS CODE AND BE EQUIVALENT TO THE BASE METAL IN STRENGTH, CORROSION RESISTANCE, AND WEATHERED APPEARANCE.

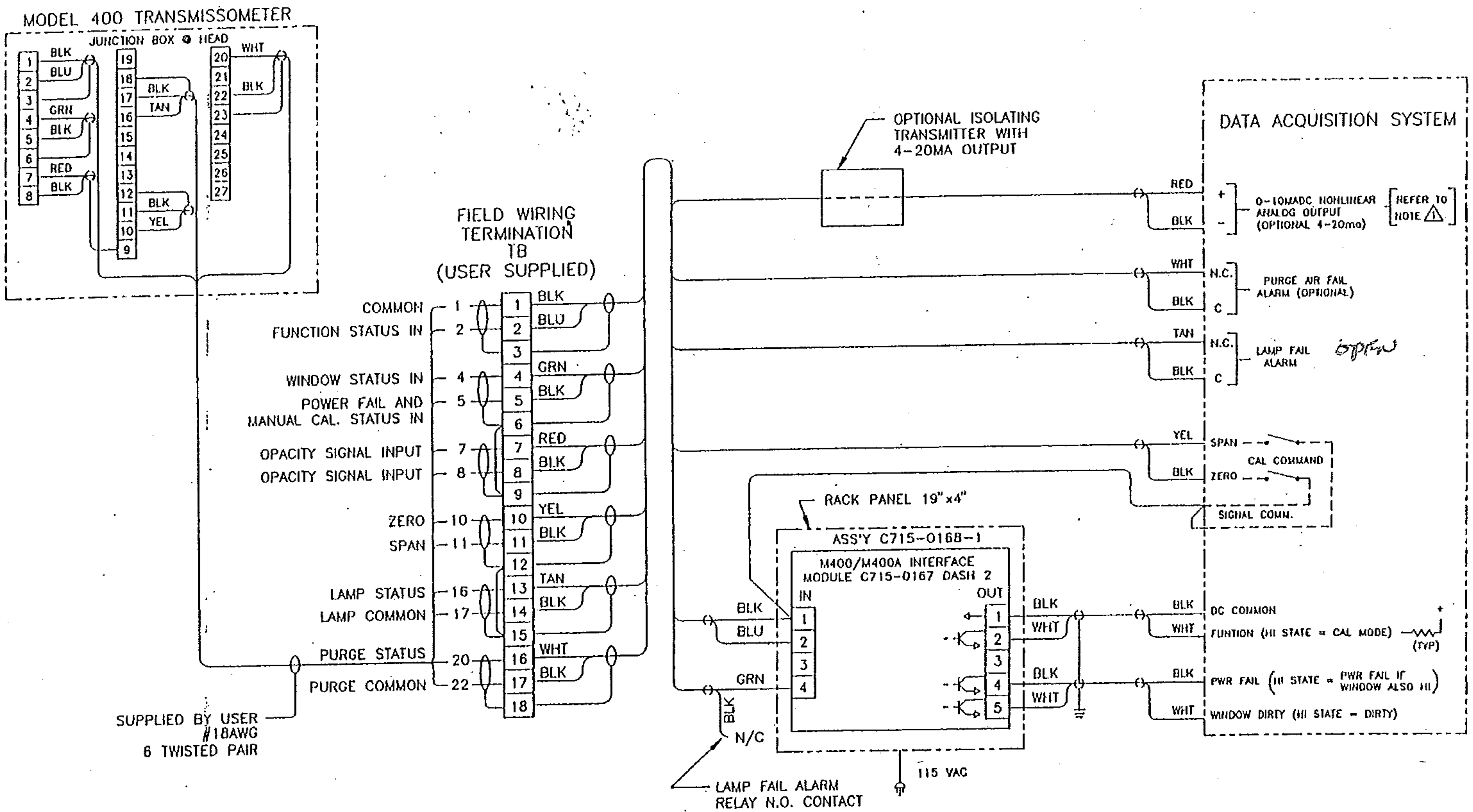
3. TOLERANCES
   - A. BASE RING AND SPLICES MUST BE PERPENDICULAR TO THE STACK CENTERLINE SUCH THAT THE ERECTION OF THE STACK CAN BE PLUMBED TO WITHIN A MAXIMUM DEVIATION OF 1" PER 50' OF HEIGHT.
   - B. MAXIMUM OUT-OF-ROUNDNESS OF ANY SECTION -- DIFFERENCE BETWEEN MINIMUM AND MAXIMUM DIAMETER -- LESS THAN 1% OF THE NORMAL DIAMETER.
   - C. MAXIMUM MISALIGNMENT OF PLATES AT ANY JOINT SHALL NOT TO EXCEED 25% OF THE NORMAL THICKNESS OR 1/8", WHICHEVER IS LESS.
   - D. ADJOINING PLATE SECTIONS SHALL BE PAIRED FOR FULL 100% DEVELOPMENT.
   - E. PEAKING OF VERTICAL JOINTS SHALL NOT EXCEED 1/4" AS MEASURED FROM THE TRUE RADIUS OF THE STACK.
   - F. TEST PORT FLANGES SHALL BE PERPENDICULAR TO THE CENTERLINE TO WITHIN 1/2 DEGREE. FIELD SPLICE FLANGES MUST BE PERPENDICULAR TO THE STACK SHELL WITHIN 1/16".
   - G. STRUCTURAL PLATES ARE TO BE PURCHASED OF SUFFICIENT LENGTH TO ALLOW FOR ONLY ONE VERTICAL SEAM PER GIRTH. VERTICAL SEAMS ON ADJACENT SECTIONS WILL BE OFFSET BY 90 DEGREES. IN SPECIAL CASES, A MAXIMUM OF TWO VERTICAL SEAMS WILL BE OFFSET AT LEAST BY 90 DEGREES.
   - H. ALL APPURTENANCES, INCLUDING PLATFORMS AND LADDERS, SHALL BE SHOP ATTACHED TO ENSURE A GOOD FIT. ALL FIELD CONNECTIONS ARE TO BE CLEARLY MATCH MARKED.

4. INSPECTION AND TESTING
   MATERIAL TEST REPORTS FOR ALL MATERIAL UTILIZED FOR MAJOR COMPONENTS AND FASTENERS SHALL BE SUBMITTED TO WARREN. THE MATERIAL TEST REPORTS ARE TO BE REQUESTED WHEN THE MATERIAL IS ORDERED AND FORWARDED TO WARREN IMMEDIATELY UPON RECEIPT. THE MSDS SHEETS ON THE TOUCH-UP PAINTS, THINNERS AND ANY OTHER HAZARDOUS MATERIAL IS TO BE INCLUDED WITH THE SHIPMENT OF THE ITEMS.

5. SURFACE PREPARATION
   - A. ALL SHARP PROJECTIONS SHALL BE GROUND SMOOTH
   - B. ALL WELD FLUX AND SPLATTER SHALL BE REMOVED BY POWER TOOL CLEANING.
   - C. ALL CARBON STEEL EXTERIOR SURFACES TO BE PAINTED SHALL BE CLEANED PER COATING MANUFACTURER'S WRITTEN INSTRUCTION.

6. PAINTING SPECIFICATION
   THE EXTERIOR SURFACES OF THE CARBON STEEL OUTER SHELL AND THE EXPOSED PORTIONS OF THE INNER FLUES SHALL BE COATED WITH A PRIME COAT AND FINISH COAT OF HIGH PERFORMANCE ELASTOMERIC URETHANE PAINT WITH A TOTAL MIL THICKNESS OF 15 MILS DFT. SUBMIT MANUFACTURER DATA SHEETS AND A COLOR CHART FOR THE URETHANE PAINT AS SOON AS POSSIBLE FOR APPROVAL BY THE OWNER. → PAINT SHELL INTERIOR IN ACCORDANCE WITH SPECIFICATION SECTION 09900.

7. LOADING AND SHIPPING
   THE STACK WILL BE LOADED AND SECURED ON TRUCKS SUCH THAT PLATES ARE NOT DEFORMED AND THE PAINT SYSTEM IS NOT COMPROMISED. STACK LOADS ARE TO BE DISTRIBUTED OVER LARGE AREAS. POINT LOADS ON PLATES ARE TO BE AVOIDED. TIMBERS USED TO SECURE LOADS ARE TO BE PLACED LONGITUDINALLY, SPANNING AT LEAST TWO STIFFENERS. THE ERECTOR IS TO REMOVE ALL TEMPORARY SPACERS AND BRACES BEFORE COMPLETING THE ERECTION.



NOTE

⚠ RECOMMEND AN ISOLATED DIFFERENTIAL INPUT WITH AN IMPEDANCE OF 100 OHMS. (PROVIDING A 0-1V ANALOG INPUT)

$$\text{PATH OPACITY} = \left(1-\sqrt{1-\frac{V2}{V1}}\right)\cdot 100$$

$$\text{EXIT OPACITY} = \left[1-\left(1-\frac{\text{PATH OPAC.}}{100}\right)^{\frac{LE}{LP}}\right]\cdot 100$$

