BEAUMONT-CHERRY VALLEY WATER DISTRICT

WELL NO. 24 PUMPING UNIT REPAIR AND WELL REHABILITATION
CONTRACT FOR PUBLIC WORK

1. Parties and Date

This Contract is entered into this ____ day of _____, 2021, between the BEAUMONT-CHERRY VALLEY WATER DISTRICT, a California Irrigation (Special) District ("District"), and ("Contractor"), for the Work described as follows: Removing, Refurbishing, Furnishing, and Installing "Well No. 24 Pumping Unit Repair and Well Rehabilitation".

2. Consideration

In consideration of the mutual covenants hereinafter contained, District and Contractor agree to comply with the terms of this Contract and to faithfully perform their duties hereunder.

3. Duties of Contractor

3.1 Contractor agrees to furnish all labor, tools, and equipment necessary to complete the work hereinafter described. Contractor hereby guarantees that all work to be performed by it hereunder will be performed in a good and workmanlike manner. The Work to be performed by Contractor is described on Exhibit "A" attached hereto and by this reference incorporated herein. Pursuant to Public Contract Code Section 3300, Contractor shall possess an active and current Contractor's License, Class A or C-57, which shall be maintained throughout the term of this Contract.

3.2 Contractor shall complete all work required herein on or before **May 20, 2021**.

3.3 Contractor shall furnish District with labor and material releases from all subcontractors performing work on, or furnishing materials for, the job prior to final payment by District.

3.4 ~~Contractor shall furnish a performance bond in the amount of the full contract price, a payment bond in the amount of 50% of the full contract price, and a maintenance bond in the amount of the full contract price issued in forms consistent with industry standards by United States Treasury authorized bonding companies as approved by District, prior to commencement of the Work. Bonds shall be furnished on the forms attached at the back of this Contract, if Additive Bid Item is exercised. Contractor hereby guarantees that all materials and workmanship furnished by him under the Contract will meet fully all requirements thereof as to quality or workmanship and of materials furnished by him. Contractor hereby agrees to replace all materials and pay for all installation costs made necessary by defects in materials or workmanship supplied by him that become evident within twelve (12) months after the date of final payment and to pay for all work necessary to remove, restore, and replace the materials to full serviceability and to full compliance with the requirements of the~~

~~Contract, including the test requirements for any part of the materials furnished hereunder which, during said twelve (12) month period, are found to be deficient with respect to any provision of the Contract. Contractor also agrees and does hereby hold District harmless from claims of any kind which may arise from injury or damage due to said defects. Contractor shall replace all defective materials promptly upon receipt of written orders for same from District. If Contractor fails to replace all defective materials promptly, District may secure the service of others to do this work, and Contractor and his surety shall be liable to District for the cost, including removal and replacement thereof. The guarantees, indemnifications and agreements set forth above shall continue to be secured following completion of the project by Contractor providing a maintenance bond in the amount of 100% of the full contract price on a form commonly used in the industry and acceptable to the District, and for this purpose said bond shall remain in force for a period of one (1) year after the date of the final payment.~~

3.5 Copies of the prevailing rate of per diem wages for each craft, classification or type of worker needed to execute this Contract are available to interested parties upon request. If the total amount of this Contract is $1,000 or more, Contractor agrees to pay such prevailing rates to each workman needed to execute the work required under this Contract and further agrees to comply with the penalty provisions of Section 1775 of the Labor Code in the event of its failure to pay prevailing rates. Pursuant to Section 1727 of the Labor Code, all wages and penalties withheld for failure of Contractor to pay such per diem wages shall be transferred by District to the State Labor Commissioner for disbursement, should Contractor fail to bring suit for recovery within ninety (90) days after completion of the Contract or acceptance of the work.

3.6 Contractor shall pay travel subsistence payments to each workman needed to execute the work, as such travel and subsistence payments are defined in the applicable collective bargaining agreements filed in accordance with Section 1773.8 of the Labor Code.

3.7 When Contractor employs workmen in an apprenticeable craft or trade, Contractor shall comply with the provisions of Section 1777.5 of the Labor Code with respect to the employment of properly registered apprentices upon public works. The primary responsibility for compliance with said section for all apprenticeable occupations shall be with Contractor.

3.8 Contractor is advised that eight (8) hours labor constitutes a legal day's work. Pursuant to Section 1813 of the Labor Code, Contractor shall forfeit a penalty of $25.00 per worker for each day that each worker is permitted to work more than eight (8) hours in any one calendar day and forty (40) hours in any one calendar week, except when payment for overtime is made at not less than one and one-half (1-1/2) times the basic rate for that worker.

3.9 In accordance with the requirements of Labor Code Section 1776, Contractor shall keep accurate payroll records on forms provided by the Division of Labor Standards Enforcement, or keep payroll records containing the same information required by such forms, and shall make any such records available for inspection.

3.10 Contractor shall keep himself fully informed of all laws and regulations in any manner affecting the performance of the Contract work, and shall indemnify District and District's agents against any liability arising from violation of any such law or regulation.

3.11 Contractor shall at its own expense maintain at least the following insurance coverages throughout the performance of this Contract:

(a) Worker's compensation insurance coverages for all persons employed or to be employed in the performance of this Contract, which insurance shall at all times be maintained in strict accordance with the requirements of the current California Worker's Compensation Insurance Laws.

(b) General commercial liability insurance coverage of at least $1,000,000 per occurrence and $2,000,000 general aggregate insuring Contractor and naming District as an additional insured for all claims for bodily injury, personal injury and property damage, arising out of or in connection with any operations under this Contract.

(c) Automobile liability insurance coverage with a limit of liability of $1,000,000 per accident Combined Single Limit.

(d) Course of construction insurance with a limit of liability equal to the full contract amount, unless waived in writing by District.

Prior to commencement of any work under this Contract, Contractor shall obtain and furnish to District a Certificate of Insurance as to each type of insurance required, which certificate shall be on the form provided to Contractor by District.

3.12 Contractor shall be responsible for all loss and damage which may arise out of the nature of the work agreed to herein, or from the action of the elements, or from any unforeseen difficulties which may arise or be encountered in the prosecution of the work until same is fully completed and accepted by District. However, Contractor shall be responsible for damage proximately caused by an act of God within the meaning of Section 4150 of the Government Code only to the extent of five percent (5%) of the contract amount.

3.13 Contractor shall indemnify and hold harmless District, its agents and employees, from and against all claims, damages, losses and expenses, including attorney's fees, arising out of or resulting from performance of work under this Contract and which are attributable to bodily injury, sickness, disease or death, or to injury to or destruction of tangible property, including the loss of use resulting therefrom, caused in whole or in part by any negligent or willful act or omission of the Contractor or anyone directly or indirectly employed by him or for whose acts he may be liable.

3.14 Contractor shall be responsible for securing and paying for all permits and licenses necessary to perform the work described herein.

3.15 If the work entails trenching of five (5) feet or more in depth, Contractor shall make adequate provisions for shoring, bracing, sloping, or other protection from the hazard of caving ground.

3.16 As required by Public Contract Code Section 7104, Contractor shall promptly, and prior to disturbance of conditions, notify District of (a) any material discovered in excavation that Contractor believes to be a hazardous waste that is required to be removed to a Class I, Class II, or Class III disposal site; (b) subsurface or latent physical conditions at the site differing from those indicated by District; and (c) unknown physical conditions of an unusual nature at the site, significantly different from those ordinarily encountered in such contract work. Upon notification, District will promptly investigate the conditions to determine whether a change order is appropriate. In the event of a dispute, Contractor shall not be excused from any scheduled completion date but will retain all rights provided by the Contract or by law for resolving the dispute.

4. <u>District's Responsibilities</u>

4.1 As consideration for performance of the work required herein, District agrees to pay Contractor the total contract amount of _____, provided that such amount shall be subject to adjustment pursuant to written change orders signed in advance by District.

4.2 Contractor shall submit progress payment invoices to District at the end of each calendar month during the term of the Contract. All progress payment invoices shall be subject to approval by the District prior to payment by the District. Such progress payment invoices shall be made in accordance with Section 20104.50 of the California Public Contract Code, requiring District to make a determination of suitability of the payment request within seven (7) days of receipt of such request and further requiring District to make payment on properly submitted progress payment invoices within thirty (30) days in order to avoid interest payments to the Contractor upon such amounts.

4.3 When the Contractor determines that he has completed the work required herein, Contractor shall so notify District in writing and shall furnish all labor and material releases required by Section 3.3 of this Contract. District shall thereupon inspect the work and, if acceptable, shall pay to Contractor the contract price, less any amount which District may be authorized or directed by law to retain. Payment of retention proceeds due to Contractor shall be made no later than sixty (60) calendar days after such final acceptance by District, in accordance with Section 7107 of the California Public Contract Code. Contractor is hereby alerted to provisions of Section 7107 of the California Public Contract Code, requiring Contractor to pay each of its subcontractors from whom retention has been withheld, each subcontractor's share of the retention received, within ten (10) calendar days from the time that all or any portion of such retention proceeds are received by Contractor from District. District will allow Contractor to substitute qualified securities, deposited with District or a qualified escrow agent, in lieu of contract retentions in accordance with provisions of California Public Contract Code, Section 22300. The escrow agreement used in such instance shall be substantially similar to that form set out in Section 22300 of the Public Contract Code. District will provide this form to the Contractor upon request.

4.4 To the extent required by Section 4215 of the Government Code, District shall compensate Contractor for the costs of locating and repairing damage to underground utility facilities

not due to the failure of Contractor to exercise reasonable care, and removing or relocating underground utility facilities not indicated in the construction drawings and for equipment necessarily idled during such work. Contractor shall not be assessed liquidated damages for delay caused by failure of District to provide for removal or relocation of such utility facilities.

5. Contractual Relationship

It is expressly agreed that Contractor is an independent contractor, and neither Contractor nor any of its employees shall be deemed employees of District. Contractor shall have full supervision over all workers on the job, including equipment, drivers, and operators, and neither District nor any of District's agents shall be held responsible for any action of Contractor under this Contract. Should any question arise regarding the meaning or import of any of the provisions of this Contract or written or oral instructions from District, the matter shall be referred to District's General Manager, whose decision shall be binding upon Contractor.

6. Assignment Forbidden

Contractor shall not assign or transfer this Contract or any right, title or interest herein without the prior written consent of District. If contractor attempts an assignment of this Contract or any right or interest herein, District may, at its option, terminate and revoke the Contract and shall thereupon be relieved from any and all obligations to Contractor or his assignee or transferee.

7. Time of Essence

Time is of the essence in the performance of this Contract. Contractor will be assessed liquidated damages in the amount of $200.00 per calendar day for each day of unauthorized delay in completing performance.

