



**SAN ANTONIO WATER SYSTEM
DOS RIOS WRC FIRST STAGE DIFFUSER REPLACEMENT
SAWS Job No. 13-6502
SAWS Solicitation No. B-13-075-MF**

**ADDENDUM No. 1
November 11, 2013**

To Bidder of Record:

This addendum, applicable to work referenced above, is an amendment to the bidding documents and as such will be made a part of and included in the Contract Documents. Acknowledge receipt of this addendum by entering the addendum number and issue date in the space provided in submitted copies of the proposal.

QUESTIONS AND CLARIFICATIONS

Q1. In order to determine what Safety & Health requirements we as an employer would have to take to protect our employees while they are at the bottom of the basin cleaning out the sludge, what chemicals or acids will they be exposed too?

A1. The basins will be emptied of all but the specified amount of grit / sludge / debris. There will be no chemicals or acids.

Q2. Will we be allowed to cut the railing around the basin in order to establish entry and exits points for our employees?

A2. You cannot cut the railing, but you can remove sections of railing as long as temporary railing is reinstalled to protect employees. The Contractor shall be responsible for any railing damaged by their work.

Q3. Is there any requirement to clean or purge the stainless steel piping?

A3. The stainless steel piping should be pressure washed.

Q4. If our Company is bidding as a Prime, and we are certified as a DBE, SBE, MBE, ESBE, and HABE thru the South Central Texas Regional Certification Agency, will we be required to meet the SMWB goal of 17%?

A4. Yes, SAWS accepts SBE, MBE, and WBE certification from the South Central Texas Regional Certification Agency. Your SBE and MBE certification will suffice, and if you will be self-performing at least 17% of the work, you will meet the aspirational SMWB goal. However, in the spirit of the SMWB program, we ask all prime contractors,

(whether SMWB-certified or not), to make a concerted effort to subcontract work to SMWBs when possible. If you need assistance with finding SMWB-certified subcontractors, please email Marisol V. Robles, SMWB program manager, at marisol.robles@saws.org with the scopes of work you are seeking. Incidentally, SAWS also accepts Texas Historically Underutilized Business (HUB) certification and federal SMWB designation as found in the federal System for Award Management (“SAM”) website.

Q5. Will patching or grouting be required on the basin floor after the demo of lateral support brackets?

A5. Yes, patching with grout will be required to fill in any holes left after removal of the brackets.

Q6. Is there a specific manufacturer for the replacement of the current “Sanitaire (xylem)” first stage diffusers?

A6. Use one of the manufacturers listed in Section 11084, Paragraph 2.2.

Q7. Since we would require the use of non potable water at the jobsite for cleaning the bottom of the basin, at what rate would the contractor be charged for usage?

A7. There will be no charge for the use of non-potable water.

Q8. Will the awarded contractor be able to dump or pump the remaining approximately 6 inches of water, sludge, sand, and mud from the bottom of the basin into the adjacent influent tank?

A8. No, the remaining 4 to 6-inches of water, sludge, grit, and debris that remain in the basin must be removed and transported to the existing sludge drying beds under the direction of SAWS.

Q9. In order to secure ladders for access to the bottom of the Basin, will contractor be allowed to anchor ladder brackets into basin concrete walls, top platform, and bottom of the basin as needed?

A9. It is the Contractor’s responsibility to provide a safe ingress and egress means to each basin throughout the project duration. Each basin will be inspected prior to being returned to service. The basin wall and floor must be in equal or better conditions. It shall be the Contractor’s responsibility to repair any holes, etc in any part of the basin wall or floor.

If anchors are used, the Contractor shall take the necessary means to locate existing reinforcing bars in the wall and provide adequate clearance for the ladder anchors.

REVISIONS TO CONTRACT DOCUMENTS AND TECHNICAL SPECIFICATIONS

CONSTRUCTION PLANS

1. Sheet C2, REMOVE and REPLACE Note 6 as follows:

“6. Protect and maintain all existing stainless steel purge lines in all ten (10) basins. Reconnect all existing stainless steel purge lines to new diffuser system. Connection shall be made in accordance with manufacturer’s recommendation.”

2. Sheet C3, REMOVE and REPLACE Note 1 as follows:

“1. Owner shall assist in draining each basin. Assistance is limited to operating existing drain valve(s) which drain basin(s) to plant drain system. SAWS will also put a trash pump in each basin to assist with draining.”

3. Sheet C3, REMOVE and REPLACE Note 3 as follows:

“3. Protect and reuse existing stainless steel manifold and purge lines.”

4. Sheet C3, REMOVE and REPLACE Note 4 as follows:

“4. Remove and dispose of all PVC Air Distribution Header, Ceramic diffuser assemblies, and piping supports. Contractor shall minimize damage to basin floor. Cut existing diffuser supports at base.”

5. Sheet C4, REMOVE and REPLACE Note related to the diffuser system purge lines.

“Protect and reconnect all existing purge lines.”

6. Sheet M1, Drawing was revised to show required manifold drainline(s) and add Note 9.

“9. The purge system shall match the existing grid configuration. A manifold (drainline) connects all headers along the extreme ends of the Grid System. Four purge lines are provided per basin and these lines are interconnected as follows:

- Grid No. 2 and 3 are interconnected to a single purge line on the north end of the basin.
- Grid No. 1 and 2 are interconnected to a single purge line on the south end of the basin.
- Grid 1 is connected to a single purge line on the north end.
- Grid 3 is connected to a single purge line on the south end.

Field verification is required to match the existing system design. The stainless steel purge main from the bottom of the basin to the top of the structure shall be re-used. The existing valve shall also be reused. Provide the manifold (drainline) that interconnects the ends of the headers.”

7. Sheet M2, REMOVE and REPLACE Note referring to drainline. This note is applicable to all Grids (Grid 1, 2, and 3).

“Provide 4” drainline with supports and connection to exiting airlift purges at 7.5’ spacing. (Typical Both Ends, all air distributors)”

BIDDING AND CONTRACT DOCUMENTS

8. Invitation to Bidders, REPLACE the first sentence of the fourth paragraph as follows:

“A non-mandatory Pre-Bid Meeting will be held at 11:00 AM (CT) on November 5, **2013** at the San Antonio Water System’s Dos Rios Water Recycling Center, 3495 Valley Rd, San Antonio, Texas 78221.”

9. Bid Proposal; ADD below **PROPOSAL CERTIFICATION** Section, the following Schedule of Manufacturers and Supplies.

SCHEDULE OF MANUFACTURERS AND SUPPLIERS

The Contract Documents are based upon the products available from the manufacturers denoted as “a”, “b”, etc., below. Bidder must indicate which manufacturer his / her bid is based upon by circling one of the listed manufacturers below. If more than one manufacturer is circled, Bidder must use the first manufacturer circled.

Specification Number	Equipment	Manufacturer or Supplier
11149	Fine Bubble Diffusers	a. Xylem Sanitaire
		b. Stamford Scientific International (SSI)
		c. Environmental Dynamics, Inc. (EDI)
		d. Aquarius Technologies, Inc.

TECHNICAL SPECIFICATIONS

10. Section 11084, Aeration Equipment: Fine Bubble Diffusers, REPLACE Paragraph 2.2 B. as follows:

“B. The allowable diffuser size is a 9-inch diffuser.”

11. Section 11084, Aeration Equipment: Fine Bubble Diffusers, DELETE 2.14, A(2) sentence:

“2. Perform two tests on one aeration system furnished, may be required by OWNER.”

12. Section 11084, Aeration Equipment: Fine Bubble Diffusers, ADD 3.3, A(5.c.1) sentence:

“c. Leak Test:

1) Fill each basin to approximately one (1) foot with clean water (NPW) above the diffuser. Perform a visual observation and check for leaks. Repair all leaks. This test shall be performed prior to introducing wastewater to the basin.”

13. Section 11084, Aeration Equipment: Fine Bubble Diffusers, ADD 2.13, A paragraph::

2.13 Purge System

A. Furnish PVC drainline at the ends of the headers to match the current existing system configuration. Provide all necessary appurtenances to drain the entire submerged aeration piping system for each grid. The existing stainless purge eductor line (bottom to top of basin) and associated purge valve will be reused.

The remainder of the bid documents remains unchanged.



Javier Garcia, P.E.
S&GE, LLC
(f/k/a Sherfey Engineering SA, LLC)



11/12/13

ACKNOWLEDGEMENT BY BIDDER

Each bidder is requested to acknowledge receipt of this Addendum No. 1 on the Bid Proposal and by his/her signature affixed hereto and to file same as an attachment to his/her bid.

The undersigned acknowledges receipt of this Addendum No. 1 and the bid submitted herewith is in accordance with the information and stipulation set forth.

Signature of Bidder

Date

END OF ADDENDUM No. 1

INVITATION TO BIDDERS

Solicitation No. B-13-075-MF

Sealed bids are requested by the San Antonio Water System for the construction of the Dos Rios Water Recycling Center (WRC) Diffuser Replacement Project, SAWS Job No. 13-6502. The project includes, but is not limited to, labor, materials, equipment, and incidentals required to demolish and replace the fine bubble diffuser system in all ten (10) First Stage aeration basins and other miscellaneous work as required per the Contract Documents.

To view additional project information, as well as obtain the plans and specifications for this project, visit our website located at www.saws.org and click on the Business Center. Then select Bidder, Consultant, and Vendor Registration, which is located on the left-hand side of the screen. Select the Register Now button and proceed with registration. For difficulties downloading plans and specifications, contact the Contracting Department at 210-233-3341.

For questions regarding this solicitation, technical questions or additional information, please contact Maria Franco, Contract Administrator, in writing via email to: Maria.Franco@saws.org by fax to (210) 233-4622 until **4:00 PM (CT) on November 7, 2013**. Answers to the questions will be posted to the web site by **4:00 PM (CT) on November 12, 2013** as a separate document or included as part of an addendum.

A **non-mandatory Pre-bid Meeting** will be held at **11:00 AM (CT) on November 5, 2013** at the San Antonio Water System's Dos Rios Water Recycling Center, 3495 Valley Rd, San Antonio, Texas 78221. Immediately following the Pre-bid Meeting, a non-mandatory site visit will be conducted.

Sealed bids will be received by the Contract Administration Division, 2800 U.S. Hwy 281 North, Customer Center Building, Suite 171, San Antonio, Texas 78212, until **2:00 PM (CT) on November 15, 2013**. Bids will then be publicly opened and read aloud in Contract Administration, Suite 169, Customer Center Building, 2800 U.S. Hwy 281 North, San Antonio, Texas. Each bid must be accompanied by a cashier's check, certified check, or bid bond in an amount not less than five percent of the total bid price.