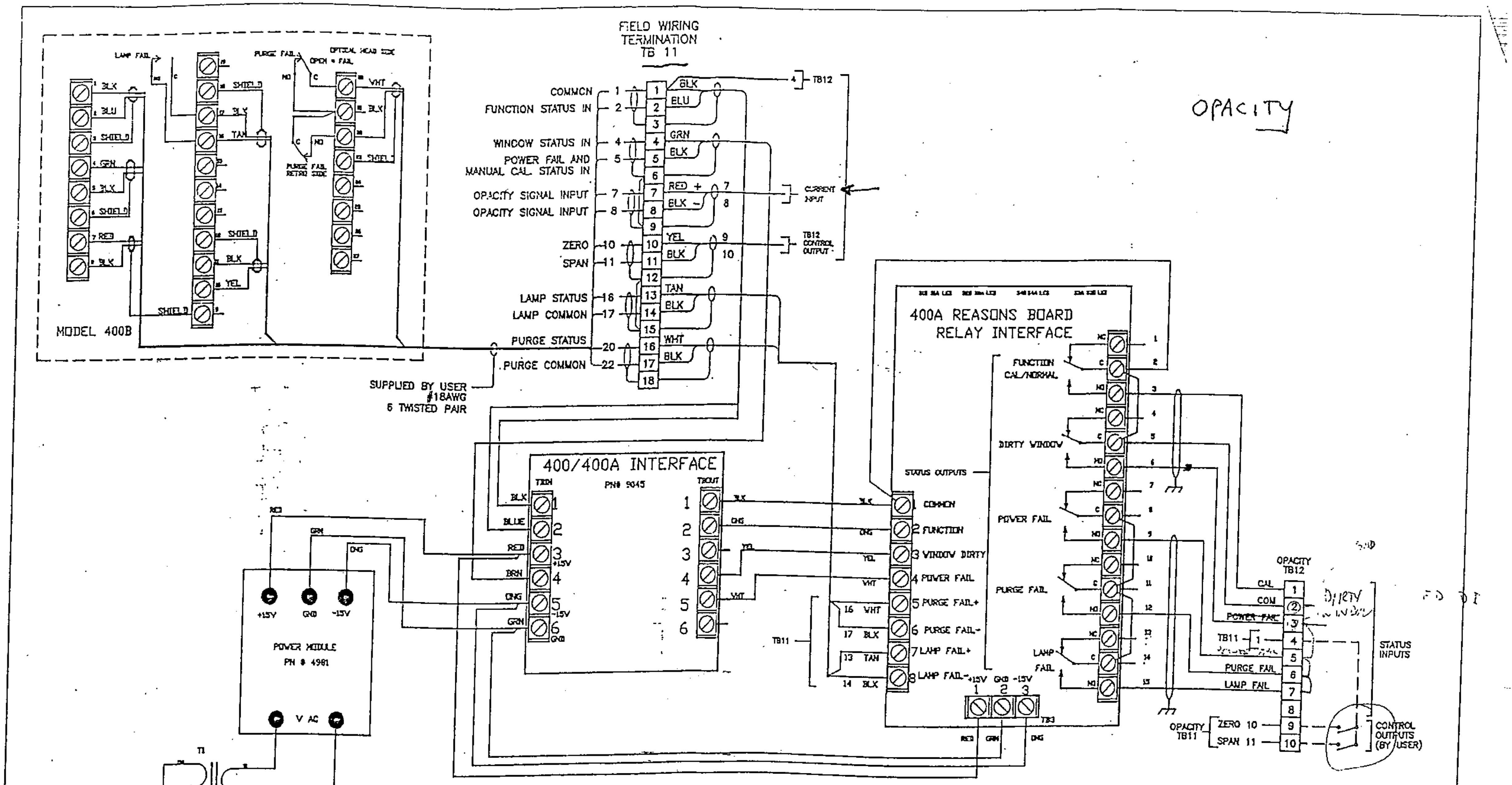
WHERE: V2 = MEASUREMENT MILLIAMPS.
V1 = 100% OPACITY MILLIAMPS.
LE = INSIDE DIAMETER AT THE STACK EXIT TO THE ATMOSPHERE
LP = INSIDE DIAMETER (PATH) AT THE MEASUREMENT POINT.

① (BLACK/TAN) - LAMP FAIL ALARM
CLOSED IS GOOD
OPEN IS BAD

② (TP29)+(9 comm) - LESS THAN .2VDC
NOT GOOD
.21 TO .60 OK

INTERCONNECTION
M400 TRANSMITTER TO DAS
C703-0075 REV.B

OPACITY



NOTE

⚠1 RECOMMEND AN ISOLATED DIFFERENTIAL INPUT WITH AN IMPEDANCE OF 100 OHMS. (PROVIDING A 0–1V ANALOG INPUT)

$$\text{PATH OPACITY} = \left(1-\sqrt{1-\frac{V2}{V1}}\right)*100$$

$$\text{EXIT OPACITY} = \left[1-\left(1-\frac{\text{PATH OPAC.}}{100}\right)^{\frac{LE}{LP}}\right]*100$$

WHERE: V2 = MEASUREMENT MILLIAMPS.
V1 = 100% OPACITY MILLIAMPS.
LE = INSIDE DIAMETER AT THE STACK EXIT TO THE ATMOSPHERE
LP = INSIDE DIAMETER (PATH) AT THE MEASUREMENT POINT.

REV.	REVISIONS
A	REVISED PER CUSTOMER REQUEST. RD/LAG 3/11/98

CS219

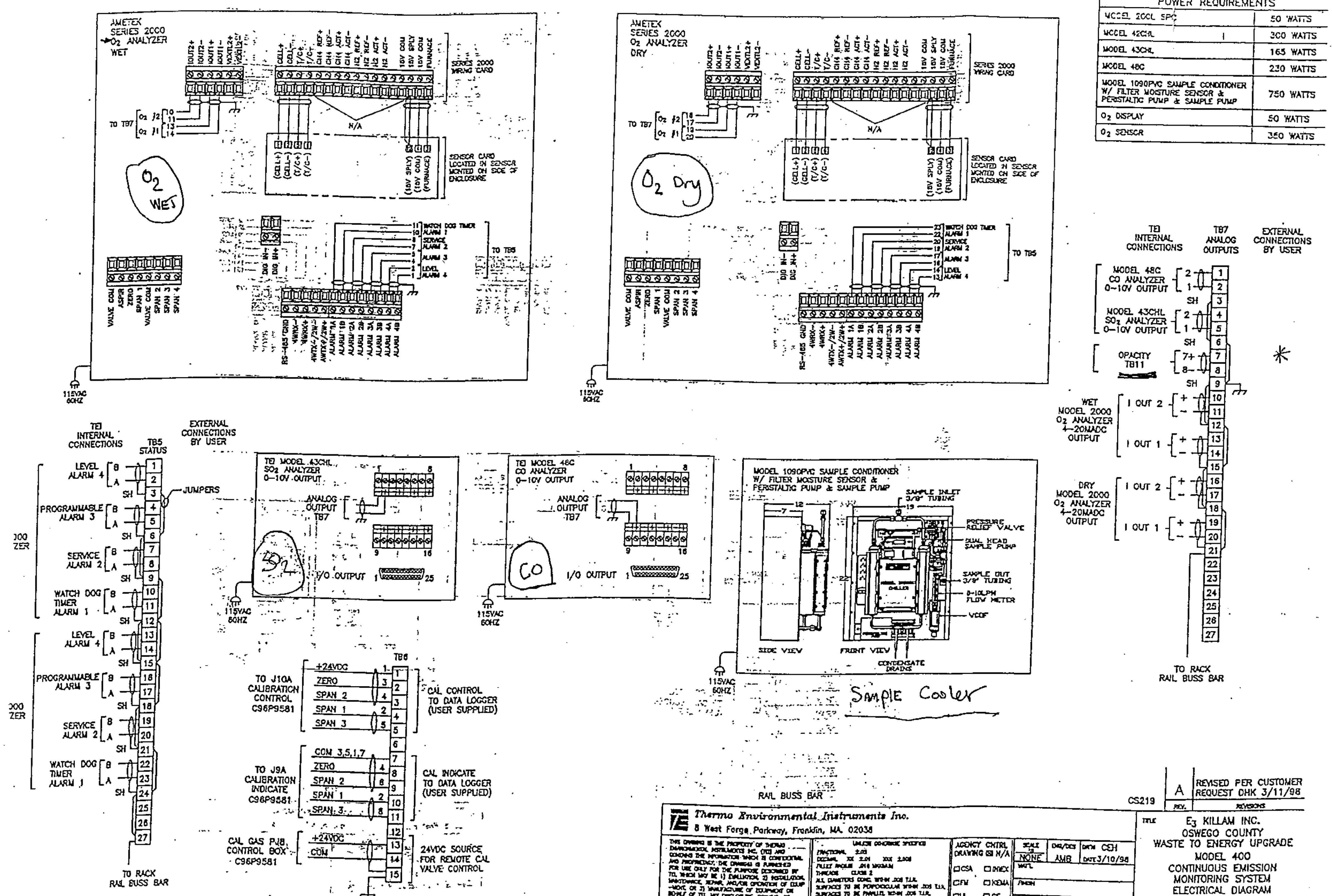
Thermo Environmental Instruments Inc.
8 West Forge Parkway, Franklin, MA. 02038

SCALE: NONE	CHK'D: R.D.	DRN: LAG	DATE: 3/10/98
CUSTOMER ORDER NO. 002758			
RELEASED BY: R.D.	DATE: 3/10/98		

TITLE: E3 KILLAM INC
OSWEGO COUNTY
WASTE TO ENERGY UPGRADE
CEM
400B OPACITY SYSTEM
INTERFACE

P.A. 29951

SIZE: D DRAWING NUMBER: 96P9579 REV: A



POWER REQUIREMENTS	
MODEL 2000 SPC	50 WATTS
MODEL 42CHL	200 WATTS
MODEL 43CHL	165 WATTS
MODEL 48C	230 WATTS
MODEL 1090PVC SAMPLE CONDITIONER W/ FILTER MOISTURE SENSOR & PERISTALTIC PUMP & SAMPLE PUMP	750 WATTS
O_2 DISPLAY	50 WATTS
O_2 SENSOR	350 WATTS

CS219

REV.	REVISIONS
A	REVISED PER CUSTOMER REQUEST DHK 3/11/98

Thermo Environmental Instruments Inc.
8 West Forge Parkway, Franklin, MA 02038

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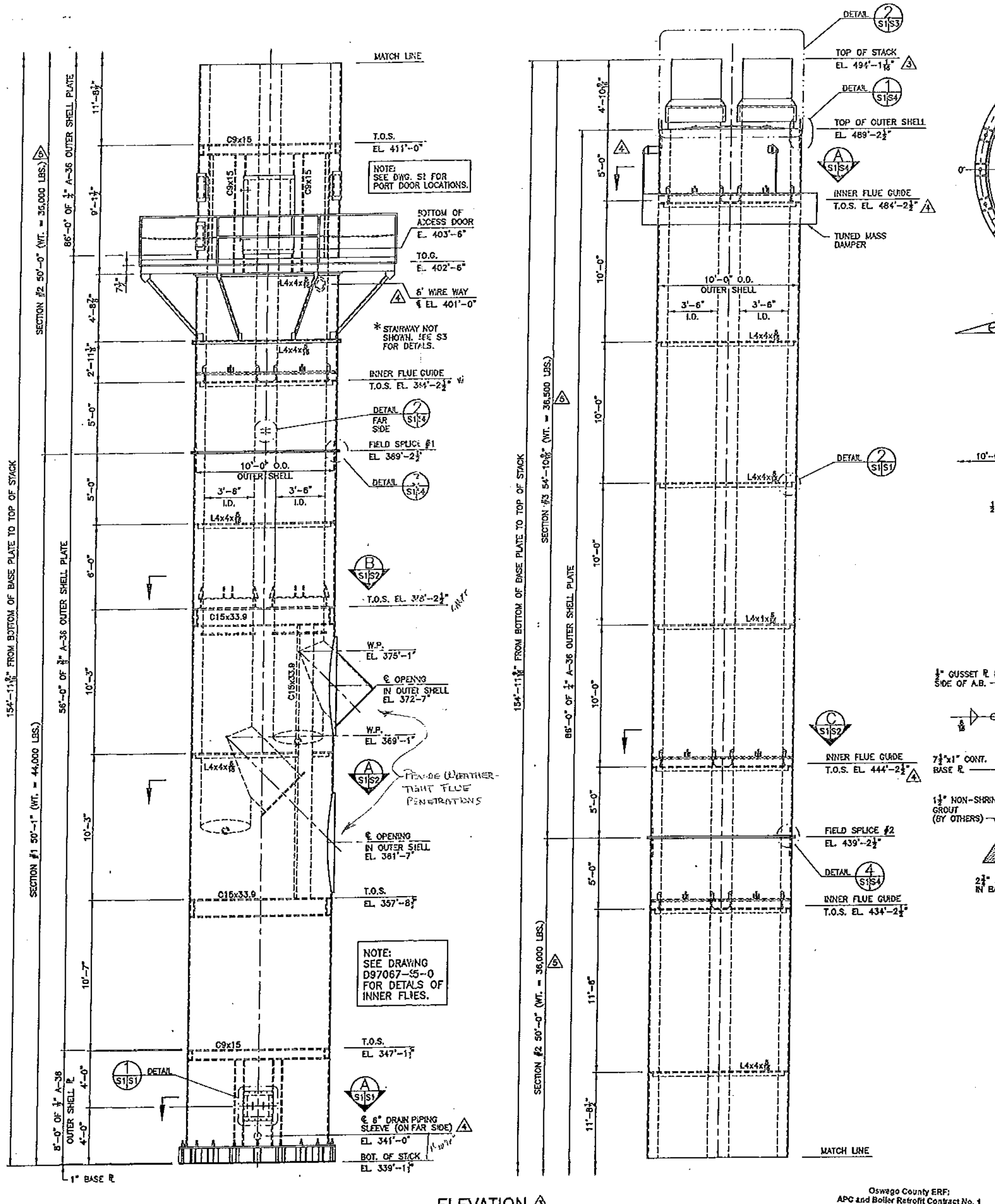
UNLESS OTHERWISE SPECIFIED
FRACTIONAL ±.03
DECIMAL .XX ±.01 .XXX ±.005
FILLET RADIUS .010 MAXIMUM
THREADS CLASS 2
ALL DIAMETERS CONC. WITHIN .005 T.I.R.
SURFACES TO BE PERPENDICULAR WITHIN .005 T.I.R.
SURFACES TO BE PARALLEL WITHIN .005 T.I.R.
HOLE ANGULAR TOLERANCE ±0° 5'
ALL OTHER ANGULAR TOLERANCE TO BE ±0° 30'
REMOVE ALL BURRS AND EDGES
DO NOT SCALE DWG.