8. Termination

This Contract may be terminated by District at any time by giving Contractor seven (7) days advance written notice. In the event of termination by District for any reason other than the fault of the Contractor, District shall pay Contractor for all work performed up to that time as provided herein. In the event of breach of the Contract by Contractor, District may terminate the Contract immediately without notice, may reduce payment to the Contractor in the amount necessary to offset District's resulting damages, and may pursue any other available recourse against Contractor.

9. Dispute Resolution

Any separate demand by Contractor for the payment of money or damages shall be resolved in accordance with Public Contract Code Sections 20104 et seq., if they apply. Copies of those sections are available upon request and by this reference are incorporated herein.

10. Attorney's Fees and Costs

If any action is necessary to enforce or interpret the terms of this Contract, the prevailing party shall be entitled to recover from the losing party attorney's fees in an amount determined to be reasonable by the court, together with costs and necessary disbursements.

11. Notices

Any notice required to be given under the terms of this Contract shall be sufficient and complete upon depositing the same in the United States mail, with postage prepaid and addressed as follows:

DISTRICT	**Contractor**
Beaumont-Cherry Valley Water District P.O. Box 2037 560 Magnolia Avenue Beaumont, CA 9223	

12. Counterparts

This Contract shall be executed in two (2) counterparts, each of which shall constitute an original.

13. Certification of License

Contractor certifies that as of the date of execution of this contract, Contractor has a current contractor's license of the classification indicated below Contractor's signature hereto.

IN WITNESS WHEREOF, each of the parties has caused this Contract to be executed on the day and year first above written.

ATTEST:

_____ _____

(Contractor) Secretary

By: _____

Title: _____

_____

Contractor's License Number & Classification

BEAUMONT-CHERRY VALLEY WATER DISTRICT

ATTEST:

By: _____

Daniel K. Jaggers
General Manager

Andy Ramirez
Secretary to the Board

CERTIFICATION

LABOR CODE – SECTION 1861

I, the undersigned Contractor, am aware of the provisions of Section 3700 et seq. of the Labor Code which requires every employer to be insured against liability for Worker's Compensation or to undertake self-insurance in accordance with the provisions of the Code, and I, the undersigned Contractor, agree to and will comply with such provisions before commencing the performance of the work of this Contract.

_____
Contractor

By: _____

Title: _____

Exhibit A

Well 24 Pumping Unit Repair Work
Scope of Work Fee Schedule

Well 24 Pumping Unit Rehabilitation
And Well Rehabilitation
Special Requirements

EXHIBIT A

BEAUMONT-CHERRY VALLEY WATER DISTRICT
WELL PLANT 24 PUMPING UNIT REPAIR WORK

SCOPE OF WORK-FEE SCHEDULE

The undersigned hereby proposes to furnish all labor, materials, equipment and methods necessary for constructing all Work specified in the Scope of Work-Fee Schedule amounts set forth below, and commence work within one (1) week of Notice to Proceed. The undersigned also acknowledges that all prices include sales tax and all other applicable taxes and fees. See attached data sheets for details related to well and pumping plant. The existing Well 24 equipment is described in the Work-Fee Schedule below and represents the actual equipment to the best of District knowledge. The District reserves the right to delete or modify any of the Work-Fee Schedule Items based on actual equipment needing replacement (i.e. such as column, tube, and line shaft).

Item	Description	Qty	Unit	Unit Cost	Amount
101	Permits, insurance, and management.	1	L.S.	N/A	$
102	Mobilize and demobilize well pump removal crew and equipment necessary to remove and reinstall a 600 hp well pumping unit and motor.	1	L.S.	N/A	$
103	Remove and inspect pump column, tube, and shaft. Tag well to determine presence/amount of fill. Haul tube and shaft from the District's Well 24 site to the Vendor's yard for evaluation (as necessary). Inspect and provide comments and/or recommendations regarding conditions and serviceability of pump column, tube and shaft.	540	L.F.	$	$
104	Remove pumping unit (16 CMC 8-Stage) and all related work	1	L.S.	N/A	$
105	Haul Well 24's 600 hp electric motor to the District's Yard at 815 12th Street Beaumont CA 92223	1	L.S.	N/A	$
106	Haul bowl assembly to Vendor's yard for evaluation. Disassemble and inspect pump bowl assembly. Measure and record wear and damage. Provide report and recommendations to Owner. Return disassembled bowl to contractor's yard for storage (if not rebuilt as part of this contract)	1	L.S.	N/A	$
107 (See 107 B Alternative Bid Item Below)	Furnish and install 540' of new 3-1/2" Enclosing Tube (5' nominal length), 2-3/16" Line shaft, C1045 and bearings	540	L.F.	$	$
108	Bail well clean. Payment will be based on actual time required to remove fill.	8	Hrs	$	$

EXHIBIT A

BEAUMONT-CHERRY VALLEY WATER DISTRICT
WELL PLANT 24 PUMPING UNIT REPAIR WORK

SCOPE OF WORK-FEE SCHEDULE

The undersigned hereby proposes to furnish all labor, materials, equipment and methods necessary for constructing all Work specified in the Scope of Work-Fee Schedule amounts set forth below, and commence work within one (1) week of Notice to Proceed. The undersigned also acknowledges that all prices include sales tax and all other applicable taxes and fees. See attached data sheets for details related to well and pumping plant. The existing Well 24 equipment is described in the Work-Fee Schedule below and represents the actual equipment to the best of District knowledge. The District reserves the right to delete or modify any of the Work-Fee Schedule Items based on actual equipment needing replacement (i.e. such as column, tube, and line shaft).

Item	Description	Qty	Unit	Unit Cost	Amount
109	Clarify water in preparation for initial video log. Perform color video log of well and provide comments and recommendations to District. Camera shall be capable of lateral (side) as well as axial viewing. Provide DVD (2 copies) to District. (Survey shall be conducted by an independent party approved by District).	1	L.S.	N/A	$
110	Wire brush well from ground surface to total depth of well (18" diameter from 0' to 1,500' below ground surface) and bail well clean.	24	Hrs.	$	$
111	Mechanically develop (swab) perforated area of well from top of perforations to total depth of well (18" diameter from 540' to 1,500' below ground surface) and bail well clean	36	Hrs.	$	$
112 (See 112 B Alternative Bid Item Below)	Furnish new replacement bowl (16CMC 8-Stage) assembly with ductile iron double bolted construction (as required to meet pressure ratings required in Specification Section 11320). Bowl assembly shall be Flowserve, Goulds, or District approved equal	1	L.S.	N/A	$
113	Inspect and refurbish existing pump discharge head as necessary and install new shaft bushing, as required	1	L.S.	N/A	$

EXHIBIT A

BEAUMONT-CHERRY VALLEY WATER DISTRICT
WELL PLANT 24 PUMPING UNIT REPAIR WORK

SCOPE OF WORK-FEE SCHEDULE

The undersigned hereby proposes to furnish all labor, materials, equipment and methods necessary for constructing all Work specified in the Scope of Work-Fee Schedule amounts set forth below, and commence work within one (1) week of Notice to Proceed. The undersigned also acknowledges that all prices include sales tax and all other applicable taxes and fees. See attached data sheets for details related to well and pumping plant. The existing Well 24 equipment is described in the Work-Fee Schedule below and represents the actual equipment to the best of District knowledge. The District reserves the right to delete or modify any of the Work-Fee Schedule Items based on actual equipment needing replacement (i.e. such as column, tube, and line shaft).

Item	Description	Qty	Unit	Unit Cost	Amount
114	Clarify water in preparation for post brushing and development video log. Perform color video log of well and provide video inspection comments to District. Camera shall be capable of lateral (side) as well as axial viewing. Provide DVD (2 copies) to District. (Survey shall be conducted by an independent party approved by District).	1	L.S.	N/A	$
115	Furnish and install 540' of new 12" Column pipe with heavy wall Column, 0.375" Wall (20' nominal length with Couplings).	27	EA	$	$
116	Install pumping unit bowl assembly, and all related work	1	L.S.	N/A	$
117	Install 540' of column, tube and shaft, discharge head, and appurtenances including leveling pumping unit (as required) and all related work	540	L.F.	$	$
118	Pick up District's new 600 hp electric motor from the District's electrical repair vendor, Sulzer, and install said 600 hp electric motor including leveling (centering) of motor on pump shaft, reconnection of existing motor power feed and control conductors to existing motor control equipment for the lump sum of	1	L.S.	N/A	$
119	Provide coordination (as necessary) with District Staff of installation of District furnished and installed Baker type tank for well water clarification (prior to off site discharge). District to furnish temporary tank and piping as required	1	L.S.	N/A	$

EXHIBIT A

BEAUMONT-CHERRY VALLEY WATER DISTRICT
WELL PLANT 24 PUMPING UNIT REPAIR WORK

SCOPE OF WORK-FEE SCHEDULE

The undersigned hereby proposes to furnish all labor, materials, equipment and methods necessary for constructing all Work specified in the Scope of Work-Fee Schedule amounts set forth below, and commence work within one (1) week of Notice to Proceed. The undersigned also acknowledges that all prices include sales tax and all other applicable taxes and fees. See attached data sheets for details related to well and pumping plant. The existing Well 24 equipment is described in the Work-Fee Schedule below and represents the actual equipment to the best of District knowledge. The District reserves the right to delete or modify any of the Work-Fee Schedule Items based on actual equipment needing replacement (i.e. such as column, tube, and line shaft).

Item	Description	Qty	Unit	Unit Cost	Amount
120	Provide start up and performance testing of all new and existing equipment, controls and instrumentation for the lump sum of	1	L.S.	N/A	$
121	Disinfect well in accordance with Specification Section 11320, State of California Department of Health Service requirements and in accordance with AWWA procedures for the lump sum of	1	L.S.	N/A	$

TOTAL AMOUNT (Sum of Fee Items 101 through 121):

_____ Dollars $_____
(words) (figures)

Vendor hereby acknowledges that all bid prices include any amounts payable by District for taxes which may result from this proposal.