BID PROPOSAL

PROPOSAL OF _____, a corporation
 a partnership consisting of _____
 an individual doing business as _____

TO THE SAN ANTONIO WATER SYSTEM:

Pursuant to the Instructions and Invitations to Bidders, the undersigned proposes to furnish all labor and materials as specified and perform the work required for the Dos Rios First Stage Diffuser Replacement Project, San Antonio Water System Job Number 13-6502, in accordance with the Plans and Specifications for the following prices to wit:

LUMP SUM PRICES FOR:

ITEM NO.	ITEM DESCRIPTION (PRICE TO BE WRITTEN IN WORDS)	UNIT	QTY.	UNIT PRICE IN FIGURES	TOTAL IN FIGURES
1.	<p>Existing Fine Bubble Diffuser System Demolition – the total amount for the demolition of the existing fine bubble diffuser system, which includes removal of water/sludge/grit from the aeration basin; removal and disposal of air distribution header, diffuser assemblies, and supports; power washing basin floor; repairing and grouting basin floor; protecting existing stainless steel air distribution manifold; and any other demolition work per the Contract Documents. This bid item shall also include videotaping each basin and surrounding areas before starting work, after basin has been emptied and cleaned, and prior to installing new fine bubble diffuser system.</p> <p>_____ Dollars and _____ Cents per Aeration Basin</p>	EA	10	\$_____	\$_____
2.	<p>Fine Bubble Diffuser System Installation - the total amount for furnishing all labor, materials, and services required for the installation of the fine bubble diffuser system in conjunction with and properly incidental to the Contract Documents.</p> <p>_____ Dollars and _____ Cents per Aeration Basin</p>	EA	10	\$_____	\$_____

3.	<p>Fine Bubble Diffuser System Equipment - the total amount for furnishing all equipment for the fine bubble diffuser system which includes but is not limited to air distribution headers, diffuser assemblies (EPDM membrane diffusers), supports, distribution header connections, fixed joints, and all other necessary appurtenances required in conjunction with and properly incidental to the Contract Documents.</p> <p>_____ Dollars and _____ Cents per Aeration Basin</p>	EA	10	\$ _____	\$ _____
4.	<p>Valve and Pipe Support Replacement Allowance – for furnishing all materials, labor, and equipment to remove and replace existing 8, 10, or 12-inch butterfly valves on air distribution piping if valves fail to hold and for replacing pipe supports for the stainless steel air distribution headers as approved by Owner.</p> <p><u>Fifty Thousand Dollars and No Cents</u></p>	LS	1	\$ <u>50,000.00</u>	\$ <u>50,000.00</u>
<p>A. SUBTOTAL BASE BID AMOUNT (Items 1 – 4)</p> <p>_____ Dollars and _____ Cents</p>					<p>\$ _____</p>
5.	<p>Mobilization and Demobilization – this item shall include project move-in and move-out of personnel and equipment, for all work including furnishing all labor, materials, tools, equipment and incidentals required to mobilize, demobilize, clean site upon project completion, and bond and insure the Work for the Dos Rios WRC First Stage Diffuser Replacement Project, in accordance with the Contract Documents, complete in place.</p> <p>Percent of Line Item “A” Subtotal Base Bid written in words</p> <p>_____ Percent</p> <p>(Maximum of 10% of Line Item A, Subtotal Base Bid (Items 1–4) amount)</p>	LS	1	\$ <u>XXXXX.XX</u>	\$ _____
<p>B. TOTAL BID AMOUNT (Items 1 – 5)</p> <p>_____ Dollars and _____ Cents</p>					<p>\$ _____</p>

Mobilization and Demobilization lump sum bid shall be limited to a maximum 10% of the Line Item 'A. Subtotal Base Bid Amount (Items 1-4)'. Line Item 'A. Subtotal Base Bid Amount (Items 1-4)' is defined as all bid items EXCLUDING Line Item '5. Mobilization and Demobilization.' **In the event of a discrepancy between the written percentage and dollar amount shown for Item 5, Mobilization and Demobilization, the bid item's written percentage will govern. If the written percentage exceeds the allowable maximum stated for Mobilization and Demobilization, SAWS reserves the right to cap the amount at the percentage shown and adjust the extensions of the bid item accordingly.**

ADDITIVE ALTERNATE

Owner reserves the right to award a contract with or without the following additive alternate.

ITEM DESCRIPTION (PRICE TO BE WRITTEN IN WORDS)	UNIT	QTY.	UNIT PRICE IN FIGURES	TOTAL IN FIGURES
<p>PTFE Coated Membrane Diffusers – additional cost to furnish and install PTFE coated membrane diffusers in lieu of EPDM membrane diffusers as defined in Base Bid Item No. 3 for all ten (10) aeration basins.</p> <p>_____ Dollars and _____ Cents per Lump Sum</p>	LS	1	\$XXXX.XX	\$ _____

 BIDDER'S SIGNATURE & TITLE

 FIRM'S NAME (TYPE OR PRINT)

 FIRM'S ADDRESS

 FIRM'S PHONE NO. /FAX NO.

 FIRM'S EMAIL ADDRESS

The Contractor herein acknowledges receipt of the following Addenda.

ACKNOWLEDGEMENT OF ADDENDUM

Addendum No. _____ Date: _____

Addendum No. _____ Date: _____

Addendum No. _____ Date: _____

Addendum No. _____ Date: _____

The Bidder offers to construct the Project in accordance with the Contract Documents for the contract price, and to complete the Project within 360 calendar days after the start date, as set forth in the Authorization to Proceed. The Bidder understands and accepts the provisions of the Contract Documents relating to liquidated damages of the project if not completed on time.

Owner reserves the right to accept the overall most responsible bid.

PROPOSAL CERTIFICATION

Accompanying this proposal is a Bid Bond or Certified or Cashier's Check on a State or National Bank payable to the Order of the San Antonio Water System for _____ dollars (\$ _____), which amount represents five percent (5%) of the total bid price. Said bond or check is to be returned to the bidder unless the proposal is accepted and the bidder fails to execute and file a contract within 10 calendar days after the award of the Contract, in which case the check shall become the property of said San Antonio Water System, and shall be considered as payment for damages due to delay and other inconveniences suffered by said San Antonio Water System due to the failure of the bidder to execute the contract. The San Antonio Water System reserves the right to reject any and all bids.

It is anticipated that the Owner will act on this proposal within 90 calendar days after the bid opening. Upon acceptance and award of the contract to the undersigned by the Owner, the undersigned shall execute standard San Antonio Water System Contract Documents and make Performance and Payment Bonds for the full amount of the contract within 10 calendar days after the award of the Contract to secure proper compliance with the terms and provisions of the contract, to insure and guarantee the work until final completion and acceptance, and the guarantee period stipulated, and to guarantee payment of all lawful claims for labor performed and materials furnished in the fulfillment of the contract.

It is anticipated that the Owner will provide written Authorization to Proceed within 30 days after the award of the Contract.

The work called for in this Contract shall commence on the date indicated in the SAWS written Authorization to Proceed. Under no circumstances shall the work commence prior to Contractor's receipt of SAWS issued, written Authorization to Proceed. Work shall be completed in full within 360 consecutive calendar days.

The undersigned further acknowledges compliance with "Wage and Labor Standard Provisions" of this contract and the use of the Blue Book rental rates for establishment of equipment rental rates whether owned or leased during the course of this Contract.

In completing the work contained in this proposal the undersigned certifies that bidder's practices and policies do not discriminate on the grounds of race, color, religion, sex or national origin and that the bidder will affirmatively cooperate in the implementation of these policies and practices.

Signed:

Company Representative

Company Name

Address

Please return bidder's check to:

Company Name

Address

SCHEDULE OF MANUFACTURERS AND SUPPLIERS

The Contract Documents are based upon the products available from the manufacturers denoted as “a”, “b”, etc., below. Bidder must indicate which manufacturer his / her bid is based upon by circling one of the listed manufacturers below. If more than one manufacturer is circled, Bidder must use the first manufacturer circled.

Specification Number	Equipment	Manufacturer or Supplier
11149	Fine Bubble Diffusers	a. Xylem Sanitaire
		b. Stamford Scientific International (SSI)
		c. Environmental Dynamics, Inc. (EDI)
		d. Aquarius Technologies, Inc.

SECTION 11084
AERATION EQUIPMENT: FINE BUBBLE DIFFUSERS

PART 1 - GENERAL

1.1 SCOPE SUMMARY

- A. This Section covers the work necessary to furnish and install the fine bubble diffused aeration equipment as specified herein. The diffusers will be installed in the treatment unit as indicated on the Drawings and specified herein.
- B. The following Specification defines the requirements for construction and operation performance for a conventional fine bubble diffuser system.

1.2 EQUIPMENT TAGS

- A. Not Used.

1.3 RELATED WORK

- A. Related Sections include, but are not limited to:
 - 1. Bidding and Contract Requirements
 - 2. Division I – General Requirements.
 - 3. Section 01340- Shop Drawings, Product Data, and Samples
 - 4. Section 01610 – Basic Product Requirements
 - 5. Section 01640 – Manufacturer’s Services
 - 6. Section 01740 – Warranties
 - 7. Section 01755 – Equipment Testing and Facility start-up
 - 8. Section 01782 – Operation and Maintenance Data
 - 9. Section 05500 – Metal Fabrication and Castings

1.4 REFERENCES

- A. The following is a list of standards which may be referenced in this Section:
 - 1. American National Standards Institute (ANSI): B 16.5, Pipe Flanges and Flanged Fittings.
 - 2. American Society of Civil Engineers (ASCE): Measurement of Oxygen Transfer in Clean Water.
 - 3. American Society for Testing and Materials (ASTM):
 - a. A182, Standard Specification for Forged or Rolled Alloy Steel Pipe Flanges, Forged Fittings, and Valves and Parts for High-Temperature Service.
 - b. A240, Standard Specification for Heat-Resisting Chromium and Chromium-Nickel Stainless Steel Plate, Sheet, and Strip for Pressure Vessels.
 - c. ASTM D1758 Standard Specification for Poly (Vinyl Chloride) PVC Plastic Pipe, Schedule 40, 80, and 120.