AGENCY CNTRL DRAWING N/A
☐CSA ☐INEX ☐FM ☐KEMA ☐UL ☐CE ☐NADPH ☐ETL

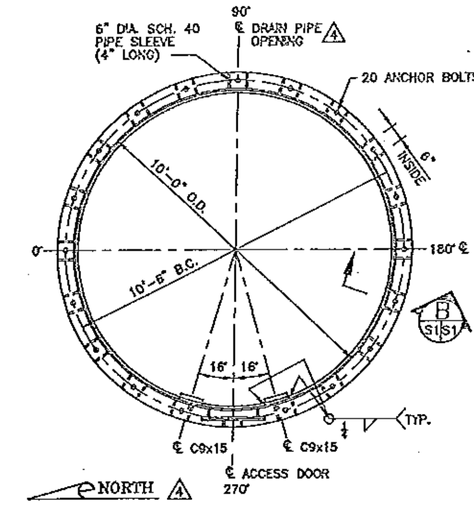
SCALE: NONE | CHK/DES: AMB | DRWN: CEH | DATE: 3/10/98
MAT'L
FINISH
FIRST USED ON | CUSTOMER ORDER NO. 002758
RELEASED BY R.D. | DATE 12/12/97

TITLE
E3 KILLAM INC.
OSWEGO COUNTY
WASTE TO ENERGY UPGRADE
MODEL 400
CONTINUOUS EMISSION
MONITORING SYSTEM
ELECTRICAL DIAGRAM

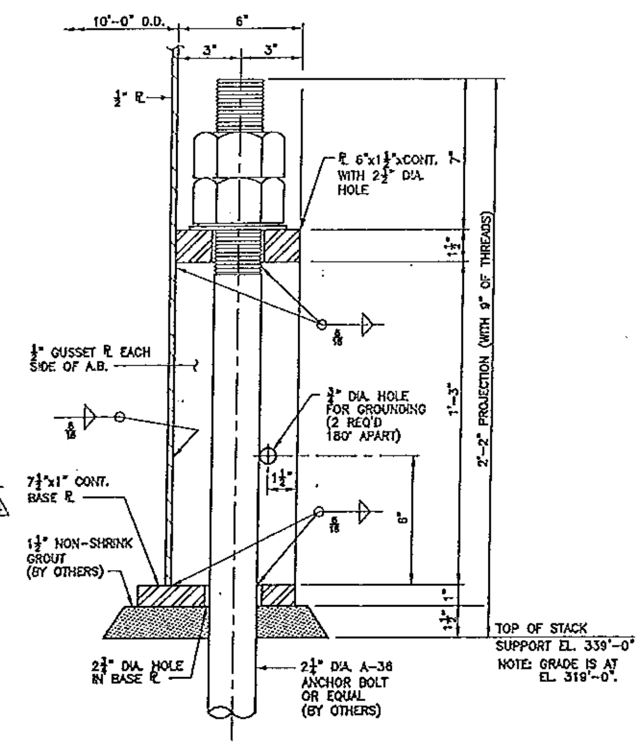
P.A. 29951
SIZE D | DRAWING NUMBER 96P9580 | REV. A



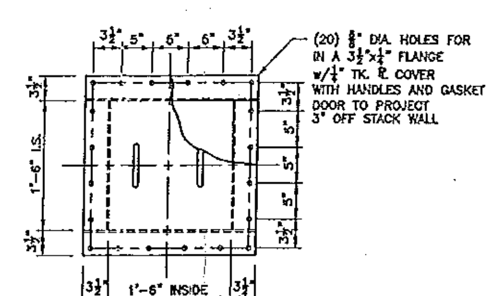
ELEVATION (3)
SCALE: ⅛"=1'-0"



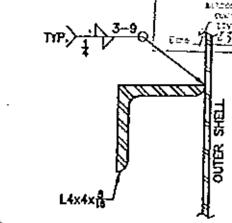
SECTION A
SCALE: ⅛"=1'-0"



SECTION (2) B
SCALE: 3"=1'-0"



DETAIL 1
SCALE: "=1'-0"



DETAIL 2
SCALE: 3"=1'-0"

GENERAL NOTES

1. MATERIAL
   - (4) A. STACK OUTER SHELL AND INNER FLUE PLATES AND ALL EXTERNAL AND INTERNAL COMPONENT PARTS SUCH AS ANCHOR BOLT CHAIR, STIFFENERS, INNER FLUE GUIDES, INNER FLUE SUPPORTS, TUNED MASS DAMPER AND LIFTING LUGS SHALL CONFORM TO ASTM A-36 CARBON STEEL UNLESS NOTED OTHERWISE.
   - (3) B. THE PLATFORM AND LADDER SHALL BE FABRICATED FROM ASTM A-36 CARBON STEEL AND HOT DIPPED GALVANIZED UNLESS NOTED OTHERWISE.
   - C. ALL FASTENERS FOR ACCESS DOORS, TEST PORTS, FIELD SPLICES, PLATFORM, LADDER AND ANY OTHER BOLTING REQUIREMENTS SHALL BE GALVANIZED ASTM A-325 FASTENERS UNLESS NOTED OTHERWISE.
   - (4) D. THE OUTSIDE OF THE INNER FLUES ARE TO BE INSULATED WITH (2) 1 1/2" LAYERS OF MINERAL FIBER INSULATION (ASTM C612-8lb/ft³).
2. FABRICATION
   ALL WORK SHALL BE FABRICATED IN ACCORDANCE WITH AISC "SPECIFICATIONS FOR STRUCTURAL STEEL BUILDINGS", LATEST EDITION. ALL WELDS SHALL BE MADE ONLY BY WELDING OPERATORS WHO HAVE BEEN PREVIOUSLY QUALIFIED BY TESTS AS PRESCRIBED IN THE AWS "STRUCTURAL WELDING CODE", OR BY THE ASME WELDING CODE, TO PERFORM THE TYPE WORK REQUIRED. ALL BUTT WELDS SHALL BE PRE-QUALIFIED, FULL PENETRATION WELDS AND SHALL DEVELOP THE FULL STRENGTH OF THE SECTION. SHELL GIRTH AND VERTICAL SEAMS SHALL BE COMPLETE PENETRATION BUTT GROOVE WELDS AND TOTALLY WELDED EITHER AUTOMATICALLY OR SEMI-AUTOMATICALLY BY THE SUBMERGED ARC WELDING PROCESS. ALL WELDING ELECTRODES AND FLUX SHALL CONFORM TO THE AWS CODE AND BE EQUIVALENT TO THE BASE METAL IN STRENGTH, CORROSION RESISTANCE, AND WEATHERED APPEARANCE.
3. TOLERANCES
   - A. BASE RING AND SPLICES MUST BE PERPENDICULAR TO THE STACK CENTERLINE SUCH THAT THE ERECTION OF THE STACK CAN BE PLUMBED TO WITHIN A MAXIMUM DEVIATION OF 1" PER 50' OF HEIGHT.
   - B. MAXIMUM OUT-OF-ROUNDNESS OF ANY SECTION – DIFFERENCE BETWEEN MINIMUM AND MAXIMUM DIAMETER – LESS THAN 1% OF THE NORMAL DIAMETER.
   - C. MAXIMUM MISALIGNMENT OF PLATES AT ANY JOINT SHALL NOT TO EXCEED 25% OF THE NORMAL THICKNESS OR 1/8", WHICHEVER IS LESS.
   - D. ADJOINING PLATE SECTIONS SHALL BE PAIRED FOR FULL 100% DEVELOPMENT.
   - E. PEAKING OF VERTICAL JOINTS SHALL NOT EXCEED 1/4" AS MEASURED FROM THE TRUE RADIUS OF THE STACK.
   - F. TEST PORT FLANGES SHALL BE PERPENDICULAR TO THE CENTERLINE TO WITHIN 1/2 DEGREE. FIELD SPLICE FLANGES MUST BE PERPENDICULAR TO THE STACK SHELL WITHIN 1/16".
   - G. STRUCTURAL PLATES ARE TO BE PURCHASED OF SUFFICIENT LENGTH TO ALLOW FOR ONLY ONE VERTICAL SEAM PER GIRTH. VERTICAL SEAMS ON ADJACENT SECTIONS WILL BE OFFSET BY 90 DEGREES. IN SPECIAL CASES, A MAXIMUM OF TWO VERTICAL SEAMS WILL BE OFFSET AT LEAST BY 90 DEGREES.
   - H. ALL APPURTENANCES, INCLUDING PLATFORMS AND LADDERS, SHALL BE SHOP ATTACHED TO ENSURE A GOOD FIT. ALL FIELD CONNECTIONS ARE TO BE CLEARLY MATCH MARKED.
4. INSPECTION AND TESTING
   MATERIAL TEST REPORTS FOR ALL MATERIAL UTILIZED FOR MAJOR COMPONENTS AND FASTENERS SHALL BE SUBMITTED TO WARREN. THE MATERIAL TEST REPORTS ARE TO BE REQUESTED WHEN THE MATERIAL IS ORDERED AND FORWARDED TO WARREN IMMEDIATELY UPON RECEIPT. THE MSDS SHEETS ON THE TOUCH-UP PAINTS, THINNERS AND ANY OTHER HAZARDOUS MATERIAL IS TO BE INCLUDED WITH THE SHIPMENT OF THE ITEMS.
5. SURFACE PREPARATION
   - A. ALL SHOP PROJECTIONS SHALL BE GROUND SMOOTH
   - B. ALL WELD FLUX AND SPLATTER SHALL BE REMOVED BY POWER TOOL CLEANING.
   - (3) C. ALL CARBON STEEL EXTERIOR SURFACES TO BE PAINTED SHALL BE CLEANED PER COATING MANUFACTURER'S WRITTEN INSTRUCTION.
6. PAINTING SPECIFICATION
   (5) THE EXTERIOR SURFACES OF THE CARBON STEEL OUTER SHELL AND THE EXPOSED PORTIONS OF THE INNER FLUES SHALL BE COATED WITH A PRIME COAT AND FINISH COAT OF HIGH PERFORMANCE ELASTOMERIC URETHANE PAINT WITH A TOTAL MIL THICKNESS OF 15 MILS DFT. SUBMIT MANUFACTURER DATA SHEETS AND A COLOR CHART FOR THE URETHANE PAINT AS SOON AS POSSIBLE FOR APPROVAL BY THE OWNER. Paint Shell Interior in Accordance with Specification Section 09900.
7. LOADING AND SHIPPING
   THE STACK WILL BE LOADED AND SECURED ON TRUCKS SUCH THAT PLATES ARE NOT DEFORMED AND THE PAINT SYSTEM IS NOT COMPROMISED. STACK LOADS ARE TO BE DISTRIBUTED OVER LARGE AREAS. POINT LOADS ON PLATES ARE TO BE AVOIDED. TIMBERS USED TO SECURE LOADS ARE TO BE PLACED LONGITUDINALLY, SPANNING AT LEAST TWO STIFFENERS. THE ERECTOR IS TO REMOVE ALL TEMPORARY SPACERS AND BRACES BEFORE COMPLETING THE ERECTION.