Vendor's Authorized Representative

_____ _____
Vendor (Company Name) Signature

_____
Name (Print)

_____
Title (Print)

ALTERNATIVE BID ITEM 107 B and 112

Item	Description	Qty	Unit	Unit Cost	Amount
107 B (See Bid Item 107 above)	Disassemble, inspect, recondition, and reassemble 540' of 2-3/16" line shaft and 3-1/2" enclosing tube	540	L.F.	$	$

112 B (See Bid Item 112 above)	Refurbish and rebuild existing pumping unit (16CMC 8-Stage). Contractor shall anticipate that pumping unit rebuild will require new impellers, bearings, etc.	1	L.S.	N/A	$

ADDITIVE FEE SCHEDULE: CHEMICAL WELL REHABILITIATION

Item	Description	Qty	Unit	Unit Cost	Amount
201	Provide chemical well rehabilitation in accordance with Specification Section 11330	1	L.S.	N/A	$

ADDITIVE FEE SCHEDULE: PROJECT BOND

Item	Description	Qty	Unit	Unit Cost	Amount
301	Project Payment Bond equal to 50% of Full Contract Amount	1	L.S.	N/A	$
302	Project Maintenance Bond equal to 100% of Full Contract Amount for a period of 30 months	1	L.S.	N/A	$

ADDITIVE FEE SCHEDULE: MISCELLANEOUS EQUIPMENT (TO PROVIDE AS REQUIRED)

Item	Description	Qty	Unit	Unit Cost	Amount
401	12” Column, 0.375” Wall (20’ nominal length)	27	L.F.	$	$
402	12” Column Coupling	1	EA.	N/A	$
403	3-1/2” Enclosing Tube (5’ nominal length)	5	L.F.	$	$
404	2-3/16” Line Shaft, C1045	27	L.F.	$	$
405	Line Shaft Bearings	1	EA.	N/A	$

EXHIBIT A

WELL 24 PUMPING UNIT REPAIR

SPECIAL REQUIREMENTS

1. The Work

The Work shall include all labor, materials, equipment, and methods required for removal of existing pumping unit, and inspection of the District's existing Well 24 domestic water well and pumping unit in accordance with the Scope of Work-Fee Schedule.

Specific work to be performed includes removing, rehabilitating and inspecting the existing well pumping unit assembly, or new approved replacement pumping unit and re-installing the existing/new well pumping equipment for Well 24.

Contractor shall complete all items included in the Scope of Work Fee Schedule. The Work will include all work listed in the Scope of Work-Fee Schedule and Alternate Work-Fee Schedule and as described herein.

District will notify Contractor of acceptance of total Project Amount with a "Notice to Proceed" letter.

A. The Contractor shall furnish all materials, labor, equipment, tools, transportation and services for the removal of the District's existing Well 24 pumping unit, inspection of said pumping unit, re-equipping with new pump bowl assembly (or rehabilitating pumping unit assembly) and reinstallation and/or installation of same.

Well 24 is located within a below grade vault with a removable access hatch on Brookside Avenue east of Union Street and west of Nancy Avenue in the City of Beaumont, California. The entrance to Well 24 is located approximately 650' east of Union Street. Plan view of the Site and Site Photographs are attached in Appendix "C".

B. The Work includes all work set forth in the Scope of Work-Fee Schedule and generally as described in the following items:

<u>Work to be Performed by Contractor</u>

- Provide temporary facilities as necessary for removal of pumping facilities. In the event the Contractor proposes to land the pumping unit on the top of the below grade vault during the removal process, the Contractor shall provide a temporary support system (i.e. steel beams, etc.) which bridge the top of the vault lid to provide pumping unit support without loading said vault lid. Specifically, support shall at least reach from vault side wall (approximately 18'-6"6).
- Disassemble and remove Well 24 access hatch, gates, etc. as necessary to access well head facilities.
- Remove existing Well 24 pumping unit equipment including existing 600 horsepower electric motor, discharge head, approximately 540' of 12" Column, Tube and Line Shaft (including couplings, and bearings) for oil lubricated pumping unit. Tag well to determine presence of fill.
- District identifies that the existing 12" pump column is epoxy coated and that the

Contractor may experience difficulties in disassembling said column due to possible epoxy overspray on the pump column threads. Contractor shall utilize all means and methods necessary to disassemble said column. Contractor shall only cut said column (if approved by the District) after attempting to disassemble each connection. The intent of the District is to salvage and re use as much column pipe materials as possible. District will provide video inspection record to confirm these efforts are applied by the Contactor.

- Inspect and provide comments and/or recommendations regarding serviceability of pump Column, Tube, and Line Shaft.
- Deliver the District's existing 600 hp electric motor from the Well 24 project site to the District's Well 1 site, located at 815 12th Street, Beaumont CA 92223.
- Haul Column, Tube, and Line Shaft and pump bowl assembly to Contractor yard for evaluation regarding condition and serviceability of the Column, Tube, and Line Shaft.
- Recondition (as required) approximately 540' of existing 12" pump column, and complete thread cleanup of existing 12" epoxy coated column pipe.
- Disassemble and inspect pump bowl assembly. Measure and record wear and damage. Provide report and recommendations to District of Bowl conditions and refurbishment options. In the event the District elects to install a new pumping unit, the existing disassembled pumping unit assembly shall be delivered to the District's Well 2 site for storage subsequent to disassembly and inspection.
- Disassemble and inspect existing approximately 540' of 2-3/16" line shaft and 3-1/2" enclosing tube removed from Well 24. Measure and record wear and damage. Provide report and recommendations to District of column, tube, and line shaft conditions and serviceability.
- Bail well clean.
- Clarify water in preparation for initial (pre cleaning) video log. Perform color video log of well and provide comments and recommendations to District. Camera shall be capable of lateral (side) as well as axial viewing. Provide DVD (2 copies) to District. (Survey shall be conducted by an independent party approved by District).
- Wire brush well from ground surface to total depth of well 18" casing 0-1500' below ground surface, and bail well clean.
- If District elects to chemically and/or sonar jet, and mechanically rehabilitate the well, the Contractor shall chemically and/or sonar jet, and mechanically rehabilitate the well as set forth in the specifications. Fee shall be based upon actual work the District elects to perform and as set forth on alternative scope of work fee schedule bid items related to same.
- Alternatively, Contractor shall only mechanically rehabilitate the well as set forth in the scope of work and the specifications.
- Clarify water in preparation for final (post cleaning) video log. Perform color video log of well and provide comments to District. Camera shall be capable of lateral (side) as well as axial viewing. Provide DVD (2 copies) to District. (Survey shall be conducted by an independent party approved by District).
- Furnish new replacement pumping unit. Pumping unit assembly shall be furnished and installed to meet pumping unit requirements set forth in Specification Section 11320. New pumping unit bowl assembly (if required) shall be manufactured by Flowserve, Goulds, or approved equal.

- Refurbish existing pump discharge head as necessary, as required.
- Pick up the District's new 600 hp electric motor from the District's electrical repair Contractor, Sulzer and deliver to the Well 24 project site.
- Install pumping unit including new or refurbished bowl assembly, and appurtenances, existing 12" pump column, tube and line shaft, discharge head and new District furnished 600 hp electric motor and level discharge head.
- Coordinate installation of Owner furnished and installed Baker Tank (for water clarification) at well site. Owner will furnish and install Baker Tank and discharge piping for well startup water clarification prior to discharge as needed.
- Start up and performance test new 600 hp electric motor and existing equipment, controls and instrumentation. Contractor shall operate pump as required.
- Disinfect well in accordance with Specification Section 11330, State of California Department of Health Service requirements and in accordance with AWWA procedures
- Reassemble Well 24 below grade vault access hatch, gates, etc. removed to access well head facilities.
- Clean up well site.

Work to be Performed by District's Staff

- District will perform bacteriological testing and assist Contractor with pumping unit startup and testing.
- Baker Tank installation and associated temporary piping for well startup and testing water clarification prior to discharge.

C. Payment for rehabilitating and equipping of the well will be based on actual quantities furnished, installed, or constructed based upon final project negotiated prices in accordance with the prices set forth on the Scope of Work-Fee Schedule for various lump sum or unit price items. If information indicates that the completion of the work at any time is not warranted, the District reserves the right to terminate all further work. In such an event, the Contractor will be paid for the value of his work completed to that time on the basis of prices stated in the bid schedule.

D. All materials, supplies, equipment, and labor, except those services expressly stipulated to be furnished by the District, shall be supplied by the Contractor. The Contractor shall leave the premises in a neat and orderly condition.

E. The Contractor shall record and notify the District of the commencement and completion of each contract operation and work item.

2. Disposal of Rehabilitation (if required), Disinfection and Testing Water

Disposal of rehabilitation, water and testing water may be through a District existing discharge flush pipeline and/ or District furnished Baker Tank onsite at the Well 24 facility. Contractor shall coordinate well discharge with the District to ensure that existing properties are protected, that well discharge meets all water quality discharge requirements, and that well discharge does not create public safety hazards.

3. Authorization to Proceed

Owner will provide an Authorization to Proceed Letter to the Contractor. The Contractor will then be authorized to begin Contract Work submittal document submission, material ordering, and construction scheduling.

4. Working Hours

Contractor shall perform all work between 7:00 AM and 5:00 PM, Monday through Friday. Contractor shall not work on Owner holidays. Said holidays are as follows:

New Year's Day
Martin Luther King Jr. Day
Presidents Day
Memorial Day
Independence Day
Labor Day
Veterans Day
Thanksgiving Day
Day After Thanksgiving Day
Christmas Day

When a legal holiday falls on a Saturday, it is observed on the preceding Friday, when it falls on a Sunday, it is observed on the following Monday.

5. Permits, Certificates, Laws, and Ordinances

Contractor shall, at his own expense, procure all permits, certificates, and licenses required of him by the State of California, City of Beaumont, County of Riverside, California Regional Water Quality Control Board, South Coast Air Quality Management District, or any other authority or agency having jurisdiction for the execution of the Work. Contractor shall comply with all federal, state, and local laws, ordinances, or rules and regulations relating to the performance of said Work.

6. Records

The Contractor shall keep records providing the following information for those items of work that are performed:

A. A complete daily log and record of all well rehabilitation, equipment removal, equipment replacement and/or refurbishing and all related work shall be furnished to the District.
B. As-Built Drawings/Submittals documenting final construction.

7. Project Completion Date

Project completion date shall be thirty (30) days from the date of the Notice to Proceed Letter issued by the District. The thirty (30) day completion date will be adjusted to provide for material acquisition delays in the event the existing Flowserve pumping unit is not refurbished and a new ductile iron bowl pumping unit is required.

8. Liquidated Damages for Delay

Contractor shall pay to Owner, as fixed and agreed, liquidated damages for each calendar days delay in the completion of all the work beyond the time agreed upon, the amount of $200.00.