1.5 DEFINITIONS

- A. Adequate Mixing: Variation in mixed liquor suspended solids (total residue) of less than 10 percent between the mean value of samples taken at any two depths along any vertical line extending between water surface and elevation of the top of diffusers.
- B. Basin: Structure within which aeration occurs.
- C. Bay: Portion of grid on each side of dropleg and manifold assembly.
- D. Cell: Portion of aeration basin physically separated from other portions of basin. A cell may contain an aeration zone or a portion of an aeration zone.
- E. Diffuser Assembly: Flexible membrane diffuser with an element holder and retaining device.
- F. Distribution Header: Piping between manifold and diffuser assembly.

- G. Dropleg: Connection from air source to manifold.
- H. Dynamic Wet Pressure (DWP): Pressure to operate at specified conditions minus submergence and flow control losses.
- I. Grid: Configuration of diffuser system in a zone.
- J. Manifold: Single run of piping that connects dropleg with distribution header(s).
- K. Standard Cubic Feet per Minute (scfm): Air at 68 degrees F, 14.7 psia, and 36 percent relative humidity.
- L. Standard Oxygen Transfer Rate (SOTR): Rate of oxygen transfer to tap water at standard conditions of 20 degrees C, 0.0 mg/L residual dissolved oxygen concentration, and a barometric pressure of 760 mm Hg (dry air).
- M. Zone: Area within an aeration basin used to provide a particular type or level of treatment. One or more cells may be included in a zone.

1.6 QUALIFICATIONS

- A. The Fine Bubble Diffusers to be furnished shall be furnished by a single manufacturer who is experienced and qualified in the manufacturer of the equipment to be furnished. The manufacturer shall be considered qualified upon examination of credentials and confirmation of satisfactory operation of similar installations over the past five (5) years in the State of Texas.

1.7 SUBMITTALS

- A. Shop Drawings:
 1. Make, model, and weight of each equipment assembly.
 2. Manufacturer's catalog information, descriptive literature, specifications, and identification of materials of construction.
 3. Detailed Mechanical Drawings showing equipment fabrications and interface with other items. Include dimensions, size, and locations of connections to other work, and weights of associated equipment.
 4. A detailed drawing of proposed aeration equipment layout for each basin showing air line sizes and lengths, distances between air distribution headers, and location of diffusers, supports, and expansion joints.
 5. Diffuser, diffuser connector, balancing orifices, and system head loss curves covering range of airflow rates specified.
 6. Calculations showing distribution and balancing of air within each basin for minimum and maximum airflow rates specified.
 7. Calculations by a registered engineer to demonstrate that support design complies with requirements of this Section.
 8. Shop and Field Painting Systems Proposed: Include manufacturer's descriptive technical catalog literature and specifications.
- B. Information Submittals:
 1. Factory test results, reports, and certifications. Oxygen transfer performance test must be verified by an independent third party.
 2. MANUFACTURER Certificate of Conformance: Manufactured/commercial products.
 3. Special shipping, storage and protection, and handling instructions.
 4. MANUFACTURER Certificate of Compliance.
 5. Operation and Maintenance Manual: Include MANUFACTURER's written/printed installation instructions with erection drawings indicating, by piece marking, how entire assembly (for each basin service) is to be shipped and field assembled.
 6. MANUFACTURER's special guarantee.
- C. Service records for maintenance performed during construction.

1.8 OPERATIONS AND MAINTENANCE MANUAL

- A. Provide manufacturer’s Operation and Maintenance Manual(s) (O&M) and Maintenance Summary Form(s) in accordance with OPERATION AND MAINTENANCE DATA in Section 01782.

1.9 WARRANTY

- A. Equipment warranty shall comply with Section 01740, WARRANTIES.
- B. Submit warranty from the equipment manufacturer clearly stipulating that manufacturer’s warranty period shall be for two (2) years commencing at final acceptance by the OWNER. The diffuser membrane shall be covered for an extend period of five (5) years after date of Final Acceptance. MANUFACTURER shall be responsible for material replacement of parts or materials that fail during warranty period.

1.10 PRODUCT, DELIVERY, AND STORAGE

- A. Product delivery, storage, and handling shall comply with Section 01610, BASIC PRODUCT REQUIREMENTS.

1.11 MANUFACTURER’S CERTIFICATES

- A. Provide manufacturer’s certificate(s) in accordance with Paragraph 3.03 MANUFACTURER’S CERTIFICATES OF COMPLIANCE in Section 01640.

1.12 SPARE PARTS

- A. Furnish, tag, and box for shipment and storage the following spare parts and special tools:

Item	Quantity
Sealing gaskets (if applicable)	25
Flexible membrane diffuser elements	250
Diffuser element retainer ring	300
Element tighteners (to tighten retainer ring)	15
Air distribution pipe support assemblies	15
Air distribution pipe expansion joints	10
Tool sets, if required, for removal & replacement of diffuser assemblies	2

PART 2 - PRODUCTS

2.1 GENERAL

- A. Furnish fixed header, fine bubble, diffused air aeration equipment system as a complete package including, but not necessarily limited to the distribution headers; diffusers; supports; header joints; accessories; and miscellaneous appurtenances. The existing droplegs and air manifold will be reused in all basins.
- B. Furnish complete, engineered systems. Drawings indicate air manifold, header, and diffuser orientations only. Details such as air distribution header sizes and spacing, header supports and spacing, diffuser spacing, etc., shall be defined by and be the responsibility of CONTRACTOR and shall be consistent with requirements in this Section. The existing droplegs and air manifold shall be reused. CONTRACTOR is responsible for confirming the diameter of the nipple/connection between the existing manifold and new air headers.
- C. Design aeration equipment so that upon completion of installation, diffusers in each zone are level to within plus or minus 3/8 inch of a common horizontal plane.
- D. Provide ten (10) fine bubble air diffuser systems, one each for the ten (10) aeration basins.

2.2 MANUFACTURERS

- A. Materials, equipment, and accessories specified in this Section shall be products of:

1. Sanitaire/Xylem
2. Stamford Scientific Inc (SSI)
3. Environmental Dynamics, Inc. (EDI)
4. Aquarius

B. The Allowable Diffuser is a 9-inch diffuser.

2.3 PERFORMANCE REQUIREMENTS

- A. Airflow Rate Output: Not differ by more than 10 percent, at minimum and maximum airflows, for any two system diffusers (based on diffuser with lower flow rate).
- B. Air Distribution and Balancing: Control by use of orifices and proper header size selection only.
- C. Do not use flow distribution control devices requiring automatic or manual operation.
- D. Mixing: Adequate throughout each zone of aeration basins at stated minimum airflow requirements.
- E. Achieve adequate mixing in aeration basins at mixed liquor suspended solids concentrations between 2,000 and 4,000 mg/L.
- F. Air Distribution and Balancing: Sufficient to maintain uniform (+/- 10%) mixed liquor suspended solids in a state of suspension over entire depth of aeration basin at stated minimum airflow requirements
- G. Material being aerated is mixed liquor suspended solids, a mixture of primary effluent and return activated sludge.
- H. Activated Sludge Aeration Requirements: The existing first stage aeration system has a total of ten (10) aeration basins, each sub-divided into three (3) grids.
 1. Allowable Diffuser Mounting Distance Above Basin Floor:
 - a. Minimum (Inches Floor-to-Diffuser Element): 10
 - b. Maximum (Inches Floor-to-Diffuser Element) 16
 2. Nine-Inch Membrane Disc Diffuser Airflow (scfm)
 - a. Minimum: 0.50
 - b. Average: 1.00
 - c. Maximum: 1.50
 3. Operating Pressure at top of Dropleg (psig): 10.45
- I. Basin Geometry:
 1. There are a total of 10 aeration basins in parallel which comprise the Dos Rios First Stage Aeration System. Each basin is approximately 172.5-feet long and 78-ft wide. The basin is completely aerated and subdivided into three (3) zones or grids. The maximum side water depth (SWD) is 23.2-feet.
- J. Temperature
 1. The maximum wastewater temperature is 20 degrees C.
- K. Air Distribution:
 1. Design Conditions
 - a. Design BOD5= 230-mg/l
 - b. Flow= 137-mgd
 - c. Loading= 263,000-lb/day
 2. Peak Flow Conditions:
 - a. Design BOD5= 430-mg/l
 - b. Flow= 137-mgd
 - c. Loading= 492,000-lb/day

2.4 AIR FLOW REQUIREMENTS / BASIN

- A. Air Flow Requirements are defined as follows:
 1. Minimum= 2,500-scfm

- 2. Average= 4,350-scfm
- 3. Maximum= 7,410-scfm

B. Air Flow Requirements/Grid

Grid	% Distribution/Grid	Minimum (scfm)	Average (scfm)	Maximum (scfm)
Grid 1	48.60%	1,215	2,114	3,601
Grid 2	27.60%	690	1,201	2,045
Grid 3	23.80%	595	1,035	1,764
Total Air/All Grid	100%	2,500	4,350	7,410
Total Ten (10) Basins		25,000	43,350	74,100

2.5 DIFFUSER LAYOUT / BASIN

Grid	Number of Diffusers
1	2,400
2	1,364
3	1,176
Total	4,940

2.6 EXISTING DIFFUSER LAYOUT/BASIN

- A. The existing stainless steel drop leg and header will be reused. Provided below is an accounting of the number of nipple/connection ports. The existing diameter of the nipple/connection port is 4.5-inches. This information must be filed verified in the field by the CONTRACTOR prior to ordering any equipment.

Grid	Number of Air Distribution Headers
1	40
2	31
3	28

2.7 SERVICE CONDITIONS

- A. System:
- 1. Temperature at Mixed Liquor:
 - a. Minimum: 14 degrees C.
 - b. Maximum: 20 degrees C.
 - 2. pH of Mixed Liquor: 6.5 to 7.5.
 - 3. Mixed Liquor Suspended Solids Concentration:
 - a. Average: 3,000.
 - b. Maximum: 4,000.
 - 4. Basin Sidewater Depth (ft): 23.2-feet.

2.8 GENERAL

- A. Shop fabricate welded metal parts and assemblies from Type 304L stainless steel with a 2D finish conforming to ASTM A240.
- B. Shop fabricate non-welded parts and pieces from sheets and plates of Type 304 stainless steel conforming to ASTM A240, unless specified otherwise.
- C. After fabrication, pickle and passivate stainless steel assemblies and parts by immersion in a pickling solution of 6 percent nitric acid and 3 percent hydrofluoric acid at 140 degrees F (60 degrees C) for 15 minutes. Neutralize by immersing in a trisodium phosphate solution.
- D. Header and Header Support System: Allow for expansion and contraction over a temperature range of 125 degrees F when installed.
- E. The minimum airflows in Table 1 are based on a 9-inch diameter membrane system. Alternative diffusers may be proposed but must be approved by the ENGINEER.