(5) NOTE:
MIN. STACK DEAD LOAD DOES NOT INCLUDE THE 5,000 LB. DEAD LOAD OF THE PLATFORM

FOUNDATION DESIGN LOADS		
MIN. DEAD LOAD OF STACK	115	KIPS (5)
WIND SHEAR AT BASE OF STACK	41	KIPS
WIND MOMENT AT BASE OF STACK	3400	KIP-FT.
WIND CODE:	NEW YORK STATE	
WIND SPEED	100 MPH	
SEISMIC LOADS DO NOT CONTROL		

CERTIFIED FOR CONSTRUCTION

Oswego County ERF:
APC and Boiler Retrofit Contract No. 1
APPROVED FOR CONTRACT REQUIREMENTS
SPEC SECTION 15?
BY:
OLORI ASSOCIATES, INC.

NO.	DATE	REVISION	BY	CHK.
5	3/30/98	REVISED DEAD LOAD FOR 1/4" I. FLUE	JWG	RSA
4	3/5/98	CHANGED INNER FLUE TO STEEL	JWG	RSA
3	2/9/98	REVISED INLETS & PATFORM	JWG	RSA
2	11/24/97	REDESIGNED USING NYSBC	JWG	RSA
1	10/24/97	REMOVED FRP NOTES	JWG	RSA

OSWEGO COUNTY
ENERGY RECOVERY FACILITY

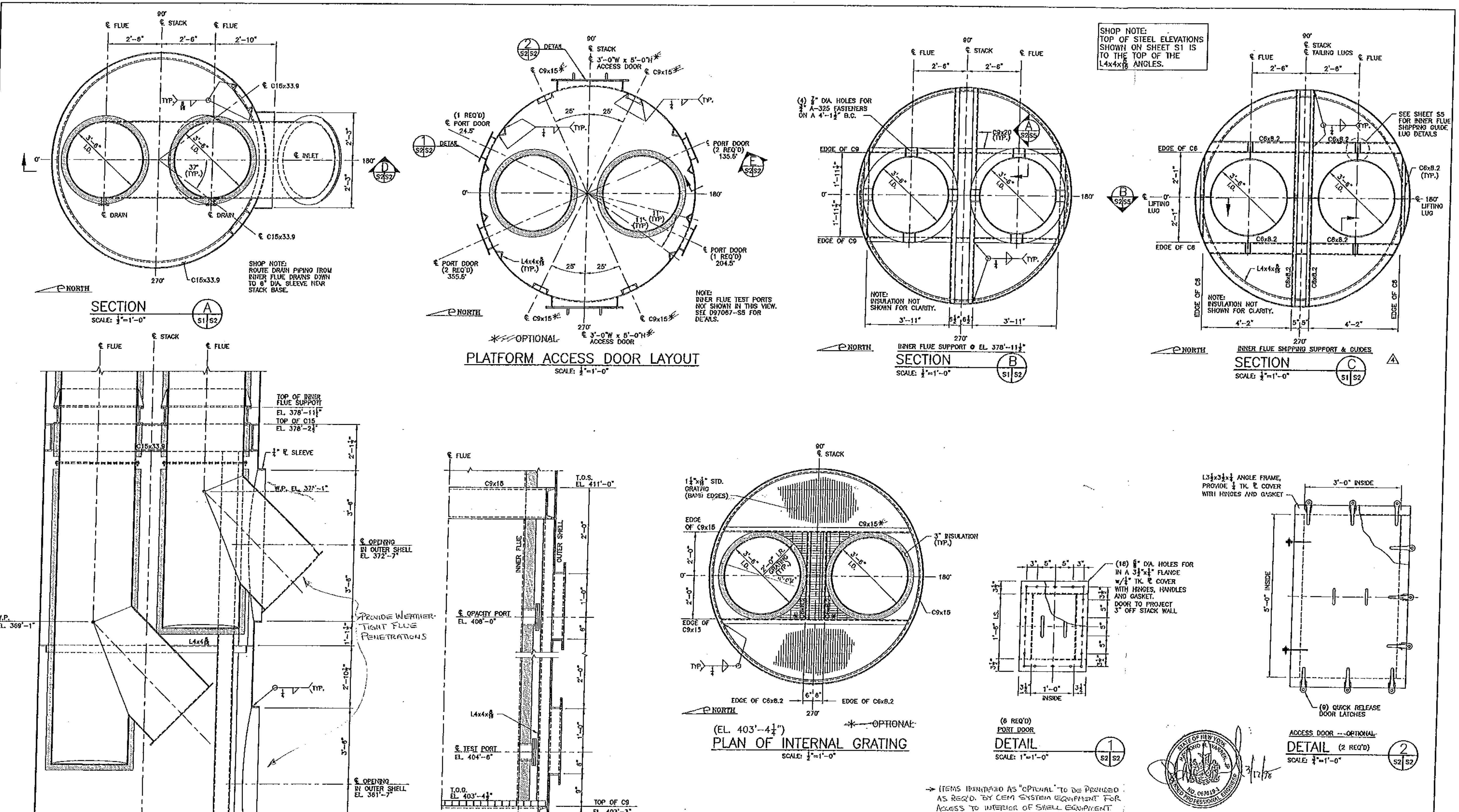
FULTON NEW YORK

STACK ELEVATION

WARREN ENVIRONMENT, INC.
ATLANTA GEORGIA

	MADE	CHKD.	RECOMMENDED	APPROVED
DESIGN	RSA	SLR		
DRAWN	JWG	RSA	SCALE AS SHOWN	DATE 10/9/97
TRACED			JOB NO.	DRAWING NO. D97067-S1-5

SCALE: 1/4"=1'-0"
DATE: 2-18-98
CAD FILE: 97067-1



→ ITEMS IDENTIFIED AS "OPTIONAL" TO BE PROVIDED AS REQ'D. BY CEM SYSTEM EQUIPMENT FOR ACCESS TO INTERIOR OF SHELL EQUIPMENT

CERTIFIED
FOR
CONSTRUCTION

OSWEGO COUNTY
ENERGY RECOVERY FACILITY

FULTON NEW YORK

BREECHING, SUPPORT/GUIDE & TEST PORTS

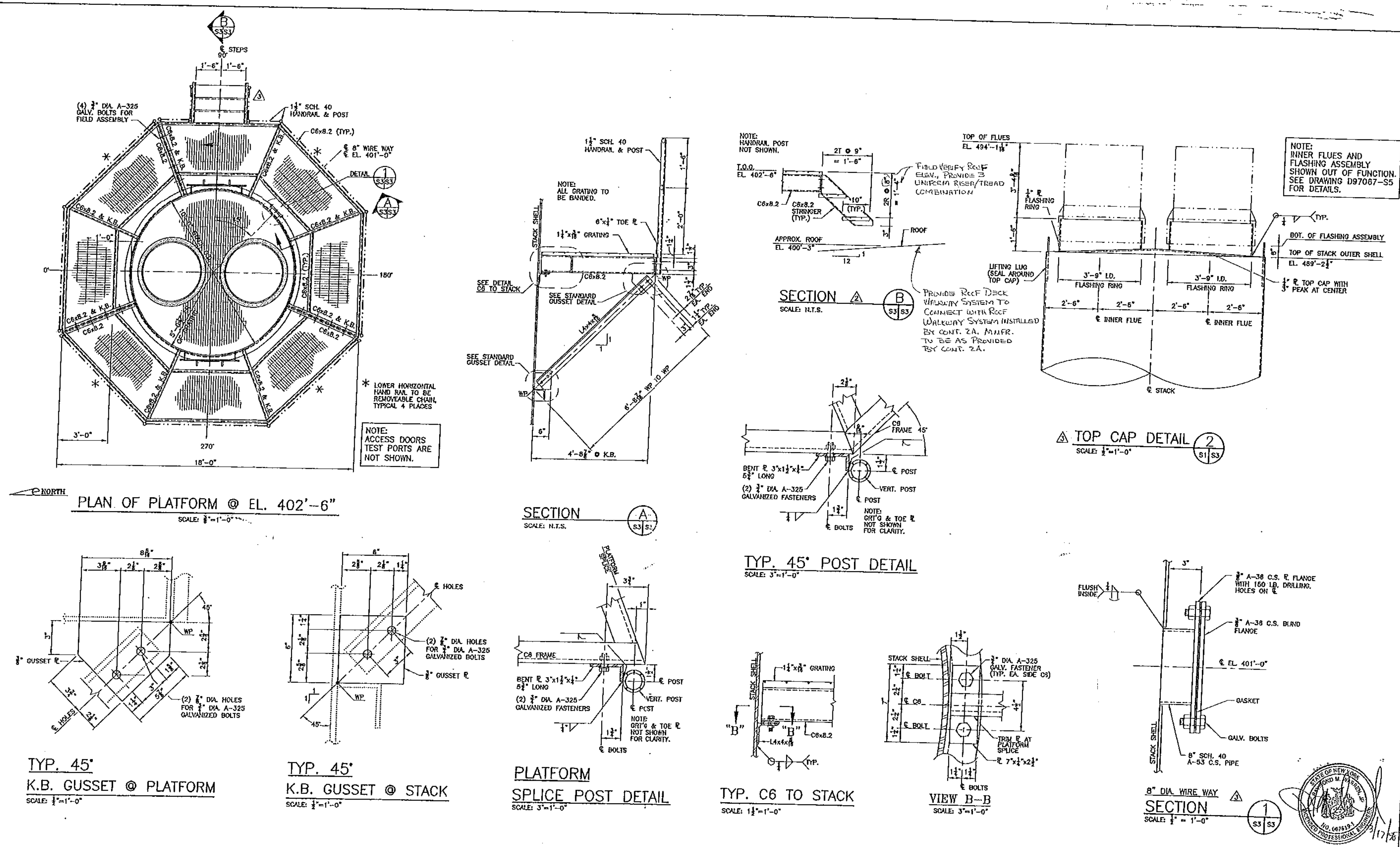
WARREN ENVIRONMENT, INC.