9. Contract Information/Drawings

The following Appendices are made a part of these Contract Documents:

APPENDIX LIST
(Attached in the back of these Contract Documents)

Title	Appendix No.
Specification Section 11320-Deepwell Vertical Turbine Pumping Unit Technical Specifications	A
Specification Section 11330-Technical Well Rehabilitation Specifications Rehabilitation of Well 24	B
Well 24 Location Map, Site Plan, and Photos	C
Maintenance Bond	D
Existing Well 24 and Pumping Unit Information	E
New 600 hp Electric Motor Information	F
Well 24 SCE Efficiency Test (2018)	G

10. District Furnished and Contractor installed new 600 hp Vertical Hollow shaft high thrust pumping unit

- Pick up District furnished new 600 hp electric motor from District Electrical Repair Vendor Sulzer. and install said new 600 hp electric motor including leveling (centering) of motor on new or existing pumping unit top shaft, connection of water cooled motor bearing lines to motor fittings, reconnection of existing motor power feed and control conductors to existing motor control equipment. Contractor shall be prepared to fabricate a new stainless steel head (top) shaft and provide a new stainless steel head nut and key assembly with all stainless steel bolts on the motor top nut assembly and all appurtenances as necessary to provide for installation of the new 400 hp motor on existing pumping unit discharge head assembly

11. Right to Change Work

District reserves the right to direct Contractor to cease work upon the well at any phase and to determine payment for work performed in accordance with the bid unit prices. District also reserves the right to either increase or decrease other related work in accordance with the aforementioned unit prices. Payment for all work shall be predicated upon work completed.

12. Payment Requests

Contractor shall submit all partial payment requests and final payment request to District. Payment requests shall be submitted by the 18th day of the month preceding the month in which payment will be made. On approval by the District, partial payments will be made by the first day of the month following the month in which request for payment is made.

All payment requests shall show all Scope of Work-Fee Items and sub items for the Contract Work. In addition, said requests shall show the percentage of completion of each Fee Item and sub item and the amount thereof, said amounts being totaled to arrive at the value of the completed Work. The net partial payment amount shall equal 95% of said total.

13. Site Maintenance

A. The Contractor shall at all times maintain the well site and discharge site in a neat and orderly fashion, free from trash and construction waste materials. All cleared and waste material shall become the property of the Contractor and shall be disposed of by Contractor outside the limits of the work in accordance with applicable ordinances and regulations of governmental agencies having jurisdictions.

B. Unattended construction materials and equipment shall be left in a manner such that they do not constitute fire hazards, exposed to vandalism, or become a nuisance or danger due to forces of nature such as rain or wind.

C. Existing improvements as designated by the District, whether on the construction site or on other property, shall be protected in place and shall be provided with adequate access.

D. While construction is being conducted, the Contractor shall provide safety in the area of construction.

E. Contractor shall remove any sediment deposited to city streets or storm water channels on a daily basis.

14. Data to be Submitted by Contractor

Contractor shall furnish District the following data and said data must be accepted by District prior to performing any Contract Work appurtenant to specific submittal items. Data (two copies) shall be submitted directly to the District for review and acceptance or rejection. Contractor shall submit five copies of accepted data to the District for distribution of same.

A. <u>Material and Equipment Lists with Catalogs</u>

Gravel, Bentonite and Cement Slurry Materials
Pump shaft, tube, bearing, and coupling manufacturer's data sheets

B. <u>Fabrication and Component Drawings with Diagrams (if required)</u>

Pumping unit bowl assembly and appurtenances (only if Fee Item 112 is required)

C. Construction Schedule

Construction Schedule

D. Well Chemical/Mechanical Rehabilitation Materials (if required)

15. Contractor Cooperation and Coordination

Contractor shall cooperate with District and all jurisdictional agencies. Contractor shall establish a work schedule sufficiently in advance of work to permit coordination of work with District and other agencies. Owner will have representatives on site to observe and verify compliance with Contract Documents. Contractor shall not operate any existing facilities, including opening or closing of pipeline valves.

16. Construction Water and Power

Owner will provide a reasonable quantity of construction water free of charge from Owner's existing potable water system. Contractor shall apply for an Owner supplied meter. Contractor shall furnish and install Owner approved backflow device and all necessary piping and appurtenances, including pumps and water trucks, necessary to convey water from Owner's meter to work location.

Contractor shall provide required power to perform all phases of work.

17. Specified Model Numbers

All model numbers used herein are provided for information only, to assist Contractor in selecting equipment that conforms to Specifications. In case of any conflict between model numbers given herein and the descriptive specifications or performance specified, the descriptive specifications and performance specified shall govern.

18. Well Protection

The Contractor shall protect open wells by installing a steel locking cover which shall be maintained in place at all times unless work within the well is actively in progress.

19. Well Disinfection

Unless otherwise stated, the Contractor shall use the following procedure to disinfect well and that the Contractor shall perform and assist District's Staff with disinfection and pump startup as described hereafter and as necessary to achieve well disinfection:

A. Immediately prior to installation of permanent pumping equipment, Contractor shall disinfect pumping unit components with chlorine.

B. Upon completion of well pumping unit installation, the Contractor shall disinfect the well and installed pumping unit with chlorine solution.

1) Contractor shall dose the well by adding liquid chlorine solution to well to obtain required concentration of at least 100 parts per million.

2) Immediately after dosing the well, District and Contractor shall pump water to ground surface until chlorine is detected and shall then allow the water to return into the well. Contractor shall repeat said procedure twice at one hour intervals.

3) The well will then be allowed to stand without pumping or agitation for 24 hours.

4) The District and the Contractor shall then pump the well to waste until chlorine is no longer evident, and shall continue to pump the well to waste for 15 minutes thereafter.

5) The District and the Contractor shall then allow the well to stand without pumping or agitation for 24 hours prior to sampling.

6) The District will then secure two samples of water from the well in approved containers, and have said samples analyzed by a State certified analytical laboratory for total coliform (presence/absence), fecal coliform (presence/absence), and heterotrophic plate count. The District will secure the first sample within five minutes of starting the pump at the specified pumping rate, and the second sample thirty minutes thereafter.

7) The well shall be deemed properly disinfected only if the sample analysis results indicate absence of total coliform bacteria, absence of fecal coliform bacteria, and a heterotrophic plate count of less than 500 colony forming units per milliliter (CFU/ml).

8) If the sample analysis results do not indicate that the well was properly disinfected, the District and the Contractor shall repeat the entire disinfection procedure, including sampling, sample analysis, and reporting of sample analysis results.

C. After 24 hours, the Contractor will assist the District, as necessary, to secure two samples of water from the well in approved sealed containers. District will have said samples analyzed by a State certified analytical laboratory for chlorine residual, total coliform (presence/absence), *e. coli* (presence/absence), and heterotrophic plate count. The District will secure the first sample within five minutes of starting the pump at the specified pumping rate, and the second sample thirty minutes thereafter.

D. The well shall be deemed properly disinfected only if the sample analysis results indicate absence of total coliform bacteria, absence of *e. coli* bacteria, and a heterotrophic plate count of less than 500 colony forming units per milliliter (CFU/ml).

APPENDIX A

Specification Section 11320
Deepwell Vertical Turbine Pumping Unit
Technical Specifications

APPENDIX A

SECTION 11320

DEEPWELL VERTICAL TURBINE PUMPING UNIT
TECHNICAL SPECIFICATIONS

PART 1 - GENERAL

1.01 Specific Project Description

Contractor shall remove and refurbish the existing Well 24 pumping unit in accordance with Scope of Work - Fee Schedule - Item 112B or in the event the existing pump bowls are identified to be irreparable, provide a new bowl assemble in accordance with Scope of Work - Fee Schedule Item 112 and Item 1.02, hereafter. Specific pumping unit related work to be performed as part of this project is identified in the Fee Schedule-Scope of Work and Generally as follows:

- Remove pump column, tube, and shaft. District identifies that the existing 12" pump column is epoxy coated and that the Contractor may experience difficulties in disassembling said column due to possible epoxy overspray on the pump column threads. Contractor shall utilize all means and methods necessary to disassemble said column. Contractor shall only cut said column (if approved by the District) after attempting to disassemble each connection. The intent of the District is to salvage and re use as much column pipe materials as possible. District will provide video inspection equipment to document and record reasonable efforts are performed by the Contactor.
- Tag well to determine presence/amount of fill. Inspect and provide comments and/or recommendations regarding conditions and serviceability of pump column, tube and line shaft
- Haul Column, tube and line shaft from the District's Well 24 site to the Contractors shop for inspection, refurbishment, and cleaning
- Haul bowl assembly to Contractor yard for evaluation. Disassemble and inspect pump bowl assembly. Measure and record wear and damage. Provide report and recommendations to District
- District anticipates the existing pumping unit may not capable of being rebuilt, and at the discretion of the District: Contractor shall provide one (1) new deepwell vertical turbine pumping unit (bowl assembly) to meet the specific project pumping unit requirements described in Section 1.03, below or, at the discretion of the District upon inspection and analysis of existing pumping unit bowl assembly condition, Contractor shall refurbish existing Sulzer/Johnston Pump Company 16CMC Pumping Unit bowl assembly, including replace wear rings on existing pump bowls (8 total) Reassemble pump bowl assembly and return to site, or alternatively replace bowls as described hereafter
- Refurbish existing 3.5", Schedule 80 tube and 2-3/16" C-1045 steel line shaft.
- Install pumping unit, including refurbished or new pumping unit bowl assembly, existing 10±' suction pipe and associated strainer, pump column, tube and line shaft, discharge head, and appurtenances including leveling pumping unit and all related work
- Pick up District furnished new 600 hp electric motor from District Electrical Repair Vendor Sulzer. and install said new 600 hp electric motor including leveling (centering) of motor on new or existing pumping unit top shaft, connection of water cooled motor bearing lines to motor fittings, reconnection of existing motor power feed and control conductors to existing motor control equipment. Contractor shall be prepared to fabricate a new stainless steel head

(top) shaft and provide a new stainless steel head nut and key assembly with all stainless steel bolts on the motor top nut assembly and all appurtenances as necessary to provide for installation of the new 400 hp motor on existing pumping unit discharge head assembly

- Provide start up and performance testing of all new and existing equipment, controls and instrumentation
- Disinfect well in accordance with Special Requirements, Specification Section 11320, State of California Department of Health Service requirements and in accordance with AWWA procedures

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1.02 Specific Project Pumping Unit Requirements

A. General

If the existing pumping unit bowl assemblies are found irreparable, the Contractor shall provide a complete new deep well pump bowl assembly (bowls, bearings, impellers, etc) consisting of a ductile iron (double bolted if required for service pressure plus factor of safety requirements set forth herein) bowl assembly to meet pumping unit performance requirements specified herein. The Contractor shall install the District furnished new vertical hollow shaft motor as described hereafter.

The existing pumping unit consists of an oil lubricated line shaft pump. All new pumping unit components shall meet the performance requirements of this specification section, as listed below.

Bidders shall submit fabrication drawings for the new bowl assembly and certified pump performance curves per Section 1.03 herein.