2.9 DROPLEG, AIR MANIFOLD, AND DISTRIBUTION HEADERS

- A. Dropleg:
 - 1. Reuse existing stainless steel manifold.
- B. Air Manifold
 - 1. Reuse existing stainless steel manifold.
- C. Distribution Headers
 - 1. Minimum 4 inch, maximum SDR 21 conforming to ASTM D2241 with 1.5 parts by weight of titanium dioxide per 100 parts of resin.
 - 2. Fabricate in sections up to a maximum of 22 feet in length, with fixed joints. Design must accommodate expansion.
 - 3. Spacing between the distribution headers is fixed and based on the location of the existing air manifold nipple/connections. CONTRACTOR to field verify spacing for all grids and basins. Refer to Drawings for additional information.
 - 4. Fabricate header with a factory solvent welded holder connection. Attach diffuser elements to distribution headers to resist 150 foot-pounds applied torque about polar axis of holder and 100 foot-pounds about longitudinal axis.
- D. Include expansion/contraction system consisting of fixed or flanged joints and guide supports
Guide supports shall allow for longitudinal movement

2.10 FLEXIBLE MEMBRANE DIFFUSER ASSEMBLIES

- A. Fine bubble disk type with flexible perforated air release membrane. After 1 year of continuous operation without basin dewatering or diffuser cleaning, pressure drop through diffuser at specified flow rates shall not increase more than 0.5 psig.
- B. Backflow preventer assembly to prevent liquid from passing into aeration header Diffusers shall require no special tools for attaching diffusers to diffuser connectors.
- C. Membrane: Ethylene propylene diene monomer (EPDM) suitable for application to continuous aeration of activated sludge mixed liquor without significant increase in head loss.
 - 1. Replaceable without use of any special tools.
 - 2. Exterior surface shall be smooth to restrict biological film growth.
 - 3. Inflate during aeration and deflate when airflow is discontinued, further restricting biological film growth.
 - 4. Cleanable in-place with water from a hose. Acid or other chemical cleaning methods shall not be required to restore diffuser to like-new performance conditions.
 - 5. Perforated over entire surface to release fine bubbles uniformly.
- D. Each basin consists of three zones with one grid in each zone.
- E. PVC Diffuser Element Holders:
 - 1. Air plenum chamber below diffuser element.

2. Mechanism to attach diffuser element to element holder.
 3. Provide complete peripheral edge support for membrane diffuser element.
- F. Retaining Device:
1. Securely hold and seal membrane diffuser element to element holder.
 2. Diffuser assembly and retaining device shall prevent air escape at diffuser element interface.
 3. Gasket shall be on top of diffuser.
 4. Vertical edges of diffuser elements shall not be exposed to liquid.
 5. Sealing method shall allow applied sealing force between sealing gasket and membrane element to be varied, with a minimum force of 50 pounds per inch of circumference of sealing gasket to provide a long-term positive seal and prevent air escape except through active area of diffuser element
 6. Retainer ring with a minimum of 2-1/2 complete threads with a minimum cross-section of 1/8 inch for engagement. Each diffuser element holder shall have an airflow control orifice.

2.11 SUPPORTS

- A. Fabricate from 0.250-inch minimum Type 304 stainless steel plate, ASTM A240. Use Type 304L stainless steel for welded parts, ASTM A240.
- B. Provide plus or minus 1/2-inch lateral and plus or minus 2-inch vertical adjustment of header. Adjustment shall be continuous and possible without removing air piping from support. Each air piping section shall have a minimum of two supports and additional supports as necessary to maintain level. Support height shall be sufficient to provide diffuser elevation shown on Drawings. Each support shall provide a bearing surface contoured to fit 360 degrees of air piping. Bearing surface shall be a minimum of 2 inches wide for manifolds and 1-1/2 inches wide for distribution headers.
- C. Air Manifold Piping Supports
1. The existing air manifold piping supports will be revised. If supports are damaged and are required to be replaced, the supports must conform to the following:
 - a. Maximum spacing between supports of 8 feet.
 - b. Resist thrust generated by expansion or contraction of air distribution headers.
 - c. Include Manifold hold down, guide straps, anchor bolts and supporting structure. Guide straps shall resist not less than 550 pounds uplift force per support without exceeding 24,000 psi design stress.
 - d. Supports shall be designed to allow for complete removal from the tank (less anchor bolt) to facilitate cleaning and maintenance of tank bottom. Attach supports to tank floor with one stainless steel expansion type anchor bolt designed for embedment in 3000 PSI Concrete. Size anchor bolts with pull-out strength, design safety factor of 4 or more.
- D. Air Distribution Header (Guide) Supports:
1. Maximum spacing between supports of 7 feet 6 inches.
 2. Allow longitudinal movement of header section to prevent stress buildup in header due to thermal expansion/contraction forces.
 3. Consist of self-limiting hold down and sliding mechanism. Sliding mechanism shall provide minimum resistance to movement of air Distribution Header under full buoyant uplift load. Mechanism shall provide 1/8-inch clearances around header and be self-limiting if mechanism is overtightened. Maximum horizontal thrust of 20 pounds or less shall initiate movement of header relative to mechanism under full buoyant uplift load.
- E. Support: Fixed, consisting of a hold down mechanism and self-limiting clamp device. Clamping shall positively grip air distribution header when tight and be self-limiting to prevent overstressing header if clamp is overtightened.

2.12 HEADER JOINTS

- A. Special Flanged Joints Between Sections of Air Distribution Header:

1. Individual header sections shall rotate independently of adjacent header sections for alignment.
 2. Flanged Joints for Stainless Steel Piping: Face ring-follower flange type with through-bolts, capable of transmitting longitudinal forces caused by expansion and contraction in air distribution header.
- B. Fixed Joints for PVC Piping Spigot section solvent welded to one end of Distribution Header, threaded socket section welded to mating distribution header, and O-ring gasket and threaded screw-on retainer ring. All fixed joints shall have interlocking splines and grooves to prevent rotation of the air distributors. All rotational forces shall be transferred through the interlocking splines. Joints that require the o-ring to transfer rotational forces between splines are not acceptable. If positive locking fixed joints are not used all distributor connections shall be 125 lb flanges.

2.13 PURGE SYSTEM

- A. Furnish PVC drainline at the ends of the headers to match the current existing system configuration. Provide all necessary appurtenances to drain the entire submerged aeration piping system for each grid. The existing stainless purge eductor line (bottom to top of basin) and associated purge valve will be reused.

2.14 APPURTENANCES

- A. Couplings: Van Stone type flanges ASTM A182 stainless steel drilled 150-pound ANSI B 16.5 Standard.
- B. Face Rings: Stainless steel, ASTM A240, Type 304L, inside diameter (ID) drilled 1/16-inch larger than pipe outside diameter (OD).
- C. Gaskets: Neoprene, 45 to 55 durometer; locate at expansion joints and couplings to form an airtight connection at 20 psig minimum.
- D. Miscellaneous: Nuts, bolts, washers, and other nonwelded parts: Type 304 stainless steel, ASTM A240. Threaded assemblies shall be chemically treated or lubricated prior to assembling to prevent galling.
- E. Lifting Lugs: Suitably attached for equipment assemblies and components weighing over 100 pounds.
- F. Anchor Bolts: Type 316 stainless steel, sized by equipment manufacturer, and as specified in Section 05500, METAL FABRICATIONS AND CASTINGS. Coat in accordance with Section 09900, PAINTING AND PROTECTIVE COATINGS.

2.15 SOURCE QUALITY CONTROL

- A. Factory Tests:
1. Furnish advance written notice of test to CONTRACTOR. CONTRACTOR will witness test.
 2. Oxygen Transfer Performance Testing Procedure: As described in most recent ASCE Standard for Measurement of Oxygen Transfer in Clean Water. Use a Theta value of 1.024. CONTRACTOR must approve specific details of test procedure and any deviation from requirements stated below.
 - a. Nonsteady-state re-aeration test shall consist of three re-aeration test runs. SOTR shall be average of SOTRs obtained for each re-aeration test run. Sodium sulfite catalyzed with cobalt chloride shall be used to strip residual dissolved oxygen between reaeration test runs.
 - b. Test Facilities: Provided by manufacturer and subject to approval of CONTRACTOR. Test facility shall be capable of providing sidewater depths and diffuser submergences specified under Article PERFORMANCE REQUIREMENTS. Test aeration tank shall be a minimum of 200 square feet. Diffusers shall be located between 9 inches and 1 foot above bottom of tank.

- c. Diffuser density for each test shall be equal to or less than diffuser density proposed by manufacturer for aeration system being tested. Diffuser density is defined as number of diffusers per square foot of tank area.
 - d. For each system being tested, test airflow rate per diffuser (scfm per diffuser) shall not be greater than airflow rate per diffuser proposed for manufacturer's system.
3. Obtain approval of test reports from CONTRACTOR prior to fabrication or shipment of any equipment.

PART 3 - EXECUTION

3.1 INSTALLATION

- A. In accordance with manufacturer's written instructions.
- B. Accurately place anchor bolts using templates furnished by manufacturer.

3.2 FIELD FINISH

- A. Equipment as specified in Section 09900, PAINTING AND PROTECTIVE COATINGS.
- B. Atmospheric exposed plastic surfaces shall be field prepared and painted per manufacturer's standard coating system.

3.3 FIELD QUALITY CONTROL

- A. Performance Test:
 - 1. Conduct on each aeration basin after installation of new fine bubble diffuser system and manufacturer's inspection.
 - 2. Perform under actual or approved simulated operating conditions. Airflow shall be as measured by plant instrumentation. Calibrate airflow instrumentation as part of testing procedure.
 - 3. Test for a continuous 3-hour period without malfunction.
 - 4. Adjust, realign, or modify units and retest if necessary.
 - 5. Test as follows:
 - a. Pressure Test: Measure air pressure immediately upstream of elbow located at top of each dropleg, and at maximum airflows and submergences stated under Article PERFORMANCE REQUIREMENTS.
 - b. Mixing Test:
 - 1) Perform at minimum airflows stated in Article PERFORMANCE REQUIREMENTS.
 - 2) Select three vertical lines and two depths in each basin.
 - 3) Take three Samples at each of two depths along each vertical line using Van Doren sampler.
 - 4) Independent testing laboratory approved by ENGINEER will perform residue test on each Sample. Mean value of total residue for three Samples at each depth will be used to determine conformance with requirements.
 - 5) All testing and sampling shall conform to procedures established in latest edition of Standard Methods for Examination of Water and Wastewater.
 - c. Leak Test:
 - 1) Fill each basin to approximately one (1) foot with clean water (NPW) above the diffuser. Perform a visual observation and check for leaks. Repair all leaks. This test shall be performed prior to introducing wastewater to the basin.