ATLANTA GEORGIA

NO.	DATE	REVISION	BY	CHK.
4	3/5/98	REVISED NORTH AND DOOR DETAIL	JWG	RSA
3	2/10/98	REVISED INLET& PORT DETAILS	JWG	RSA
2	11/20/97	GENERAL REVISION	JWG	RSA
1	10/24/97	REMOVED INLET DETAIL	JWG	RSA

	MADE	CHKD.	RECOMMENDED	APPROVED
DESIGN	RSA	SLR		
DRAWN	JWG	RSA	SCALE AS SHOWN	DATE 10/9/97
TRACED			JOB NO.	DRAWING NO. D97067--S2-4

CAD FILE: 97067-2 DATE: 2-16-98 SCALE: 1/2"=1'-0"



SCALE: 3/8"=1'-0" DATE: 2-16-98 CAD FILE: 97067-3

CERTIFIED FOR CONSTRUCTION

OSWEGO COUNTY
ENERGY RECOVERY FACILITY

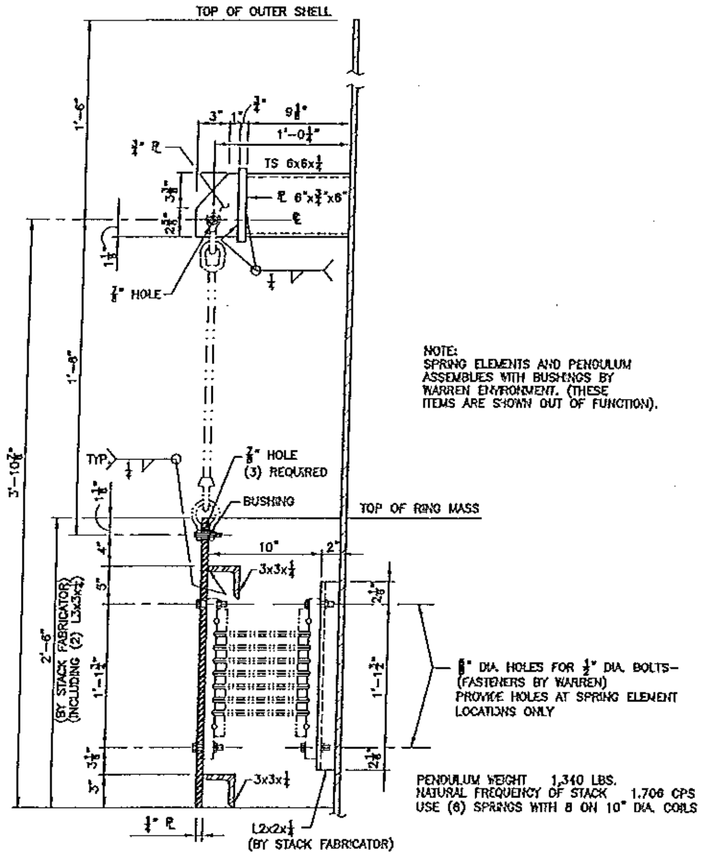
FULTON — NEW YORK

PLATFORM & LADDER

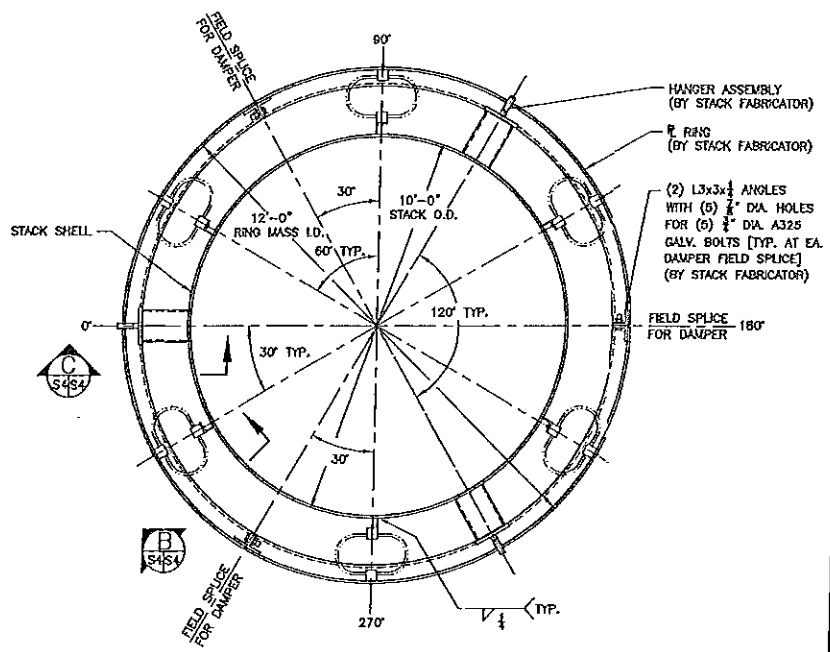
WARREN ENVIRONMENT, INC.
ATLANTA — GEORGIA

NO.	DATE	REVISION	BY	CHK.
3	3/1/98	REVISED ORIENTATION OF STEPS	JWG	RSA
2	2/10/98	REMOVED LADDER & ADDED STEPS	JWG	RSA
1	11/20/97	GENERAL REVISION	JWG	RSA

	MADE	CHKD.	RECOMMENDED	APPROVED
DESIGN	RSA	SLR		
DRAWN	JWG	RSA	SCALE AS SHOWN	DATE 10/9/97
TRACED			JOB NO.	DRAWING NO. D97067-S3-3

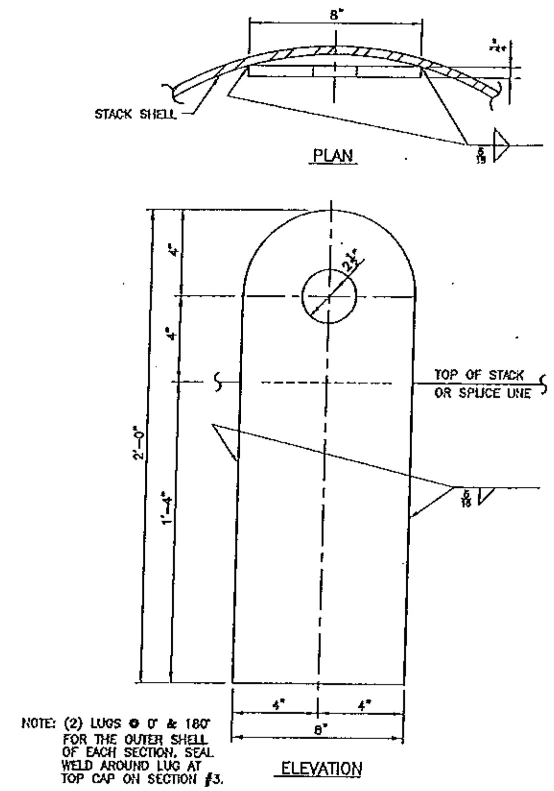


COMBINED SECTIONS (B&C / S4 S4)
N.T.S.

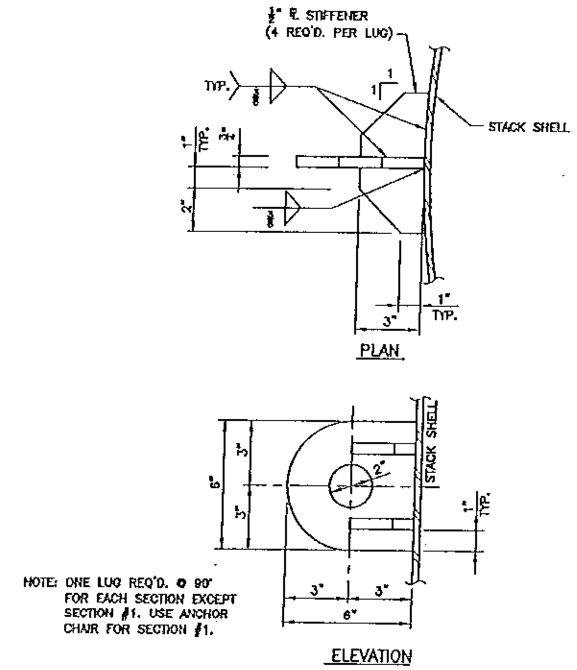


SECTION (A / S1 S4)
N.T.S.

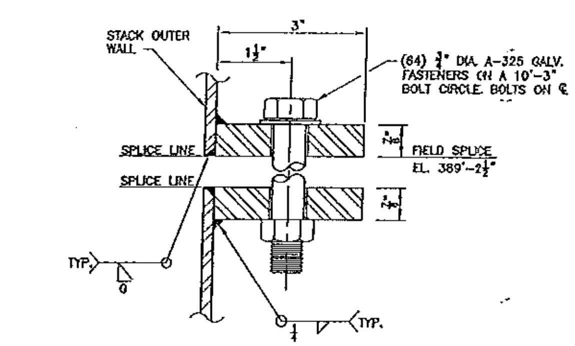
TUNED MASS DAMPER



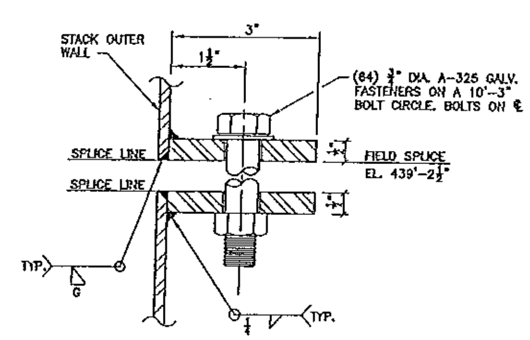
LIFTING LUG DETAIL (1 / S1 S4)
SCALE: 3" = 1'-0"



TAILING LUG DETAIL (2 / S1 S4)
SCALE: 3" = 1'-0"



OUTER SHELL
FIELD SPLICE DETAIL (3 / S1 S4)
SCALE: N.T.S.