B. Well No. 24 Pump (Required if Fee Schedule Item 112 – New Bowl Option is Selected)

1. Performance (Pump preliminary performance criteria set forth is based on existing Goulds 16 CMC - 8 stage pumping unit bowl assembly)

Discharge Capacity (GPM)	Bowl Head (Feet)	Minimum Bowl Efficiency	Maximum Net Positive Suction Head Required (Feet)
Shutoff Head	1045 (min)	NA	NA
1,500	860±20	62 %	28
2,000	780±15	73.5 %	28
2,500*	720±10	81 %	28
2,800	650±5	83 %	28
3,500	180±15	81 %	34

* Design condition

2. Pumping unit shall be of the enclosed line shaft (oil lubricated), enclosed impeller deepwell vertical turbine unit design.

3. Maximum Horsepower - Speed: 600 hp - 1770 rpm.

At no point on the pump curve shall the existing driving equipment be overloaded.

4. Bowl Assembly Diameter: 16" maximum, (double bolted ductile iron bowl and discharge case assembly as required for design pressure and factor of safety)

5. Column Piping: Wire brush, clean and reuse 540’ of existing 12" diameter expoxy lined and coated column piping.

6. Refurbish and re-install 540'± of 2-3/16" enclosed line shafting (oil lubricated) within 3-1/2" schedule 80 tube. Contractor to verify dimensions, including using all couplings, bearings, keys, bolts and nuts.

7. Discharge Head: Reuse existing discharge head. Contractor shall refurbish existing discharge head as required for reinstallation of pumping unit with new 2-3/16" diameter head (top) pump shaft. Contractor shall remove existing seal bushing and furnish and install new seal bushing as required for new head (top) line shaft. Contractor shall re-plumb and reinstall pump line shaft and oil line to the discharge head.

   Existing discharge head:
   Fabricated steel

8. Pump manufacturer shall select pump and verify performance. Selected pump shall be approved by District.

9. Existing pump: Goulds 16CMC - 8 stages (See Appendix E for specific information)

E. New District Furnished Vertical Hollow Shaft Motor - Furnished by the District, installed by the Contractor

1. Horsepower: 600 Hp

   Brake Horsepower (Field) shall not exceed nameplate rating within entire operating range.

2. Power: 3 phase, 60 hertz, 460 volts.

3. Speed: 1800 RPM (no load).

4. Starting Characteristics: Solid State Motor Controller.

1.03 Pumping Unit Data to be Submitted by Bidder (Required if Fee Schedule Item 112 – New Bowl Option is Selected)

Unless specified otherwise in Section 1.02 herein, bidder shall submit a certified pumping unit component drawing for each different pumping unit to be furnished and it shall show dimensions of pumping unit and its components including bowl assembly, column assembly, tube and line shaft assembly, discharge head assembly, motor, and related appurtenances.

Bidders shall submit a certified pump performance curve together with design calculations for each different pump to be furnished. Each curve shall show head versus capacity, pump bowl efficiency versus capacity, brake horsepower versus capacity, overall (wire to water) efficiency versus capacity, all for full operating range specified.

Each certified pump curve shall be continuous from zero capacity to maximum pumping unit capacity on the abscissa. It shall be furnished full size on 8-1/2 inches (ordinate) x 11 inches (abscissa) paper. Bidder shall indicate certified values on each curve for the following characteristics at all specified design points since consideration will be given thereto in selecting units to be furnished.

A. Discharge capacity in gallon per minute.

B. Total discharge head in feet (bowl head).

C. Pump bowl efficiency.

D. Brake horsepower (including losses in pump, shaft, column, and head).

E. Wire to water efficiency (including losses in motor, pump, shaft, column, and head).

F. Down thrust and momentary up thrust.

G. Net positive suction head (close coupled booster application only).

1.04 Contractor Submittals <u>(Provide Submittals Only for New Equipment)</u>

Complete submittals (shop drawings) showing performances, fabrication, assembly, and installation, together with detailed specifications and data covering performance and materials of construction, power drive assembly, parts, devices, wiring diagrams, and other accessories forming a part of the pumping units shall be submitted. Submittals shall include, but shall not be limited to, the following:

A. Submit the following minimum information for each pumping unit specified herein for the District's review and approval:

1. Items as specified in Section 1.03

2. Type and model number with reference to pumping units suitability for service for pumps specific intended use.

3. Assembly drawing, nomenclature and material list.

4. Type, manufacturer, model numbers, location and spacing of bearings.

5. Impeller diameter, eye area, sphere size, and identification number.

6. Maximum rotative speed.

7. Complete performance curves indicating total dynamic head, flow rate, brake horsepower, shutoff head, net positive suction head required, RPM, and efficiency.

   The manufacturer shall indicate by arrows to points on the H/Q curves the limits recommended for stable operation, between which pumps are to be operated to prevent surging, cavitation, and vibration. The stable operating range shall be as large as possible and shall be based on actual hydraulic and mechanical characteristics of the units.

Provide certified performance curves prior to shipment.

Provide pumping unit bowl assembly thrust calculation (with drive shaft weight calculation) to motor bearing for District validation of new motor thrust bearing life expectancy, including shaft and column stretch calculations and pumping unit lateral adjustment calculation.

8. Motor data, including the manufacturer, size, type designation, minimum guaranteed efficiency and power factor at full load, 3/4 load, and 1/2 load, locked motor current in amps, full load current in amps, the motor speed in rpm, mounting details, and other data as required in the Contract Documents.

9. Outline dimensions and weights of pumping unit components and as assembled.

10. Materials of pump construction including bowls, bowl lining, shafts bearings, impellers and castings. Written certification of pumping unit's capability to withstand specified pressures.

11. Protective coating of pumping unit.

12. Installation instructions.

13. Operation and maintenance manuals.

1.06 Quality

A. All pumping equipment furnished under this Section shall be of a design and manufacture that has been used in similar applications. Manufacturer shall demonstrate to the satisfaction of the District that pumps of similar construction are in service and functioning properly. Manufacturers as specified herein manufacture pumping units with acceptable quality or experience. Manufacturers must, however, meet the performance requirements stated herein for the actual pumps specified. Listing of said manufacturers does not imply that said performance requirements can be met for each pumping unit specified. Contractor shall be responsible to verify that manufacturers supplying equipment meet the size and capacity requirement specified herein.

B. Pump manufacturer shall verify applicability of pumping equipment with respect to NPSHA, suction piping, can and discharge geometry to assure prevention of cavitation, vibration, surging, overheating, corrosion, and vortexing.

C. Pumping unit Supplier shall be an authorized distributor approved by District. Said distributor shall have adequate service facilities within a 100 mile radius of District's office and shall have a service organization, machine shop facilities, and parts inventory such that servicing or replacement of pumping units can be provided with minimum delay.

PART 2 - PRODUCTS

2.01 General

Deepwell vertical turbine pumps shall be enclosed line shaft (oil lubricated) or open line shaft (water lubricated) type, whichever is specified, with aboveground flanged discharge and enclosed impellers.

All parts of the pump exposed to water shall be of stainless steel, brass, heavy cast iron, or equivalent corrosion resistant material.

Unless otherwise specified herein, all applicable provisions of AWWA E 101 (Part A), latest, are hereby made a part of these Specifications.

Pumps shall be manufactured by Sulzer/Johnston Pump, Flowserve, Floway, Goulds, or Peerless.

2.02 Pump and Components

A. Pump Bowls

Bowls shall be of ductile iron double bolted or close-grained, gray cast iron, Class 30, precision cast, free from blow holes, sand pockets, and other detrimental defects as required by pump working and shutoff pressures specified under Item 1.02. Water passageways in said bowls shall be smooth so as to allow freedom from cavitation and permit maximum efficiency. Each bowl shall have end or side seal (or both) to prevent slippage of water between bowl and impeller.

Bowls shall be lined with vitreous porcelain enamel, or equal, to produce long effective life (said lining shall not be applied for the purpose of short time gain in efficiency). Lining, identical to that furnished hereunder, shall have been used in the field under similar conditions with satisfactory results for at least a five-year period.

Bowls shall be of such size to fit the well casing with proper clearance (net clearance of 2 inches or more). Bowls shall be capable of withstanding 1-1/2 times the pump shut-off head pressure (zero discharge) or twice the rated capacity pressure, whichever is greater. Bowl materials shall have a minimum tensile strength of 30,000 psi.

B. Pump Impellers

Impellers shall be of the enclosed type, constructed of SAE 40 bronze. They shall be balanced hydraulically and dynamically to prevent vibration and shall be smoothly finished on all surfaces for minimum friction. Impellers shall be accurately fitted and securely locked to the pump shaft. Vertical adjustment of impellers shall be possible by adjusting top shaft nut. Impellers in multi-stage pumps shall all have the same diameter and trim.

C. Pump Shaft

Pump shaft shall be constructed of AISI-410 or 416 stainless steel and shall be accurately machined to provide smooth operation. It shall easily withstand torsional loads and other stresses encountered within the pump. Pump shaft shall have adequate bearing support at every bowl section and at top bottom and case section, and shall be equipped with a suitable steel coupling for connection to the line shaft.

D. Pump Bearings

Pump bearings shall be sleeve type constructed of SAE 40, 64, 67, or 660 bronze, or approved equal. Bearing area, bearing cooling, and bearing lubrication shall be ample for long, trouble-free operation.

E. Discharge Case

Discharge case shall securely fasten the pump bowl assembly to the column piping. It shall be heavily reinforced with streamlined fluid passages and it shall contain sleeve bearings for the pump shaft. Discharge case shall be provided with a means of reducing to a minimum the leakage of water into the shaft enclosing tube. It shall have bypass ports of sufficient area to permit the escape of water that leaks through the seal bushing.

F. Suction Case

Suction case shall securely fasten the suction piping to the bowl assembly. It shall be heavily reinforced with streamlined fluid passages and it shall contain a sleeve bearing for the pump shaft which is effectively plugged at the bottom to form a grease container. A sand collar shall prevent sand from entering the suction case bearing.

G. Suction Pipe and Strainer

Unless specified otherwise, the suction pipe shall be 10 feet in length and comprised of the same material and diameter as the column piping. A cone type strainer shall be provided for attachment to the suction pipe. The strainer shall be galvanized steel, bronze, or equivalent and shall have a net inlet area of a least four times the suction pipe area. The maximum strainer opening shall not be more than 75% of the minimum opening of the water passage through the bowl or impeller.

H. Column Piping

Column piping shall be threaded pipe conforming to the following diameters and weights per foot, unless specified otherwise.

Nominal Size (Inches)	Outside Diameter (Inches)	Weight Per Foot (Pounds)
6	6.625	18.97
8	8.625	24.70
10	10.750	34.24
12	12.750	43.77
14	14.000	54.57
16	16.000	62.58

Pipe shall be furnished in interchangeable sections of 20-foot nominal length for enclosed line shaft and 10-foot length for open line shaft, with the exception of the top column section which shall be of 5-foot nominal length and the bottom column section which may be of shorter length. Column pipe sections shall be connected with threaded steel sleeve type couplings. Ends of each pipe section shall be faced normal to section axis and machined with threads to permit ends to butt to ensure proper alignment when assembled. Coating of the column piping, either interior or exterior, is not required.