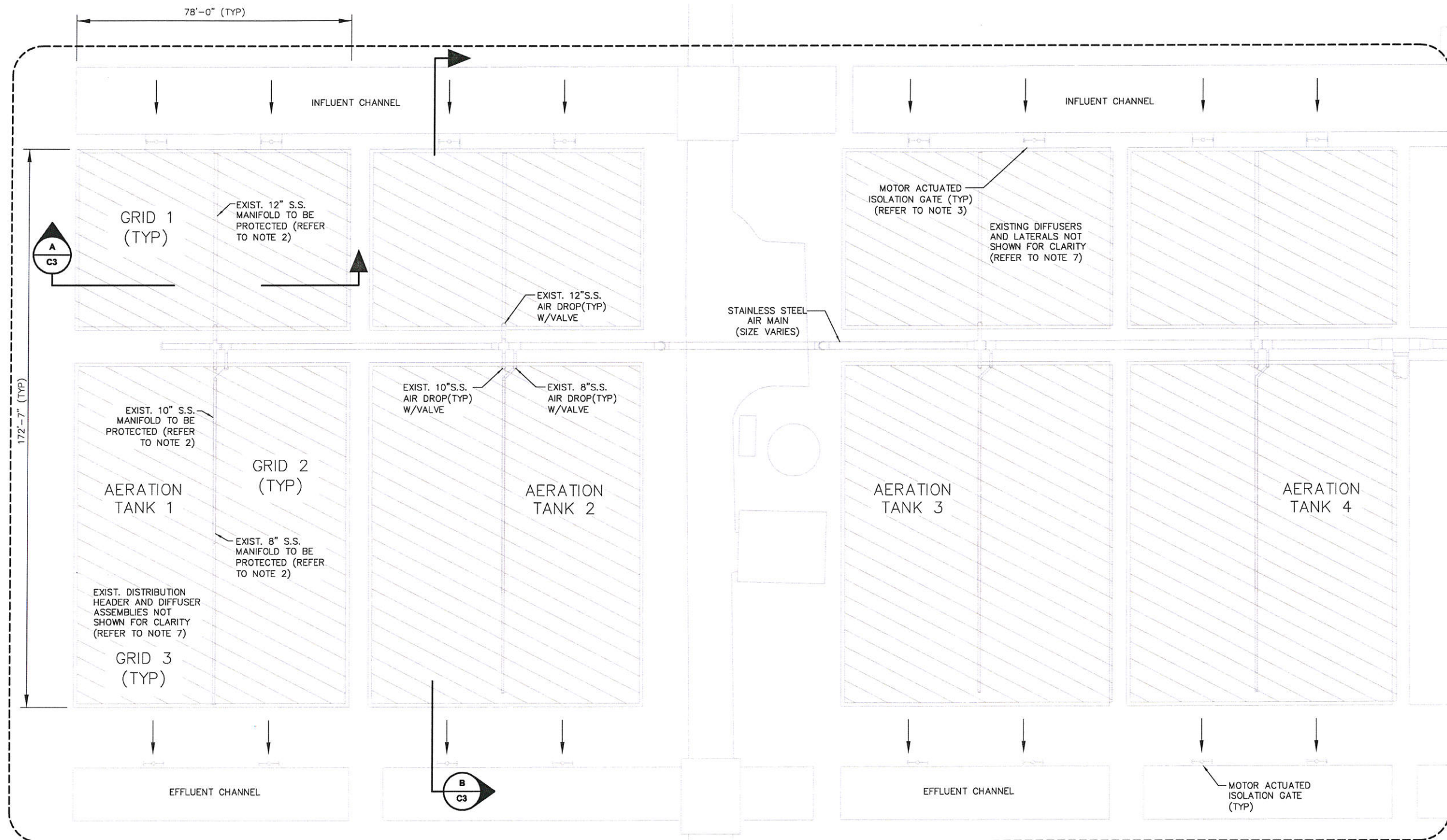
3.4 MANUFACTURER'S SERVICES

- A. MANUFACTURER'S Representative: Present at site during installation and performance testing for each set of two (2) basins. This project includes ten (10) basins. Therefore, multiple trips and visits will be required to fulfill the following requirements for minimum person-days listed below, travel time excluded:
 - 1. One (1) person-day for installation assistance and inspection.

- a. Set of two (2) Basins at a time. Five (5) total trips required.
2. One (1) person-days for performance testing and completion of Manufacturer's Certificate of Compliance.
 - a. Set of two (2) Basins at a time. Five (5) total trips required.
3. One (1) person-days for pre-startup classroom or site training. This may occur during the last performance testing and completion of Manufacturer's Certificate of Compliance trip.

Present at site or classroom designated by CONTRACTOR, for minimum person-days listed below, travel time excluded:

END OF SECTION



NOTES:

1. TYPICAL DEMOLITION PLAN SHOWN FOR BASINS #1, 2, 3, AND 4. TANKS 5 TO 10 NOT SHOWN FOR CLARITY.
2. REMOVE AND DISPOSE OF ALL EXISTING AIR DISTRIBUTION HEADERS, CERAMIC DOME DIFFUSERS, AND SUPPORTS. PROTECT EXISTING STAINLESS STEEL MANIFOLD TO REMAIN.
3. COORDINATE ALL DEMOLITION ACTIVITIES WITH SAWS OPERATION. MAINTAIN UNINTERRUPTED SERVICE AT ALL TIMES. NOTIFY SAWS OPERATION AT LEAST 72 HOURS PRIOR TO ANY SHUTDOWNS. MAINTAIN NO LESS THAN EIGHT(8) BASINS IN SERVICE. THEREFORE DEMOLITION OF NO MORE THAN TWO(2) BASINS AT A TIME IS ALLOWED.
4. TWO (2) MOTOR ACTUATED ISOLATION GATES ARE AVAILABLE AT THE INFLUENT AND EFFLUENT BASIN. OWNER SHALL OPERATE GATES, AND THEY SHALL BE LOCKED OUT/TAGGED OUT WHILE CONTRACTOR IS DOING WORK INSIDE THE BASINS.
5. 12-INCH, 10-INCH, AND 8-INCH STAINLESS STEEL DROP LEG INCLUDES A VALVE FOR ISOLATION AT EACH BASIN.
6. PROTECT AND MAINTAIN ALL EXISTING STAINLESS STEEL PURGE LINES IN ALL TEN (10) BASINS. RECONNECT ALL EXISTING STAINLESS STEEL PURGE LINES TO NEW DIFFUSER SYSTEM. CONNECTION SHALL BE MADE IN ACCORDANCE WITH MANUFACTURER'S RECOMMENDATION.
7. NO RECORD DRAWINGS EXISTS OF DIFFUSER GRID LAYOUT IN FIRST STAGE BASIN (1 TO 10). REFER TO PHOTOGRAPHS INCLUDED IN SHEET C-4 AND ACCOUNTING SUMMARIZED BELOW. INFORMATION NOTED BELOW IS PER BASIN.

1

GRID 1 (12-INCH DROP LEG)	
AIR HEADERS IN GRID =	40
DIFFUSERS/AIR HEADER =	90
TOTAL NUMBER OF DIFFUSERS =	3,600
GRID 2 (10-INCH DROP LEG)	
AIR HEADERS IN GRID =	31
DIFFUSERS/AIR HEADER =	68
TOTAL NUMBER OF DIFFUSERS =	2,108
GRID 3 (8-INCH DROP LEG)	
AIR HEADERS IN GRID =	28
DIFFUSERS/AIR HEADER =	64
TOTAL NUMBER OF DIFFUSERS =	1,792

DEMOLITION ENLARGED PLAN
SCALE: 1/16"=1'-0"

Proj. No.: 5475	Revision	Date	Description
Designed: JG			
Drawn: H3			
Approved: JG			
File:			
	11/12/13		ADDENDUM NO. 1

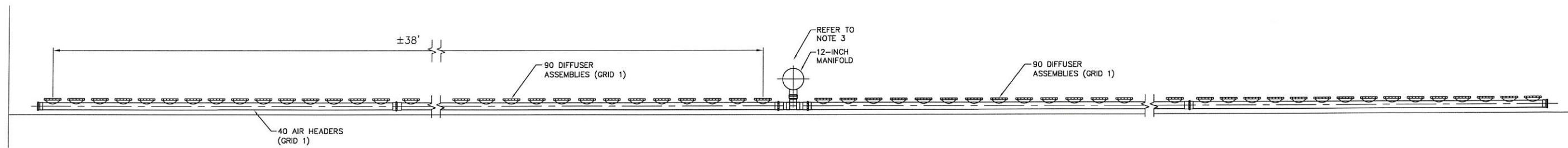


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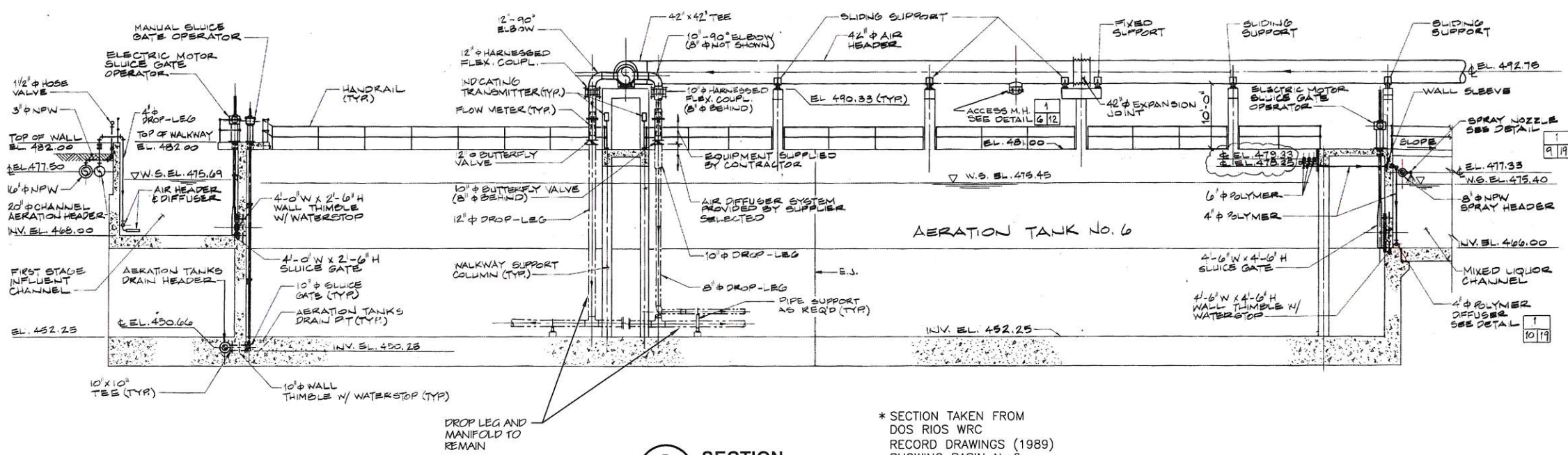
SAN ANTONIO WATER SYSTEM
DOS RIOS FIRST STAGE
DIFFUSER REPLACEMENT
SAWS Job No. 13-6502
San Antonio, Texas