OUTER SHELL
FIELD SPLICE DETAIL (4 / S1 S4)
SCALE: 3" = 1'-0"

CERTIFIED FOR CONSTRUCTION

OSWEGO COUNTY
ENERGY RECOVERY FACILITY

FULTON NEW YORK

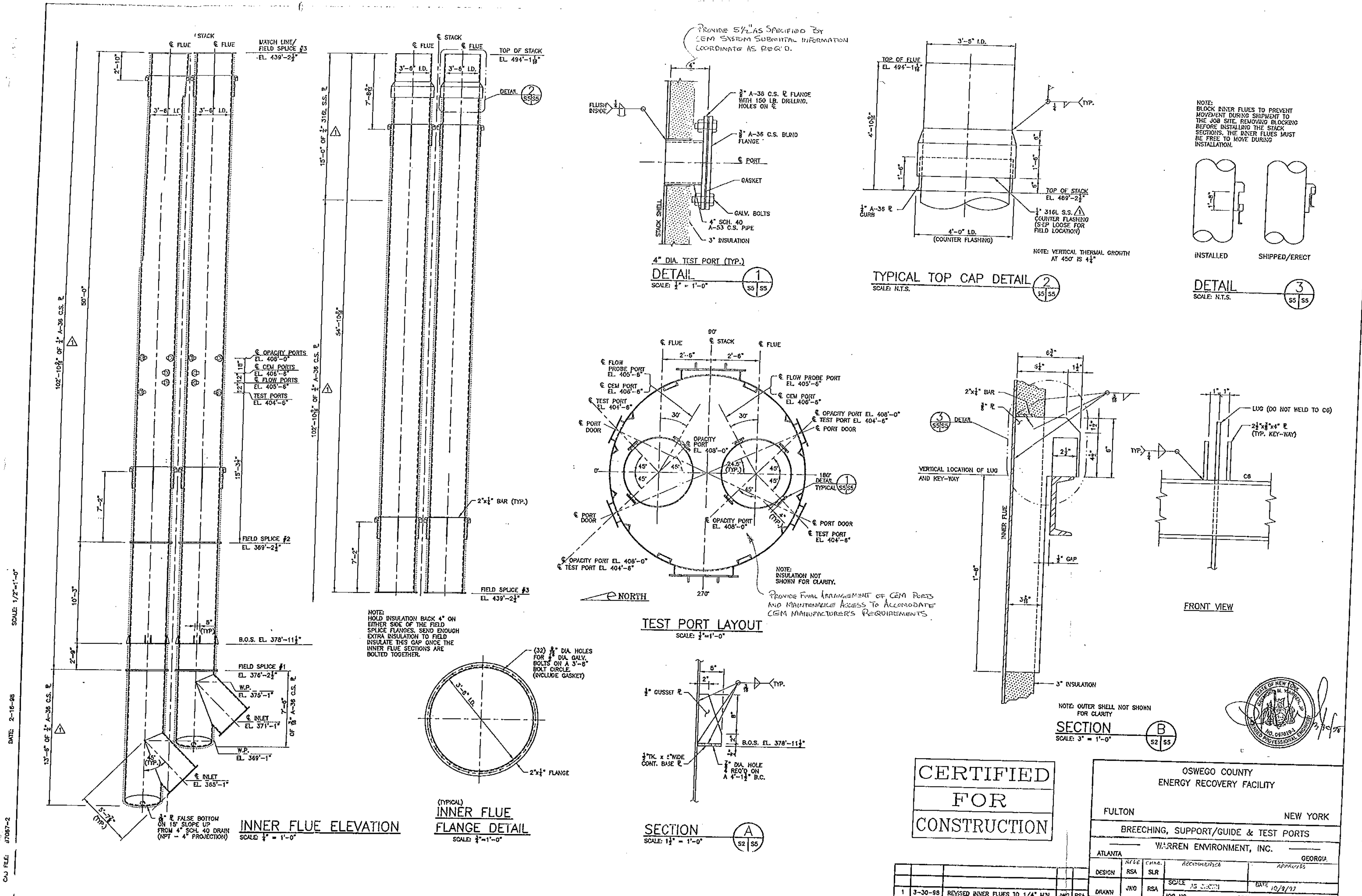
T.M.D., LUGS, SPLICE

WARREN ENVIRONMENT, INC.
ATLANTA GEORGIA

NO.	DATE	REVISION	BY	CHK.
4	3/1/98	REVISED NORTH ARROW	JWO	RSA
3	2/10/98	REVISED NOTES	JWO	RSA
2	11/20/97	GENERAL REVISION	JWO	RSA
1	10/24/97	REMOVED FRP DETAILS	JWO	RSA

	MADE	CHKD.	RECOMMENDED	APPROVED
DESIGN	RSA	SLR		
DRAWN	JWO	RSA	SCALE AS SHOWN	DATE 10/9/97
TRACED			JOB NO.	DRAWING NO. D97067-S4-4

CAD FILE: 97067-4
DATE: 2-16-98
SCALE: 1/4"=1'-0"



OSWEGO COUNTY
ENERGY RECOVERY FACILITY

FULTON NEW YORK

BREECHING, SUPPORT/GUIDE & TEST PORTS

WARREN ENVIRONMENT, INC.
ATLANTA GEORGIA

NO.	DATE	REVISION	BY	CHK.
1	3-30-98	REVISED INNER FLUES TO 1/4" MIN.	JWG	RSA

	NAME	CHKD.	RECOMMENDED	APPROVED
DESIGN	RSA	SLR		
DRAWN	JWG	RSA	SCALE AS SHOWN	DATE 10/9/97
TRACED			JOB NO.	DRAWING NO. D97067-S5-1

Form **W-9**
(Rev. December 2014)
Department of the Treasury
Internal Revenue Service

Request for Taxpayer Identification Number and Certification

Give Form to the requester. Do not send to the IRS.

Print or type
See **Specific Instructions** on page 2.

1 Name (as shown on your income tax return). Name is required on this line; do not leave this line blank.

2 Business name/disregarded entity name, if different from above

3 Check appropriate box for federal tax classification; check only **one** of the following seven boxes:

☐ Individual/sole proprietor or single-member LLC ☐ C Corporation ☐ S Corporation ☐ Partnership ☐ Trust/estate

☐ Limited liability company. Enter the tax classification (C=C corporation, S=S corporation, P=partnership) ▶ ________

Note. For a single-member LLC that is disregarded, do not check LLC; check the appropriate box in the line above for the tax classification of the single-member owner.

☐ Other (see instructions) ▶

4 Exemptions (codes apply only to certain entities, not individuals; see instructions on page 3):

Exempt payee code (if any) ________

Exemption from FATCA reporting code (if any) ________

(Applies to accounts maintained outside the U.S.)

5 Address (number, street, and apt. or suite no.)

Requester's name and address (optional)

6 City, state, and ZIP code

7 List account number(s) here (optional)

Part I Taxpayer Identification Number (TIN)

Enter your TIN in the appropriate box. The TIN provided must match the name given on line 1 to avoid backup withholding. For individuals, this is generally your social security number (SSN). However, for a resident alien, sole proprietor, or disregarded entity, see the Part I instructions on page 3. For other entities, it is your employer identification number (EIN). If you do not have a number, see *How to get a TIN* on page 3.

Note. If the account is in more than one name, see the instructions for line 1 and the chart on page 4 for guidelines on whose number to enter.

Social security number

☐☐☐ – ☐☐ – ☐☐☐☐

or

Employer identification number

☐☐ – ☐☐☐☐☐☐☐

Part II Certification

Under penalties of perjury, I certify that:

1. The number shown on this form is my correct taxpayer identification number (or I am waiting for a number to be issued to me); and
2. I am not subject to backup withholding because: (a) I am exempt from backup withholding, or (b) I have not been notified by the Internal Revenue Service (IRS) that I am subject to backup withholding as a result of a failure to report all interest or dividends, or (c) the IRS has notified me that I am no longer subject to backup withholding; and
3. I am a U.S. citizen or other U.S. person (defined below); and
4. The FATCA code(s) entered on this form (if any) indicating that I am exempt from FATCA reporting is correct.

Certification instructions. You must cross out item 2 above if you have been notified by the IRS that you are currently subject to backup withholding because you have failed to report all interest and dividends on your tax return. For real estate transactions, item 2 does not apply. For mortgage interest paid, acquisition or abandonment of secured property, cancellation of debt, contributions to an individual retirement arrangement (IRA), and generally, payments other than interest and dividends, you are not required to sign the certification, but you must provide your correct TIN. See the instructions on page 3.

Sign Here **Signature of U.S. person ▶** **Date ▶**

General Instructions

Section references are to the Internal Revenue Code unless otherwise noted.

Future developments. Information about developments affecting Form W-9 (such as legislation enacted after we release it) is at *www.irs.gov/fw9*.

Purpose of Form

An individual or entity (Form W-9 requester) who is required to file an information return with the IRS must obtain your correct taxpayer identification number (TIN) which may be your social security number (SSN), individual taxpayer identification number (ITIN), adoption taxpayer identification number (ATIN), or employer identification number (EIN), to report on an information return the amount paid to you, or other amount reportable on an information return. Examples of information returns include, but are not limited to, the following:

- Form 1099-INT (interest earned or paid)
- Form 1099-DIV (dividends, including those from stocks or mutual funds)
- Form 1099-MISC (various types of income, prizes, awards, or gross proceeds)
- Form 1099-B (stock or mutual fund sales and certain other transactions by brokers)
- Form 1099-S (proceeds from real estate transactions)
- Form 1099-K (merchant card and third party network transactions)
- Form 1098 (home mortgage interest), 1098-E (student loan interest), 1098-T (tuition)
- Form 1099-C (canceled debt)
- Form 1099-A (acquisition or abandonment of secured property)

Use Form W-9 only if you are a U.S. person (including a resident alien), to provide your correct TIN.

If you do not return Form W-9 to the requester with a TIN, you might be subject to backup withholding. See *What is backup withholding?* on page 2.

By signing the filled-out form, you:

1. Certify that the TIN you are giving is correct (or you are waiting for a number to be issued),

2. Certify that you are not subject to backup withholding, or

3. Claim exemption from backup withholding if you are a U.S. exempt payee. If applicable, you are also certifying that as a U.S. person, your allocable share of any partnership income from a U.S. trade or business is not subject to the withholding tax on foreign partners' share of effectively connected income, and

4. Certify that FATCA code(s) entered on this form (if any) indicating that you are exempt from the FATCA reporting, is correct. See *What is FATCA reporting?* on page 2 for further information.

Note. If you are a U.S. person and a requester gives you a form other than Form W-9 to request your TIN, you must use the requester's form if it is substantially similar to this Form W-9.

Definition of a U.S. person. For federal tax purposes, you are considered a U.S. person if you are:

• An individual who is a U.S. citizen or U.S. resident alien;

• A partnership, corporation, company, or association created or organized in the United States or under the laws of the United States;

• An estate (other than a foreign estate); or

• A domestic trust (as defined in Regulations section 301.7701-7).