I. Line Shaft

Line shaft shall be comprised of AISI C-1045 material, or approved equal. Line shaft sections excluding top and bottom sections shall match column sections (10-foot or 20-foot nominal length). Top and bottom shaft sections shall match top and bottom column sections. Unless specified otherwise, top shaft shall be two (2) piece with coupling within discharge head.

Shaft enclosing tubing shall be Schedule 80 extra heavy steel pipe, maximum 5-foot lengths. Enclosed line shafting shall be supported by bronze bearings which shall also join tube sections. Open line shafting shall be supported by rubber bearings with bronze retainers which shall also join column sections.

When enclosed line shaft is specified, molded rubber stabilizing spiders that will deform to permit proper alignment of the shafting and tubing assembly within the column shall be furnished and spaced every 40 feet maximum throughout the column length.

2.03 Discharge Head (Not Required)

Discharge head shall be constructed of high grade cast iron or fabricated steel as shown on the Drawings as specified in Section 1.02, and shall be capable of withstanding all loads imposed during normal operation. Discharge head shall be furnished with a tube tension and seal assembly, as approved by District, for enclosed line shaft and a stuffing box assembly for open line shaft.

Discharge head shall be suitably enclosed to prevent the entrance of dust and foreign material. Access to the tube tension and seal or stuffing box assembly shall be ample. Drain plugs shall be provided at the bottom. Unless specified otherwise, discharge head shall accommodate two (2) piece top shaft with coupling.

Discharge head shall have a standard flanged outlet of the size specified except where otherwise permitted. If the discharge flange is not the size specified, an adapter consisting of a smooth eccentric increaser (with bottoms level) or reducer (with tops level) shall be provided. Said adapter shall be

flanged to mate the discharge head at one end and as specified at the other.

Discharge head assembly shall be capable of withstanding 1-1/2 times the pump shut-off head pressure (zero discharge) or twice the rated capacity pressure, whichever is greater.

Motor base, column flange face, and discharge flange face shall be accurately machined, faced, and drilled to NEMA and ASA Standards. Upon assembly, motor and discharge head shall form an integral unit.

2.04 Lubrication System (Not Required)

Oil lubrication system shall be automatic gravity feed and it shall consist of an oil reservoir, solenoid control valve, sight feed valve, and appurtenant supports and oil lines. It shall be furnished with sight glass or other plainly visible oil indicator device.

Unless specified otherwise, oil reservoir shall have a capacity of two gallons and it shall be Peerless or approved equal. It shall be mounted on the pump discharge head unless specified otherwise.

Oiler solenoid control valve shall open or close upon command of control system and it shall be ASCO 826111, or approved equal. It shall automatically start or stop the flow of lubricating oil to the bearings. It shall also permit manual operation upon control system failure. It shall be rated 120 psi minimum, 120 volt, 60 hertz, unless specified otherwise.

Oil piping shall be sized according to the viscosity of the oil recommended by the pump manufacturer and ambient temperature at the pumping unit. Said piping shall permit conveyance of full oil supply required by pumping unit.

Water lubrication system shall be automatic unless specified otherwise. It shall consist of piping or tubing from a source of water pressurized when pump is off, solenoid control valve, and appurtenant piping supports. System shall comply with pump manufacturer's recommendations for flow.

Water solenoid control valve shall open or close upon command of control system. It shall automatically start or stop the flow of water to the shaft bearings. It shall also permit manual operation upon control system failure.

2.05 Nameplate (Required)

Nameplate, easy to read and corrosion resistant, shall be provided with each pump and shall contain complete pump information including manufacturer, serial number, model number, capacity in gallons per minute, total dynamic head in feet, and pump speed, all at specified design point. Said nameplate shall be mounted on pump head.

2.06 Vertical Hollow Shaft Electric Motor (Not Required)

A. General

Vertical hollow shaft electric motors shall be Design B, high thrust, squirrel cage, induction type having NEMA weather protected Type I enclosures unless specified otherwise. Motors shall be built to form an integral part of pump head assembly and shall be suitable electrically and mechanically to efficiently and effectively drive pumps specified. Motors shall operate in

accordance with these Specifications.

Motors shall be manufactured by General Electric Corporation, U.S. Electrical Motors Division Emerson Electric Co., or Westinghouse Electric Corporation, or approved equal. Unless specified otherwise all materials, workmanship, and tests shall conform with the applicable specifications of the National Electrical Manufacturers Association (NEMA), Institute of Electrical and Electronic Engineers (IEEE), and American Standards Association (ASA), and the Anti-Friction Bearing Manufacturers Association (AFBMA).

B. Power

Unless specified otherwise, motors shall be nameplate rated, 3 phase, 60 hertz, 460 volts.

C. Speed

Unless specified otherwise, motors shall be 4 pole and shall have no load speed of 1800 rpm.

D. Starting Characteristics

Motors rated 200 hp and smaller shall be full voltage line start and motors rated 250 hp and larger shall be part winding increment start, unless specified otherwise.

E. Efficiency

All motors shall be rated premium efficiency, unless specified otherwise. Rated efficiencies shall be based on NEMA Standard MG1-12.536. Guaranteed efficiencies shall be determined in accordance with IEEE #12, Test Method B and E, latest revision.

F. Service Factor

Rated service factor shall be 1.15 or greater.

G. Insulation System

All motors shall be provided with Class "F" or better insulation systems except that motor lead insulation may be Class "B" or better. Impregnating materials shall be rated Class "F" (155 degrees C) minimum. Completed windings, when tested in accordance with IEEE #57, latest revision, shall show a thermal rating of not less than 150 degrees C for 30,000 hour's life.

Windings shall be held firmly in stator slots to prevent coil shift. Sharp edges and burrs shall be removed from stator slots prior to winding or inserting coils. Slot liners and coil end phase insulation, in addition to the coating, shall be provided. Stator windings shall be of high conductivity copper magnet wire.

Completed stator windings shall be provided with a properly cured, uniform impregnation for mechanical rigidity, moisture resistance, and protection against winding failures from accumulation of foreign conductive matter. The completed insulation system shall be capable of withstanding phase-to-ground rms voltage of 600 volts continuous and 2,300 volts instantaneous (surge or transient).

H. Temperature Rise

Rated temperature rise above 40 degrees C ambient temperature measured by resistance at service factor load of 1.15 shall not exceed 90 degrees C.

I. Inrush Current

Motors rated between 10 hp and 50 hp shall be rated NEMA locked rotor Code H or better and motors rated 50 hp and larger shall be rated NEMA locked rotor Code G or better except where NEMA locked rotor Code H is specifically permitted.

J. Load Conditions

Actual motor loads shall not exceed the nameplate rating (horsepower) unless specified otherwise.

K. Motor Balance

Motors shall be dynamically balanced to a maximum of .001 inches peak to peak amplitude, especially at upper bearing housing.

L. Bearings

Motors shall be equipped with anti-friction type thrust and guide bearings. Angular contact ball thrust bearings shall be used in preference to spherical roller thrust bearings wherever possible. Angular contact ball thrust bearing shall be self cooled wherever possible. Water cooled angular contact ball thrust bearings shall be used only when approved by District. Spherical roller thrust bearings shall be water cooled.

Bearings shall be of sufficient capacity to carry all static and dynamic up and down thrust loads, both momentary and continuous, imposed by the pump. Bearings shall provide minimum 3 year B10 life (26,300 hours) based on continuous design thrust load or minimum 1 year B10 life (8770 hours) based on maximum pump shutoff thrust load, whichever is greater. Bearings shall also provide for minimum momentary upthrust equal to 30% of rated downthrust.

M. Bushings

Motors shall be equipped with lower end head shaft steady bushings unless specified otherwise.

N. Lubrication System

Motor thrust bearings shall be oil lubricated; however, motor guide bearings may be grease lubricated. Oil lubrication systems shall provide optimum lubrication of bearings. Said systems shall have sufficient oil storage and oil cooling capacity to limit oil bath temperature rise to 45 degrees C above 40 degrees C ambient temperature unless temperature rise of 50 degrees C is specifically permitted. Oil lubricated motors shall have visual level indicators and accessible fill and drain plugs. Indicators and plugs shall be located 180 degrees from

pump discharge unless specified otherwise. Grease lubrication systems shall be regreasable and shall provide for automatic flushing or purging of grease cavity during regreasing.

O. Thermal Protection

Motors shall be equipped with 120 volt thermal sensors, one for each phase, affixed to or embedded in motor windings, set to open control circuit at 135 degrees C. All thermal sensor leads shall terminate in motor terminal box. Control modules and reset switches shall be furnished with the thermal sensors. The thermal sensors shall be Texas Instruments 4BA or 7BA, or approved equal. The control modules shall be Texas Instruments 50AA, or approved equal.

P. Space Heaters

Motors shall be equipped with 120 volt single phase belt type space heaters capable of raising motor temperature 10 degrees C above ambient temperature to prevent condensation. All space heater leads shall terminate in motor terminal box.

Q. Non-Reverse Protection

Motors shall be equipped with non-reverse mechanisms which shall limit maximum reversal to within 10 degrees of rotation.

R. Terminal Box

Motors shall be equipped with extra large heavy duty split type conduit boxes. Unless specified otherwise, motor terminal boxes shall be located 90 degrees from pump discharge.

S. Screens

Motors shall be equipped with suitable corrosion resistant safety and rodent screens. Said screens shall not interfere with motor cooling or motor heat dissipation.

T. Nameplates

Nameplates, easy to read and corrosion resistant, shall be provided with each motor and said nameplates shall include the following information:

1. Motor Data Nameplate - Manufacturer, serial number, model number, rated horsepower, service factor, frequency, phase, load voltage, full load current, full load speed, design designation, locked rotor-code, insulation class, temperature rise, ambient temperature, thermal sensor setting, NEMA nominal efficiency, guaranteed minimum efficiency, and full load power factor.

2. Connection Data Nameplate - Motor start, motor run characteristics, and motor connection diagram.

3. Bearing Data Nameplate - Manufacturers, bearing types (thrust and guide), bearing numbers, thrust capacity, oil type, minimum operating oil viscosity, maximum operating oil bath temperature, required cooling water flow, and maximum cooling

water pressure.

PART 3 - EXECUTION

3.01. Pumping Unit Factory Performance Test (Not Required)

Each completed pumping unit (pump bowl assembly and vertical hollow shaft motor to be furnished) shall be given a certified factory performance test by pump manufacturer prior to shipment from factory. Pumping unit shall be tested at all design points for verification of certified performance curve furnished by Bidder and approved by District.