DEMOLITION PLAN
(SHEET 1 OF 3)

C2
SHT 6 of 10



A SECTION
C2 SCALE: N.T.S.



B SECTION
C2 SCALE: N.T.S.

* SECTION TAKEN FROM
DOS RIOS WRC
RECORD DRAWINGS (1989)
SHOWING BASIN No. 6.
BASIN No. 1 TO 10 ARE
SIMILAR. (REFER TO NOTE 7)

NOTES:

1. OWNER SHALL ASSIST IN DRAINING EACH BASIN. ASSISTANCE IS LIMITED TO OPERATING EXISTING DRAIN VALVE(S) WHICH DRAIN BASIN TO PLANT DRAIN SYSTEM. SAWS WILL ALSO PUT A TRASH PUMP IN EACH BASIN TO ASSIST WITH DRAINING.
2. APPROXIMATELY 2 TO 6-INCHES OF WATER, SLUDGE, GRIT AND DEBRIS WILL REMAIN AFTER OWNER DRAINS BASIN. IT IS CONTRACTORS FULL RESPONSIBILITY TO DISPOSE OF ALL REMAINING WATER, SLUDGE, AND GRIT IN EACH BASIN AT THE PLANT'S DRYING BEDS UNDER OWNER'S DIRECTION. DEBRIS, INCLUDING DEMOLISHED DIFFUSER SYSTEM SHALL BE CONTRACTORS RESPONSIBILITY TO DISPOSE OF OFFSITE AT CONTRACTOR'S EXPENSE.
3. PROTECT AND REUSE EXISTING MANIFOLD AND PURGE LINES.
4. REMOVE AND DISPOSE OF ALL PVC AIR DISTRIBUTION HEADER, CERAMIC DIFFUSER ASSEMBLIES, AND PIPING SUPPORTS. CONTRACTOR SHALL MINIMIZE DAMAGE TO BASIN FLOOR. CUT EXISTING DIFFUSER SUPPORTS AT BASE.
5. CLEAN AND POWER WASH FLOOR OF EACH BASIN.
6. REPAIR AND GROUT CONCRETE FLOOR SURFACE AND PREPARE TO INSTALL NEW FINE BUBBLE DIFFUSER SYSTEM.
7. SECTION B IS PROVIDED FOR INFORMATIONAL PURPOSES ONLY. IT IS MEANT TO SHOW A TYPICAL CROSS SECTION FOR THE EXISTING BASINS.

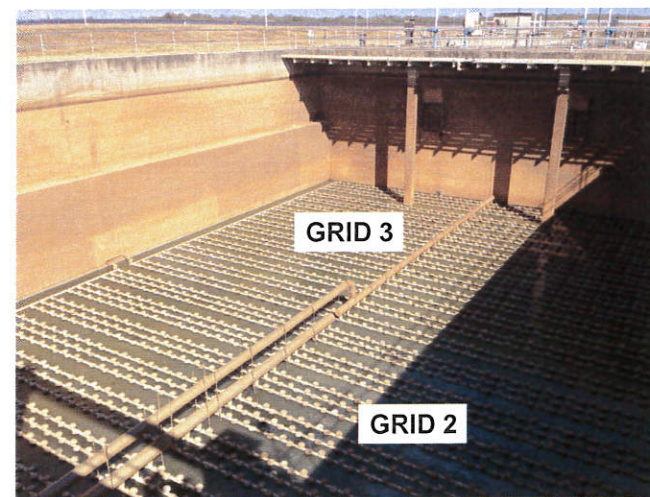
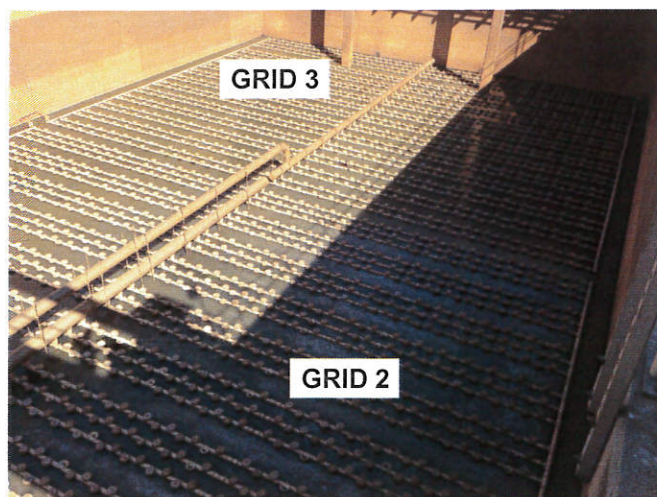
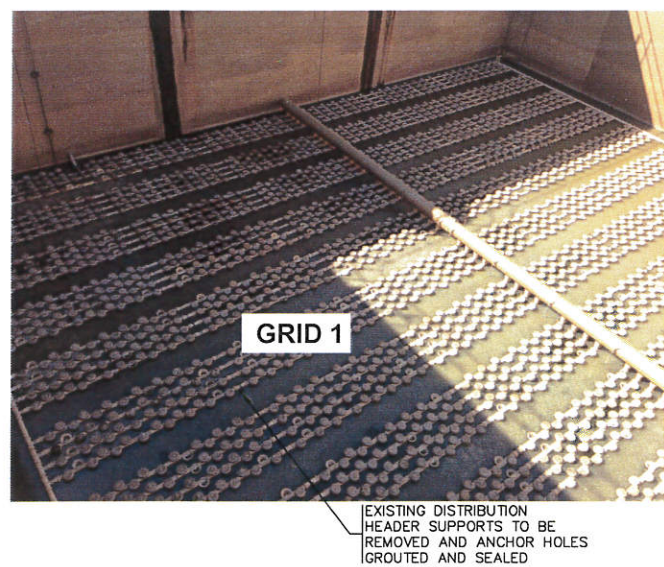
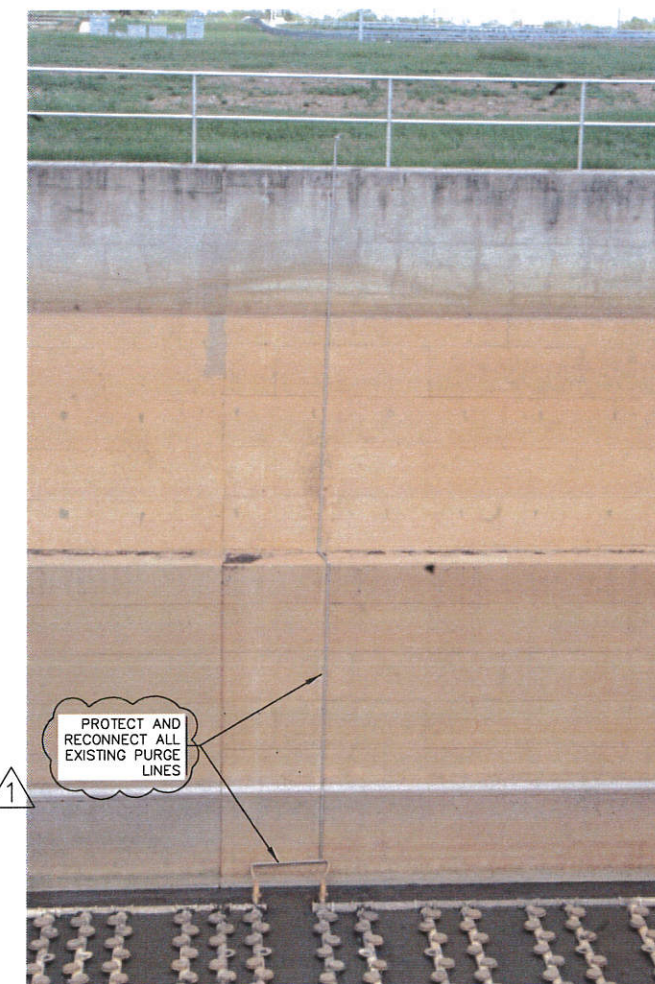
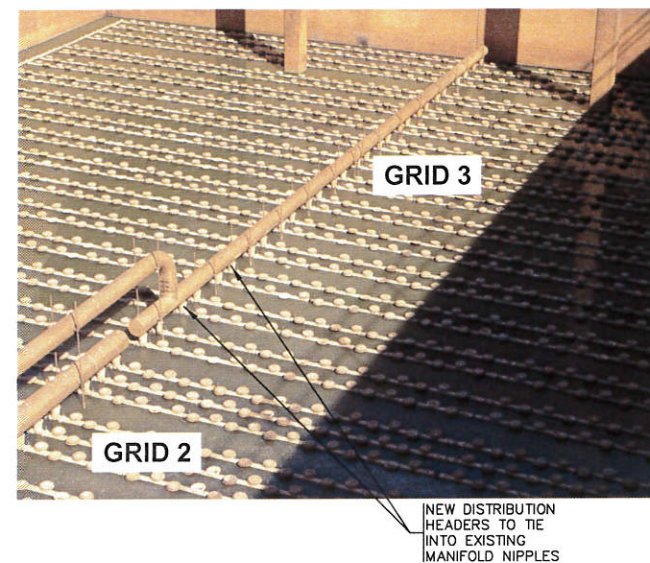
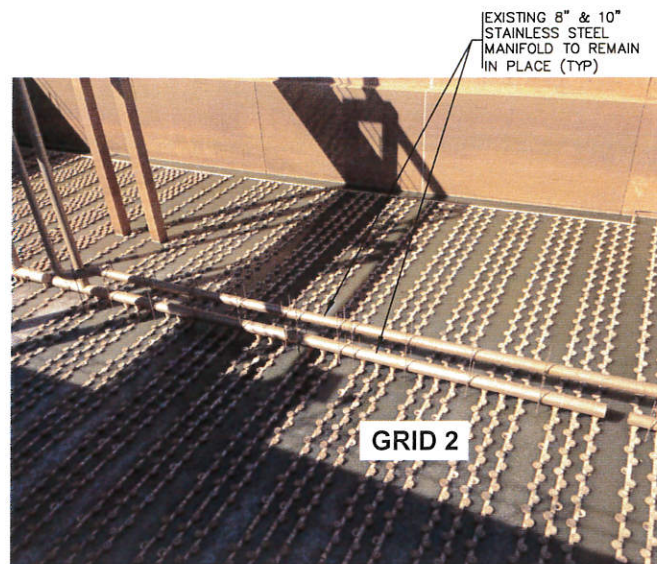
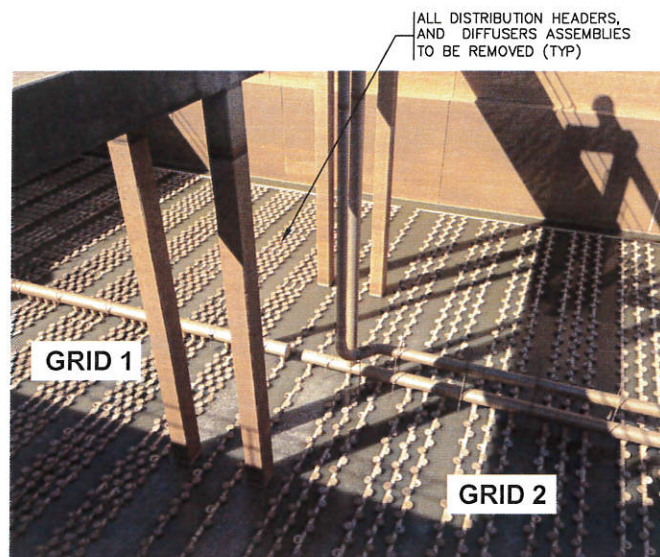
Proj. No.:	5475		
Designed:	JG		
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	11/12/13	ADDENDUM NO. 1	