Special rules for partnerships. Partnerships that conduct a trade or business in the United States are generally required to pay a withholding tax under section 1446 on any foreign partners' share of effectively connected taxable income from such business. Further, in certain cases where a Form W-9 has not been received, the rules under section 1446 require a partnership to presume that a partner is a foreign person, and pay the section 1446 withholding tax. Therefore, if you are a U.S. person that is a partner in a partnership conducting a trade or business in the United States, provide Form W-9 to the partnership to establish your U.S. status and avoid section 1446 withholding on your share of partnership income.

In the cases below, the following person must give Form W-9 to the partnership for purposes of establishing its U.S. status and avoiding withholding on its allocable share of net income from the partnership conducting a trade or business in the United States:

• In the case of a disregarded entity with a U.S. owner, the U.S. owner of the disregarded entity and not the entity;

• In the case of a grantor trust with a U.S. grantor or other U.S. owner, generally, the U.S. grantor or other U.S. owner of the grantor trust and not the trust; and

• In the case of a U.S. trust (other than a grantor trust), the U.S. trust (other than a grantor trust) and not the beneficiaries of the trust.

Foreign person. If you are a foreign person or the U.S. branch of a foreign bank that has elected to be treated as a U.S. person, do not use Form W-9. Instead, use the appropriate Form W-8 or Form 8233 (see Publication 515, Withholding of Tax on Nonresident Aliens and Foreign Entities).

Nonresident alien who becomes a resident alien. Generally, only a nonresident alien individual may use the terms of a tax treaty to reduce or eliminate U.S. tax on certain types of income. However, most tax treaties contain a provision known as a "saving clause." Exceptions specified in the saving clause may permit an exemption from tax to continue for certain types of income even after the payee has otherwise become a U.S. resident alien for tax purposes.

If you are a U.S. resident alien who is relying on an exception contained in the saving clause of a tax treaty to claim an exemption from U.S. tax on certain types of income, you must attach a statement to Form W-9 that specifies the following five items:

1. The treaty country. Generally, this must be the same treaty under which you claimed exemption from tax as a nonresident alien.

2. The treaty article addressing the income.

3. The article number (or location) in the tax treaty that contains the saving clause and its exceptions.

4. The type and amount of income that qualifies for the exemption from tax.

5. Sufficient facts to justify the exemption from tax under the terms of the treaty article.

Example. Article 20 of the U.S.-China income tax treaty allows an exemption from tax for scholarship income received by a Chinese student temporarily present in the United States. Under U.S. law, this student will become a resident alien for tax purposes if his or her stay in the United States exceeds 5 calendar years. However, paragraph 2 of the first Protocol to the U.S.-China treaty (dated April 30, 1984) allows the provisions of Article 20 to continue to apply even after the Chinese student becomes a resident alien of the United States. A Chinese student who qualifies for this exception (under paragraph 2 of the first protocol) and is relying on this exception to claim an exemption from tax on his or her scholarship or fellowship income would attach to Form W-9 a statement that includes the information described above to support that exemption.

If you are a nonresident alien or a foreign entity, give the requester the appropriate completed Form W-8 or Form 8233.

Backup Withholding

What is backup withholding? Persons making certain payments to you must under certain conditions withhold and pay to the IRS 28% of such payments. This is called "backup withholding." Payments that may be subject to backup withholding include interest, tax-exempt interest, dividends, broker and barter exchange transactions, rents, royalties, nonemployee pay, payments made in settlement of payment card and third party network transactions, and certain payments from fishing boat operators. Real estate transactions are not subject to backup withholding.

You will not be subject to backup withholding on payments you receive if you give the requester your correct TIN, make the proper certifications, and report all your taxable interest and dividends on your tax return.

Payments you receive will be subject to backup withholding if:

1. You do not furnish your TIN to the requester,

2. You do not certify your TIN when required (see the Part II instructions on page 3 for details),

3. The IRS tells the requester that you furnished an incorrect TIN,

4. The IRS tells you that you are subject to backup withholding because you did not report all your interest and dividends on your tax return (for reportable interest and dividends only), or

5. You do not certify to the requester that you are not subject to backup withholding under 4 above (for reportable interest and dividend accounts opened after 1983 only).

Certain payees and payments are exempt from backup withholding. See *Exempt payee code* on page 3 and the separate Instructions for the Requester of Form W-9 for more information.

Also see *Special rules for partnerships* above.

What is FATCA reporting?

The Foreign Account Tax Compliance Act (FATCA) requires a participating foreign financial institution to report all United States account holders that are specified United States persons. Certain payees are exempt from FATCA reporting. See *Exemption from FATCA reporting code* on page 3 and the Instructions for the Requester of Form W-9 for more information.

Updating Your Information

You must provide updated information to any person to whom you claimed to be an exempt payee if you are no longer an exempt payee and anticipate receiving reportable payments in the future from this person. For example, you may need to provide updated information if you are a C corporation that elects to be an S corporation, or if you no longer are tax exempt. In addition, you must furnish a new Form W-9 if the name or TIN changes for the account; for example, if the grantor of a grantor trust dies.

Penalties

Failure to furnish TIN. If you fail to furnish your correct TIN to a requester, you are subject to a penalty of $50 for each such failure unless your failure is due to reasonable cause and not to willful neglect.

Civil penalty for false information with respect to withholding. If you make a false statement with no reasonable basis that results in no backup withholding, you are subject to a $500 penalty.

Criminal penalty for falsifying information. Willfully falsifying certifications or affirmations may subject you to criminal penalties including fines and/or imprisonment.

Misuse of TINs. If the requester discloses or uses TINs in violation of federal law, the requester may be subject to civil and criminal penalties.

Specific Instructions

Line 1

You must enter one of the following on this line; **do not** leave this line blank. The name should match the name on your tax return.

If this Form W-9 is for a joint account, list first, and then circle, the name of the person or entity whose number you entered in Part I of Form W-9.

a. **Individual.** Generally, enter the name shown on your tax return. If you have changed your last name without informing the Social Security Administration (SSA) of the name change, enter your first name, the last name as shown on your social security card, and your new last name.

Note. ITIN applicant: Enter your individual name as it was entered on your Form W-7 application, line 1a. This should also be the same as the name you entered on the Form 1040/1040A/1040EZ you filed with your application.

b. **Sole proprietor or single-member LLC.** Enter your individual name as shown on your 1040/1040A/1040EZ on line 1. You may enter your business, trade, or "doing business as" (DBA) name on line 2.

c. **Partnership, LLC that is not a single-member LLC, C Corporation, or S Corporation.** Enter the entity's name as shown on the entity's tax return on line 1 and any business, trade, or DBA name on line 2.

d. **Other entities.** Enter your name as shown on required U.S. federal tax documents on line 1. This name should match the name shown on the charter or other legal document creating the entity. You may enter any business, trade, or DBA name on line 2.

e. **Disregarded entity.** For U.S. federal tax purposes, an entity that is disregarded as an entity separate from its owner is treated as a "disregarded entity." See Regulations section 301.7701-2(c)(2)(iii). Enter the owner's name on line 1. The name of the entity entered on line 1 should never be a disregarded entity. The name on line 1 should be the name shown on the income tax return on which the income should be reported. For example, if a foreign LLC that is treated as a disregarded entity for U.S. federal tax purposes has a single owner that is a U.S. person, the U.S. owner's name is required to be provided on line 1. If the direct owner of the entity is also a disregarded entity, enter the first owner that is not disregarded for federal tax purposes. Enter the disregarded entity's name on line 2, "Business name/disregarded entity name." If the owner of the disregarded entity is a foreign person, the owner must complete an appropriate Form W-8 instead of a Form W-9. This is the case even if the foreign person has a U.S. TIN.

Line 2

If you have a business name, trade name, DBA name, or disregarded entity name, you may enter it on line 2.

Line 3

Check the appropriate box in line 3 for the U.S. federal tax classification of the person whose name is entered on line 1. Check only one box in line 3.

Limited Liability Company (LLC). If the name on line 1 is an LLC treated as a partnership for U.S. federal tax purposes, check the “Limited Liability Company” box and enter “P” in the space provided. If the LLC has filed Form 8832 or 2553 to be taxed as a corporation, check the “Limited Liability Company” box and in the space provided enter “C” for C corporation or “S” for S corporation. If it is a single-member LLC that is a disregarded entity, do not check the “Limited Liability Company” box; instead check the first box in line 3 “Individual/sole proprietor or single-member LLC.”

Line 4, Exemptions

If you are exempt from backup withholding and/or FATCA reporting, enter in the appropriate space in line 4 any code(s) that may apply to you.

Exempt payee code.

- Generally, individuals (including sole proprietors) are not exempt from backup withholding.
- Except as provided below, corporations are exempt from backup withholding for certain payments, including interest and dividends.
- Corporations are not exempt from backup withholding for payments made in settlement of payment card or third party network transactions.
- Corporations are not exempt from backup withholding with respect to attorneys' fees or gross proceeds paid to attorneys, and corporations that provide medical or health care services are not exempt with respect to payments reportable on Form 1099-MISC.

The following codes identify payees that are exempt from backup withholding. Enter the appropriate code in the space in line 4.

1—An organization exempt from tax under section 501(a), any IRA, or a custodial account under section 403(b)(7) if the account satisfies the requirements of section 401(f)(2)

2—The United States or any of its agencies or instrumentalities

3—A state, the District of Columbia, a U.S. commonwealth or possession, or any of their political subdivisions or instrumentalities

4—A foreign government or any of its political subdivisions, agencies, or instrumentalities

5—A corporation

6—A dealer in securities or commodities required to register in the United States, the District of Columbia, or a U.S. commonwealth or possession

7—A futures commission merchant registered with the Commodity Futures Trading Commission

8—A real estate investment trust

9—An entity registered at all times during the tax year under the Investment Company Act of 1940

10—A common trust fund operated by a bank under section 584(a)

11—A financial institution

12—A middleman known in the investment community as a nominee or custodian

13—A trust exempt from tax under section 664 or described in section 4947

The following chart shows types of payments that may be exempt from backup withholding. The chart applies to the exempt payees listed above, 1 through 13.

IF the payment is for . . .	THEN the payment is exempt for . . .
Interest and dividend payments	All exempt payees except for 7
Broker transactions	Exempt payees 1 through 4 and 6 through 11 and all C corporations. S corporations must not enter an exempt payee code because they are exempt only for sales of noncovered securities acquired prior to 2012.
Barter exchange transactions and patronage dividends	Exempt payees 1 through 4
Payments over $600 required to be reported and direct sales over $5,000[1]	Generally, exempt payees 1 through 5[2]
Payments made in settlement of payment card or third party network transactions	Exempt payees 1 through 4

[1] See Form 1099-MISC, Miscellaneous Income, and its instructions.

[2] However, the following payments made to a corporation and reportable on Form 1099-MISC are not exempt from backup withholding: medical and health care payments, attorneys' fees, gross proceeds paid to an attorney reportable under section 6045(f), and payments for services paid by a federal executive agency.