Tests shall be performed using suitable equipment for measuring bowl capacity, bowl head, power (input, brake, and water), and speed, all as approved by District. Equipment shall include a power meter for measuring input power (wire), a dynamometer for determination of pump brake horsepower, and a water meter for measuring output power (water). Contractor shall submit three copies of each certified factory performance test for acceptance by District. District reserves the right to have a representative present during any tests and to witness same.

3.02. Pumping Unit Installation (Required)

Contractor shall bear full responsibility for the satisfactory installation and initial operation of all pumping units furnished under these Specifications and shall provide sufficient personal supervision over all installation and startup procedures accordingly, unless otherwise specified. Contractor shall also provide all test equipment necessary to determine initial operating performance.

During installation, Contractor shall disinfect all portions of the pump bowl assembly and column piping with a chlorine solution and method acceptable to District.

3.03. Pumping Unit Field Performance Test (Acceptance Test)

After equipment has been completely installed, field tests shall be performed by the Contractor which shall be witnessed by District. Each pumping unit furnished hereunder shall be operated for a period of two weeks during which time acceptance tests may be conducted. Head capacity, overall efficiency, and input and output horsepower shall be determined for at least three different operating conditions in the operating range of the pumping unit, including the specified design point, for comparison with the certified pump curves and the factory performance test results, both as approved by District.

Pumping units (pump and motor) shall perform in the field substantially in accordance with the certified pump curves and the factory performance test results as adjusted for field conditions. If, in the opinion of District, the equipment furnished does not perform in accordance with these Specifications, Contractor shall promptly make all necessary repairs or corrections so that the equipment fully complies with these Specifications. Contractor shall remove, restore, and replace the equipment if required. Factory and field performance tests shall be rerun if necessary. Pump manufacturer's field service engineer shall assist District in the proper conduct of the above field acceptance tests.

3.04. Pumping Unit Vibration

Completed pumping unit (pump and motor) shall receive a final field trim balance, as may be required, and vibration of unit shall not exceed 0.0025 inches, peak to peak amplitude when operating. Contractor shall field measure vibration with a suitable calibrated instrument and all measurements shall be witnessed by District. Vibration shall be measured at motor thrust bearing housing and at any other locations on pumping unit as directed by District.

END OF SECTION

APPENDIX B

Specification Section 11330
Technical Well Rehabilitation Specification
Rehabilitation of Well 24

APPENDIX B

SECTION 11330

TECHNICAL WELL REHABILITATION SPECIFICATIONS
REHABILITATION OF WELL 24

INCLUDES ADDATIVE BID ITEM FOR CHEMICAL WELL REHABILITATION

PART 1 - GENERAL

1.01 General

If selected as an Addative Bid Item, the Contractor shall furnish all labor, equipment, materials, and services to rehabilitate wells as specified in the bidding sheets (or Scope of Work, as applicable) including removal of pumping unit, inspection of pumping unit, removal of oil from the surface of the water, wire brushing, cleaning debris from the bottom of the well, chemical treatment, disinfection, and installation of pumping unit. All work will be performed during normal working hours as set forth in the Special Requirements.

PART 2 - REHABILITATION OF WATER WELL

2.01 Removal of Pumping Unit

Contractor shall furnish all labor, equipment, materials, and services to remove and reinstall the motor, pump discharge head, column pipe, tube, shaft, and pump for the Well. All connecting appurtenances and equipment removed from the Well shall be properly lubricated and sealed from dirt, dust, water, condensation, and any other form of contamination.

Contractor shall inspect and make recommendations for repair of pumping unit bowl assembly, column for cracking/defects and tubing for defects/oil leakage.

2.02 Removal of Oil from Well (if pumping unit is an oil lubricated pump)

(a) Contractor shall furnish all labor, equipment, materials and services to remove the line shaft turbine pump oil from the water table surface following the completion of the pump removal. The oil shall be gently bailed from each well and placed in suitable leak proof containers.

(b) Contractor shall properly dispose of oil removed from each well. Disposal shall be in accordance with all federal, state and local regulations.

2.03 Video Logging of Wells

The successful bidder will provide two (2) color video logs for the well; one before and one after rehabilitation. The Contractor shall provide equipment that is capable of producing a clear video image of the well casing both submerged and out of the water. The camera must be capable of providing a clear video image of the Well and must be capable of displaying a right angle, side-scan view of the Well casing at the direction of the District. The equipment shall indicate digitally on screen the depth of the camera within one (1) foot of its actual location at one-foot intervals. The District must be present during the video scan. The successful bidder will provide a written field log of the observations from each video scan. Two (2) DVD Copies of each inspection scan shall be provided to the District upon completion of each video-logging run. The successful bidder will schedule the video loggings with the District at least two (2) Working Days in advance. Prior to performing videologs, water shall be added to the well in sufficient quantity and for sufficient duration to clarify the water in the well.

2.04 Bailing Well Clean

Contractor shall remove the debris from the bottom of the Well using a bottom bailer or a District-approved bailing method to depths specified for the Well.

2.05 Wire Brushing of Well

The well shall be cleaned using a **rotary brush method**. The brush shall be a minimum of five (5) feet in length and have 100% contact for the length of the brush with the well casing. The brush shall turn no less than ten (10) revolutions per minute. The rate of brushing shall be no more than forty (40) feet per hour. The bristle material shall be manufactured of stainless steel, low carbon steel, or nylon. Nylon bristles shall be used for wire-wrap screens. As the well casing is cleaned, the scale and encrustation being removed will be allowed to settle to the bottom of the Well. Actual method and tool must be submitted to the District for approval prior to the start of work. The successful bidder is responsible for safely controlling all fluid and debris around and exiting the site.

2.06 Chemical Treatment of Well (Addative Bid Item)

A. At the Districts discretion subsequent to performance of the first video log (pre rehabilitiation) the District will determine if it will exercise the chemical treatment of the well addative bid item. Contractor shall furnish all labor, equipment, materials, and services to chemically treat the well. Care shall be taken to follow all Federal, State, and local regulations pertaining to the handling and disposal of the waste chemicals.

B. Prior to commencing the Work, Contractor shall supply to the District a copy of the manufacturer's Material Safety Data Sheets (MSDS) for all well treatment and neutralizing chemicals for the District's approval and a shop drawing of the snug

fitting double surge block assembly. A Certificate of Analysis (COA) from the manufacturer/supplier must be provided for the acid used. In addition, the Contractor shall provide their proposed program to apply the chemicals, method of neutralizing the acid, method of disposal, Emergency Response Plan, and list of staff qualified to handle the above chemicals. Said list shall include training and certifications received by each individual pertinent to their duties.

All individuals involved in handling well treatment chemicals shall possess all certifications, authorizations and licenses required by local, state and federal authorities to perform the work.

C. Contractor shall chemically treat the well utilizing the method specified below.

1. The well shall be pretreated to disrupt the fouling mechanisms existing within the well column. Pretreatment shall consist of wire brushing of the entire wetted portion of the well as specified herein, followed by bailing the well clean.

2. A treatment solution consisting of the following chemicals shall be mixed above-ground and injected into the existing perforated sections of the casing starting from the bottom of the lower perforated casing to the top of the perforated casing using a double packer tremie method:

    a. Hydrochloric acid (approximately 30% activity): 9% of Total Well Volume
    b. Biodispersant (Johnson Screens NW-310 or equivalent): 3% of Total Well Volume
    c. Nonionic surfactant (Johnson Screens NW-400 or equivalent): 0.1% of Total Well Volume

2. Total Well Volume shall mean 1.5 X the volume of standing water within the well casing.

3. Immediately following the injection of the treatment solution, the Contractor shall swab the perforated sections of the casing with a minimum 20 foot long, snug fitting double surge block. Swabbing shall begin at the bottom of the lower perforated casing and work continuously upwards to the top of the upper perforated casing. After the upper most portion of the well is swabbed, Contractor shall secure a water sample to verify the pH. The sample may be secured by air lifting, submersible pumping, or thief sampling. **If the pH is above three (3), additional treatment solution will be added to the well at the discretion of the District**. If additional treatment solution is needed, the solution will be added and swabbed into place using the double surge block. Sampling and treatment solution addition shall continue until pH is equal to three (3) or less.

4. Contractor shall them wire-brush the well as specified in Section 2.05 above.

5. The well will then be allowed to stand for 12 hours. Immediately after 12 hours the Contractor shall swab each 20 foot perforated section for 15 minutes with the double surge block. Swabbing shall begin at the top of the upper perforated casing and work continuously downward to the bottom of the lower perforated casing.

D. Contractor shall remove and dispose of the treatment chemicals as outlined below.

1. After completion of swabbing as described above, the Contractor shall remove five (5) volumes of wastewater from the well into an above-ground portable tank, such as a Baker Tank. The wastewater will be removed continuously from the well by air lifting or pumping. Air lifting or pumping shall begin at the bottom of the well and work upward to the top of the upper perforated casing interval. The well should be continually purged until the pH has stabilized to a normal background level and the turbidity of the discharge has dissipated.

2. At the discretion of the District, water samples will be secured from the well after removal of the treated water to determine pH after removal. The total number of samples will not exceed four (4) in order to determine pH. Should the pH be greater than nine (9) or less than six (6), the Contractor will remove additional wastewater from the well at the direction of the District and dispose of same.

3. After removal of the wastewater, and at the direction of the District, Contractor shall bail the well clean.

4. Prior to disposal, Contractor shall neutralize the pH of the wastewater in the above-ground tank by adding sufficient soda ash (powder), magnesium hydroxide (slurry), potassium hydroxide (liquid), or other pre-approved neutralizing agent. **Neutralization will not be allowed in the well casing**.

5. All wastewater and residual solids from chemical treatment shall be disposed of by the Contractor in a manner and at the facility designated by the Contractor and approved by the District, in accordance with the attached Scope of Work.

6. Contractor shall discharge the neutralized wastewater onsite at a controlled rate to avoid erosion, as directed by District.

E. Contractor has the option of submitting in writing to District alternative methods of chemically treating the well, such as the use of available proprietary chemical well treatment systems. Alternative methods may only be used if approved by District in advance of bid opening by issuance of a Contract Addendum.

F. All chemicals used in treating the well shall be of food-grade quality. All biodispersants, surfactants and additives, both proprietary and non-proprietary, shall be NSF approved for potable well use.