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San Antonio, Texas 78216 - (210) 493-9200
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SAN ANTONIO WATER SYSTEM
DOS RIOS FIRST STAGE
DIFFUSER REPLACEMENT
SAWS Job No. 13-6502
San Antonio, Texas

DEMOLITION PLAN
(SHEET 2 OF 3)



EXISTING DIFFUSER LAYOUT PHOTOGRAPHS
SCALE: N.T.S.

Proj. No.: 5475			
Designed: JG			
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Revision	Date	Description	
	11/12/13	ADDENDUM NO. 1	



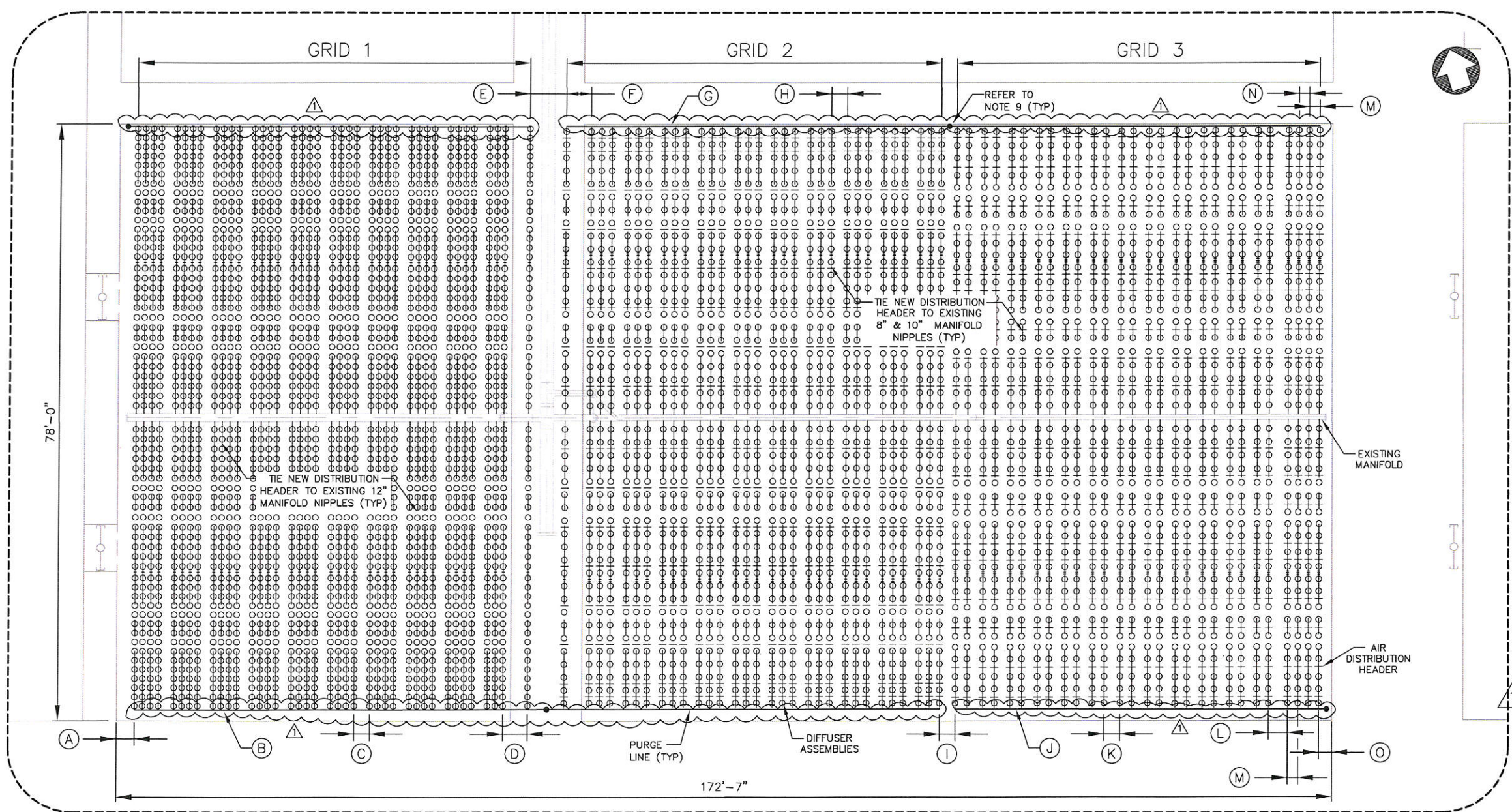
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SAN ANTONIO WATER SYSTEM
 DOS RIOS FIRST STAGE
 DIFFUSER REPLACEMENT
 SAWS Job No. 13-6502
 San Antonio, Texas

DEMOLITION PLAN
(SHEET 3 OF 3)

NOTES:

- DESIGN DRAWINGS AND RELATED DETAILS ARE BASED ON A DIFFUSER LAYOUT AND SYSTEM BY SANITAIRE (XYLEM). IF DESIGN MODIFICATIONS ARE REQUIRED BY THE SELECTION OF AN ANOTHER MANUFACTURER AS DEFINED PER THE SPECIFICATIONS, ANY ASSOCIATED RE-DESIGN AND/OR ANY ADDITIONAL CONSTRUCTION COSTS SHALL BE AT THE CONTRACTOR'S EXPENSE AND AT NO ADDITIONAL COST TO THE OWNER.
- REFER TO SPECIFICATION SECTION 11084 FOR GRID CONFIGURATION.
- REUSE EXISTING STAINLESS STEEL MANIFOLD. CONTRACTOR SHALL BE FULLY RESPONSIBLE FOR PROTECTING THE STAINLESS STEEL MANIFOLD FROM DAMAGE. OWNER WILL INSPECT MANIFOLD AND IF FOUND TO BE DESTROYED OR DAMAGE; CONTRACTOR SHALL BE RESPONSIBLE FOR REPLACING AT CONTRACTOR'S EXPENSE AND AT NO ADDITIONAL COST TO THE OWNER.
- FIELD VERIFY ALL DIMENSIONS BEFORE ORDERING ANY EQUIPMENT. THIS INCLUDES BUT IS NOT LIMITED TO STAINLESS STEEL PIPE NIPPLE DIAMETER TO CONNECT AIR DISTRIBUTION HEADERS, CONFIRM NUMBER OF HEADER CONNECTION POINTS AND SPACING, AND OVERALL TANK DIMENSIONS.
- PROVIDE AND INSTALL NEW AIR DISTRIBUTION HEADERS, DIFFUSERS, AND SUPPORTS.
- DETAILED SHOP DRAWINGS DEPICTING THE LOCATION AND SPACING OF DIFFUSERS, ANCHORS, GUIDE SUPPORTS, FIXED AND EXPANSION JOINTS, AND DRAINS SHALL BE PROVIDED FOR REVIEW AS WELL AS ANY OTHER REQUIRED INFORMATION NOTED IN THE SPECIFICATIONS.
- THOROUGHLY CLEAN AND REPAIR TANK FLOOR TO PREPARE FOR INSTALLATION OF NEW DIFFUSER SYSTEM. ANY DAMAGE TO THE TANK FLOOR DURING THE DEMOLITION PROCESS MUST BE REPAIRED. ALL HOLES MUST BE FILLED AND GROUTED. PRESSURE WASH BASIN FLOOR PRIOR TO APPLYING GROUT.
- RECORD DRAWING INFORMATION FOR EXISTING GRID LAYOUT IS NOT AVAILABLE. TABLE A SHOWS SPACING DIMENSIONS/BETWEEN AIR DISTRIBUTION HEADERS IN EACH RESPECTIVE GRID. THE DIAMETER OF THE EXISTING NIPPLE/CONNECTION PORT IS 4.50-INCHES. THIS IS PROVIDED FOR INFORMATIONAL PURPOSES ONLY AND IT SHALL BE CONTRACTOR'S RESPONSIBILITY TO FIELD VERIFY PRIOR TO ORDERING ANY EQUIPMENT OR SUPPLIES.
- THE PURGE SYSTEM SHALL MATCH THE EXISTING GRID CONFIGURATION. A MANIFOLD (DRAIN LINE) CONNECTS ALL HEADERS ALONG THE EXTREME ENDS OF THE GRID SYSTEM. FOUR PURGE LINES ARE PROVIDED PER BASIN AND THESE LINES ARE INTERCONNECTED AS FOLLOWS:
 - GRID NO. 2 AND 3 ARE INTERCONNECTED TO A SINGLE PURGE LINE ON THE NORTH END OF THE BASIN.
 - GRID NO. 1 AND 2 ARE INTERCONNECTED TO A SINGLE PURGE LINE ON THE SOUTH END OF THE BASIN.
 - GRID 1 IS CONNECTED TO A SINGLE PURGE LINE ON THE NORTH END.
 - GRID 3 IS CONNECTED TO A SINGLE PURGE LINE ON THE SOUTH END.
 FIELD VERIFICATION IS REQUIRED TO MATCH THE EXISTING SYSTEM DESIGN. THE STAINLESS STEEL PURGE MAIN FROM THE BOTTOM OF THE BASIN TO THE TOP OF THE STRUCTURE SHALL BE RE-USED. THE EXISTING VALVE SHALL ALSO BE REUSED. PROVIDE THE MANIFOLD (DRAIN LINE) THAT INTERCONNECTS THE ENDS OF THE HEADERS.