Exemption from FATCA reporting code. The following codes identify payees that are exempt from reporting under FATCA. These codes apply to persons submitting this form for accounts maintained outside of the United States by certain foreign financial institutions. Therefore, if you are only submitting this form for an account you hold in the United States, you may leave this field blank. Consult with the person requesting this form if you are uncertain if the financial institution is subject to these requirements. A requester may indicate that a code is not required by providing you with a Form W-9 with “Not Applicable” (or any similar indication) written or printed on the line for a FATCA exemption code.

A—An organization exempt from tax under section 501(a) or any individual retirement plan as defined in section 7701(a)(37)

B—The United States or any of its agencies or instrumentalities

C—A state, the District of Columbia, a U.S. commonwealth or possession, or any of their political subdivisions or instrumentalities

D—A corporation the stock of which is regularly traded on one or more established securities markets, as described in Regulations section 1.1472-1(c)(1)(i)

E—A corporation that is a member of the same expanded affiliated group as a corporation described in Regulations section 1.1472-1(c)(1)(i)

F—A dealer in securities, commodities, or derivative financial instruments (including notional principal contracts, futures, forwards, and options) that is registered as such under the laws of the United States or any state

G—A real estate investment trust

H—A regulated investment company as defined in section 851 or an entity registered at all times during the tax year under the Investment Company Act of 1940

I—A common trust fund as defined in section 584(a)

J—A bank as defined in section 581

K—A broker

L—A trust exempt from tax under section 664 or described in section 4947(a)(1)

M—A tax exempt trust under a section 403(b) plan or section 457(g) plan

Note. You may wish to consult with the financial institution requesting this form to determine whether the FATCA code and/or exempt payee code should be completed.

Line 5

Enter your address (number, street, and apartment or suite number). This is where the requester of this Form W-9 will mail your information returns.

Line 6

Enter your city, state, and ZIP code.

Part I. Taxpayer Identification Number (TIN)

Enter your TIN in the appropriate box. If you are a resident alien and you do not have and are not eligible to get an SSN, your TIN is your IRS individual taxpayer identification number (ITIN). Enter it in the social security number box. If you do not have an ITIN, see *How to get a TIN* below.

If you are a sole proprietor and you have an EIN, you may enter either your SSN or EIN. However, the IRS prefers that you use your SSN.

If you are a single-member LLC that is disregarded as an entity separate from its owner (see *Limited Liability Company (LLC)* on this page), enter the owner's SSN (or EIN, if the owner has one). Do not enter the disregarded entity's EIN. If the LLC is classified as a corporation or partnership, enter the entity's EIN.

Note. See the chart on page 4 for further clarification of name and TIN combinations.

How to get a TIN. If you do not have a TIN, apply for one immediately. To apply for an SSN, get Form SS-5, Application for a Social Security Card, from your local SSA office or get this form online at *www.ssa.gov*. You may also get this form by calling 1-800-772-1213. Use Form W-7, Application for IRS Individual Taxpayer Identification Number, to apply for an ITIN, or Form SS-4, Application for Employer Identification Number, to apply for an EIN. You can apply for an EIN online by accessing the IRS website at *www.irs.gov/businesses* and clicking on Employer Identification Number (EIN) under Starting a Business. You can get Forms W-7 and SS-4 from the IRS by visiting IRS.gov or by calling 1-800-TAX-FORM (1-800-829-3676).

If you are asked to complete Form W-9 but do not have a TIN, apply for a TIN and write “Applied For” in the space for the TIN, sign and date the form, and give it to the requester. For interest and dividend payments, and certain payments made with respect to readily tradable instruments, generally you will have 60 days to get a TIN and give it to the requester before you are subject to backup withholding on payments. The 60-day rule does not apply to other types of payments. You will be subject to backup withholding on all such payments until you provide your TIN to the requester.

Note. Entering “Applied For” means that you have already applied for a TIN or that you intend to apply for one soon.

Caution: *A disregarded U.S. entity that has a foreign owner must use the appropriate Form W-8.*

Part II. Certification

To establish to the withholding agent that you are a U.S. person, or resident alien, sign Form W-9. You may be requested to sign by the withholding agent even if items 1, 4, or 5 below indicate otherwise.

For a joint account, only the person whose TIN is shown in Part I should sign (when required). In the case of a disregarded entity, the person identified on line 1 must sign. Exempt payees, see *Exempt payee code* earlier.

Signature requirements. Complete the certification as indicated in items 1 through 5 below.

1. Interest, dividend, and barter exchange accounts opened before 1984 and broker accounts considered active during 1983. You must give your correct TIN, but you do not have to sign the certification.

2. Interest, dividend, broker, and barter exchange accounts opened after 1983 and broker accounts considered inactive during 1983. You must sign the certification or backup withholding will apply. If you are subject to backup withholding and you are merely providing your correct TIN to the requester, you must cross out item 2 in the certification before signing the form.

3. Real estate transactions. You must sign the certification. You may cross out item 2 of the certification.

4. Other payments. You must give your correct TIN, but you do not have to sign the certification unless you have been notified that you have previously given an incorrect TIN. "Other payments" include payments made in the course of the requester's trade or business for rents, royalties, goods (other than bills for merchandise), medical and health care services (including payments to corporations), payments to a nonemployee for services, payments made in settlement of payment card and third party network transactions, payments to certain fishing boat crew members and fishermen, and gross proceeds paid to attorneys (including payments to corporations).

5. Mortgage interest paid by you, acquisition or abandonment of secured property, cancellation of debt, qualified tuition program payments (under section 529), IRA, Coverdell ESA, Archer MSA or HSA contributions or distributions, and pension distributions. You must give your correct TIN, but you do not have to sign the certification.

What Name and Number To Give the Requester

For this type of account:	Give name and SSN of:
1. Individual	The individual
2. Two or more individuals (joint account)	The actual owner of the account or, if combined funds, the first individual on the account[1]
3. Custodian account of a minor (Uniform Gift to Minors Act)	The minor[2]
4. a. The usual revocable savings trust (grantor is also trustee)	The grantor-trustee[1]
b. So-called trust account that is not a legal or valid trust under state law	The actual owner[1]
5. Sole proprietorship or disregarded entity owned by an individual	The owner[3]
6. Grantor trust filing under Optional Form 1099 Filing Method 1 (see Regulations section 1.671-4(b)(2)(i)(A))	The grantor*
For this type of account:	**Give name and EIN of:**
7. Disregarded entity not owned by an individual	The owner
8. A valid trust, estate, or pension trust	Legal entity[4]
9. Corporation or LLC electing corporate status on Form 8832 or Form 2553	The corporation
10. Association, club, religious, charitable, educational, or other tax-exempt organization	The organization
11. Partnership or multi-member LLC	The partnership
12. A broker or registered nominee	The broker or nominee
13. Account with the Department of Agriculture in the name of a public entity (such as a state or local government, school district, or prison) that receives agricultural program payments	The public entity
14. Grantor trust filing under the Form 1041 Filing Method or the Optional Form 1099 Filing Method 2 (see Regulations section 1.671-4(b)(2)(i)(B))	The trust

[1] List first and circle the name of the person whose number you furnish. If only one person on a joint account has an SSN, that person's number must be furnished.

[2] Circle the minor's name and furnish the minor's SSN.

[3] You must show your individual name and you may also enter your business or DBA name on the "Business name/disregarded entity" name line. You may use either your SSN or EIN (if you have one), but the IRS encourages you to use your SSN.

[4] List first and circle the name of the trust, estate, or pension trust. (Do not furnish the TIN of the personal representative or trustee unless the legal entity itself is not designated in the account title.) Also see *Special rules for partnerships* on page 2.

***Note.** Grantor also must provide a Form W-9 to trustee of trust.

Note. If no name is circled when more than one name is listed, the number will be considered to be that of the first name listed.

Secure Your Tax Records from Identity Theft

Identity theft occurs when someone uses your personal information such as your name, SSN, or other identifying information, without your permission, to commit fraud or other crimes. An identity thief may use your SSN to get a job or may file a tax return using your SSN to receive a refund.

To reduce your risk:

- Protect your SSN,
- Ensure your employer is protecting your SSN, and
- Be careful when choosing a tax preparer.

If your tax records are affected by identity theft and you receive a notice from the IRS, respond right away to the name and phone number printed on the IRS notice or letter.

If your tax records are not currently affected by identity theft but you think you are at risk due to a lost or stolen purse or wallet, questionable credit card activity or credit report, contact the IRS Identity Theft Hotline at 1-800-908-4490 or submit Form 14039.

For more information, see Publication 4535, Identity Theft Prevention and Victim Assistance.

Victims of identity theft who are experiencing economic harm or a system problem, or are seeking help in resolving tax problems that have not been resolved through normal channels, may be eligible for Taxpayer Advocate Service (TAS) assistance. You can reach TAS by calling the TAS toll-free case intake line at 1-877-777-4778 or TTY/TDD 1-800-829-4059.

Protect yourself from suspicious emails or phishing schemes. Phishing is the creation and use of email and websites designed to mimic legitimate business emails and websites. The most common act is sending an email to a user falsely claiming to be an established legitimate enterprise in an attempt to scam the user into surrendering private information that will be used for identity theft.

The IRS does not initiate contacts with taxpayers via emails. Also, the IRS does not request personal detailed information through email or ask taxpayers for the PIN numbers, passwords, or similar secret access information for their credit card, bank, or other financial accounts.

If you receive an unsolicited email claiming to be from the IRS, forward this message to *phishing@irs.gov.* You may also report misuse of the IRS name, logo, or other IRS property to the Treasury Inspector General for Tax Administration (TIGTA) at 1-800-366-4484. You can forward suspicious emails to the Federal Trade Commission at: *spam@uce.gov* or contact them at *www.ftc.gov/idtheft* or 1-877-IDTHEFT (1-877-438-4338).

Visit IRS.gov to learn more about identity theft and how to reduce your risk.

Privacy Act Notice

Section 6109 of the Internal Revenue Code requires you to provide your correct TIN to persons (including federal agencies) who are required to file information returns with the IRS to report interest, dividends, or certain other income paid to you; mortgage interest you paid; the acquisition or abandonment of secured property; the cancellation of debt; or contributions you made to an IRA, Archer MSA, or HSA. The person collecting this form uses the information on the form to file information returns with the IRS, reporting the above information. Routine uses of this information include giving it to the Department of Justice for civil and criminal litigation and to cities, states, the District of Columbia, and U.S. commonwealths and possessions for use in administering their laws. The information also may be disclosed to other countries under a treaty, to federal and state agencies to enforce civil and criminal laws, or to federal law enforcement and intelligence agencies to combat terrorism. You must provide your TIN whether or not you are required to file a tax return. Under section 3406, payers must generally withhold a percentage of taxable interest, dividend, and certain other payments to a payee who does not give a TIN to the payer. Certain penalties may also apply for providing false or fraudulent information.