DIFFUSER LAYOUT PLAN BASIN NO. 1 (TYP*)
SCALE: 1/8"=1'-0"

* BASIN NO. 1 SHOWN, BASINS NO. 2 THROUGH 10 NOT SHOWN ARE IDENTICAL

TABLE A
EXISTING DIFFUSER SYSTEM GRID

GRID 1	
KEY POINT	DIM (INCHES)
A	28
B	12
C	29 1/2
D	42 1/2
E	30

* ALL DIM CENTER TO CENTER

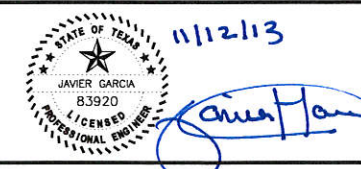
GRID 2	
KEY POINT	DIM (INCHES)
F	42 1/2
G	16 3/4
H	30 1/4
I	31 1/4

* ALL DIM CENTER TO CENTER

GRID 3	
KEY POINT	DIM (INCHES)
J	19 1/4
K	27
L	42
M	24 1/2
N	27
O	28

* ALL DIM CENTER TO CENTER

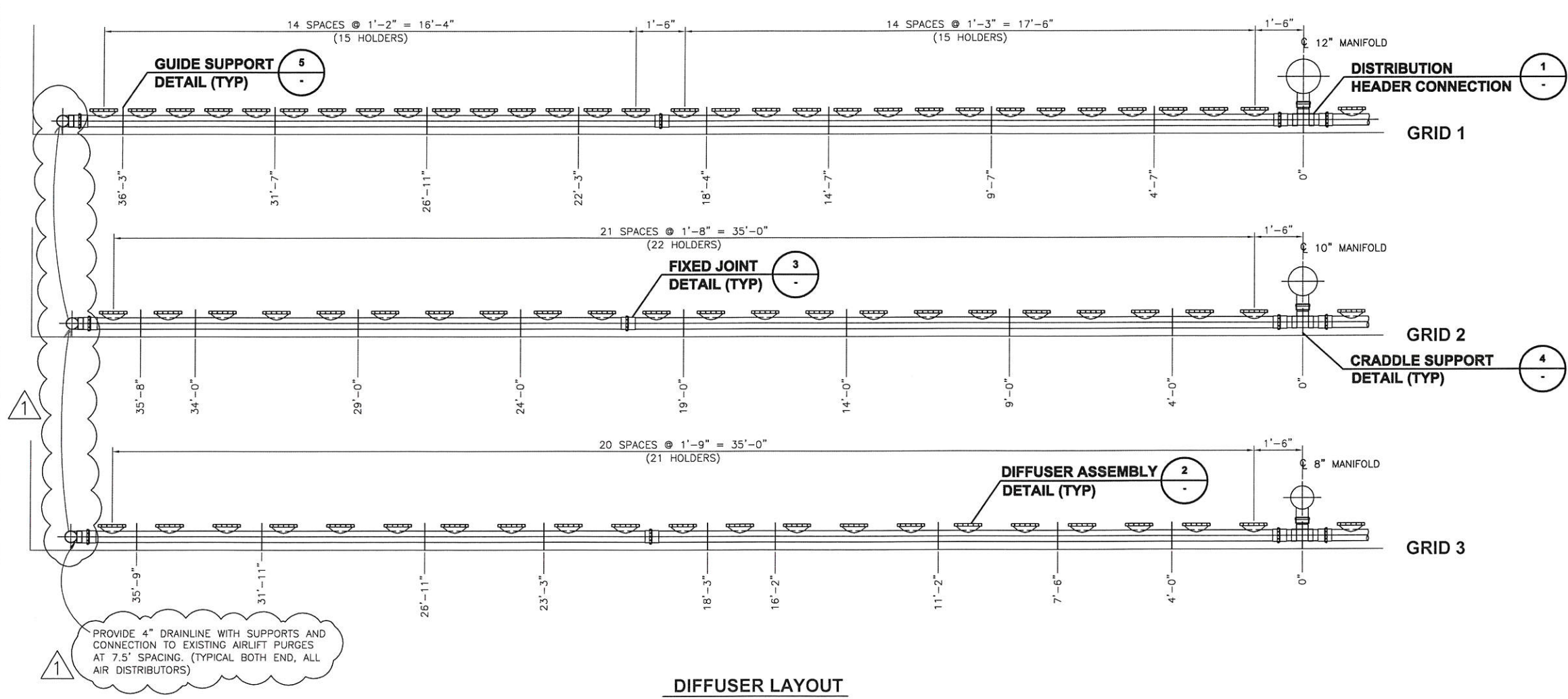
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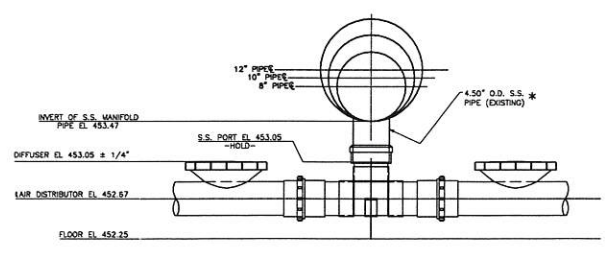
SAN ANTONIO WATER SYSTEM
DOS RIOS FIRST STAGE
DIFFUSER REPLACEMENT
SAWS Job No. 13-6502
San Antonio, Texas

**FIRST STAGE AERATION
BASIN DIFFUSER
LAYOUT (TYP)**

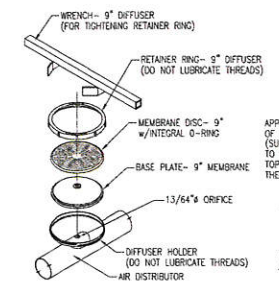


NOTES:
 1. DETAILS ON THIS SHEET WERE PROVIDED BY SANITAIRE (XYLEM).

DIFFUSER LAYOUT

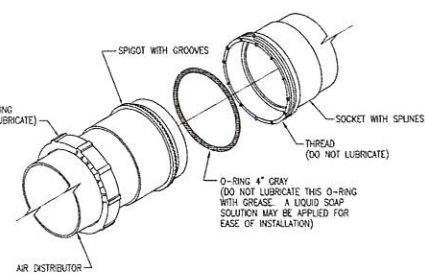


1
DISTRIBUTION HEADER CONNECTION
 N.T.S.

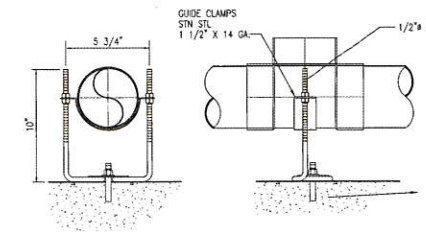


2
9" EPDM DIFFUSER ASSEMBLY DETAIL FB-3
 N.T.S.

APPLY A VERY LIGHT COATING OF SILICONE BASED GREASE (SUPPLIED BY XYLEM) TO THE UNDERSIDE OF THE TOP SEALING SURFACE OF THE RETAINER RING.
LUBRICATION DETAIL

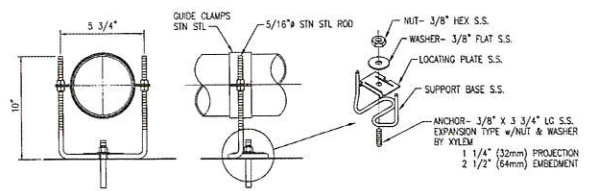


3
FIXED JOINT DETAIL FB-10A
 N.T.S.



4
CRADLE SUPPORT DETAIL NS-1
 N.T.S.

NUT - 3/8" HEX S.S.
 WASHER - 3/8" FLAT S.S.
 LOCATING PLATE S.S.
 SUPPORT BASE S.S.
 ANCHOR - 3/8" X 3 3/4" LG S.S. EXPANSION TYPE w/NUT & WASHER BY XYLEM
 1 1/4" (32mm) PROJECTION
 2 1/2" (64mm) EMBEDMENT



5
GUIDE SUPPORT DETAIL SUP-1
 N.T.S.

* FIELD VERIFY AND CONFIRM ALL DIMENSIONS PRIOR TO ORDERING DIFFUSER SYSTEM. ADJUST AS NECESSARY.

Proj. No.:	5475		
Designed:	JG		
Drawn:	H3		
Approved:	JG		
File:			
Revision	11/12/13	ADDENDUM NO. 1	Description



SHERFEY ENGINEERING S.A., L.L.C.
 8400 Blanco Road - Suite 201
 San Antonio, Texas 78216 - (210) 493-9200
 T.B.P.E. FIRM REGISTRATION No. F-8038

SAN ANTONIO WATER SYSTEM
 DOS RIOS FIRST STAGE
 DIFFUSER REPLACEMENT
 SAWS Job No. 13-6502
 San Antonio, Texas

DIFFUSER DETAILS