2.07 Well Disinfection

After wire brushing and removal of debris, the well shall be disinfected with a chlorine solution. Unless otherwise permitted, Contractor shall use the following procedure to disinfect the well:

a. Before dosing, the Contractor shall check the pH of the well to determine if buffering of the chlorine will be necessary. If the pH is above 7.5 a chlorine enhancing chemical such as Johnson Screen's "NW-410," Layne-Christensen's "Oximate," or other District pre-approved equivalent must be used to lower the pH and enhance the effectiveness of chlorination. The chlorine enhancing chemical shall be used at a rate of 1.5 gallons per 1,000 gallons of disinfectant solution for a target pH of 6.5 to 7.5 during chlorination.

b. Contractor shall prepare a disinfectant solution consisting of water, sodium hypochlorite solution, and, if necessary, chlorine enhancing chemical, above-ground for addition to the well. The disinfectant solution shall have a free chlorine concentration of 300 parts per million (ppm). To achieve 300 ppm of chlorine, approximately 2.4 gallons of 12.5% Sodium Hypochlorite solution will be required per 1,000 gallons of disinfectant solution. The sodium hypochlorite solution used shall not have been stored more than 60 days.

c. Contractor shall dose the well by adding two times the Well Casing Volume of disinfectant solution to the well. The method used to introduce the disinfectant solution into the well shall ensure that the disinfectant solution reaches all portions of the well in which contamination might have occurred during construction.

d. Immediately after dosing the well, Contractor shall agitate the chlorinated water within the well by swabbing the well.

e. After the well has been swabbed, Contractor shall secure a water sample to verify the chlorine concentration. The sample may be secured by air lifting, submersible pumping, or thief sampling. If the chlorine concentration is less than 100 ppm, additional disinfectant solution will be added to the well, at the discretion of the District. Sampling and disinfectant solution addition shall continue until the

chlorine concentration is between 100 and 300 ppm. **A chlorine concentration of greater than 500 ppm is not permitted.**

f. Contractor shall repeat the agitation, sampling, and disinfectant solution addition procedure twice at one hour intervals.

g. Contractor shall then allow the well to stand without pumping or agitation for at least 6 hours.

h. Contractor shall then reinstall the permanent pumping unit into the well, and shall pump the chlorinated water from the well into an above-ground portable tank, such as a Baker Tank until chlorine is no longer evident and shall continue to pump until 15 minutes thereafter.

i. Contractor shall then allow the well to stand without pumping or agitation for 24 hours prior to sampling.

j. District will then secure two (2) samples of water from the well in approved containers, and have said samples analyzed by a State Certified analytical laboratory for total coliform (presence/absence), fecal coliform (presence/absence), and heterotrophic plate count. District will secure the first sample within five (5) minutes of starting the pump at the specified pumping rate, and the second sample thirty (30) minutes thereafter. District will furnish results of said analyses to Contractor within 48 hours of sampling.

k. The well shall be deemed properly disinfected only if the sample analysis results indicate absence of total coliform bacteria, absence of fecal coliform bacteria, and a heterotrophic plate count of less than 500 colony forming units per milliliter (CFU/ml).

l. If the sample analysis results do not indicate that the well was properly disinfected, the Contractor shall repeat the entire disinfection procedure, including sampling, sample analysis, and reporting of sample analysis results. Contractor shall continue to repeat the entire disinfection procedure until sample analysis results indicate that the well has been properly disinfected.

m. The chlorinated water shall be dechlorinated to less than 0.1 ppm of chlorine prior to disposal. Dechlorination shall take place within the above-ground portable tank. The dechlorinated water shall be discharged off site at a controlled rate to avoid erosion, as directed by District.

PART 3 - CLEANUP

3.01 Cleanup

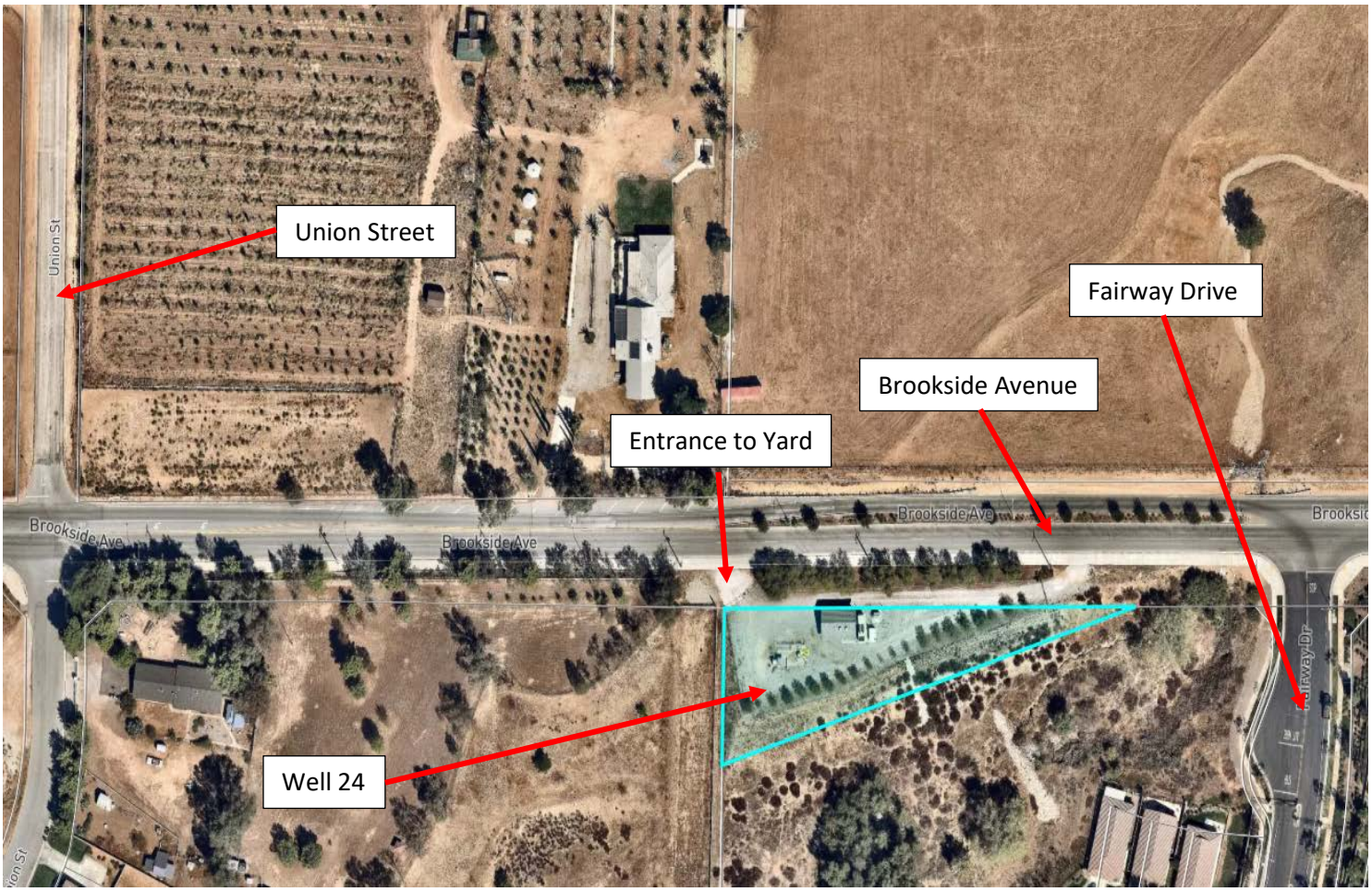
Contractor shall clean and restore all areas occupied by Contractor in connection with the Work to preconstruction condition. Cleanup shall include, but shall not be limited to, removal and disposal of equipment, rubbish, excess materials, temporary structures, deposited sediments, and excavated materials and restoration of equipment, fences, pavements, trees, shrubs, piping, and ground surface. All parts of work site shall be left in a neat and presentable condition, all to satisfaction of District.

APPENDIX C

Well 24 Location Map, Site Plan, and Photos

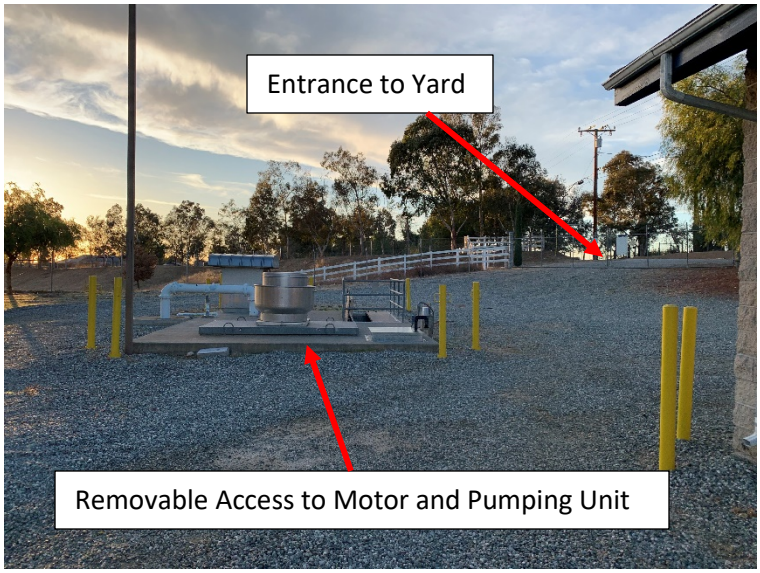
APPENDIX C

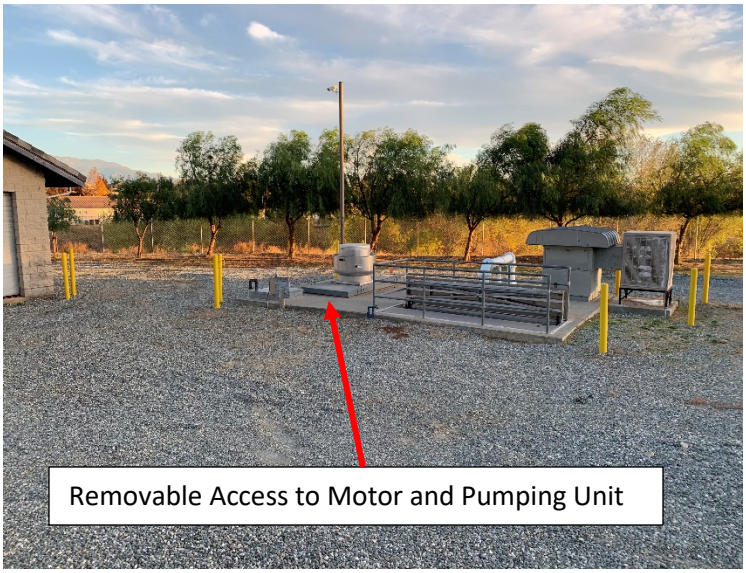
Well 24 Location Map



APPENDIX C

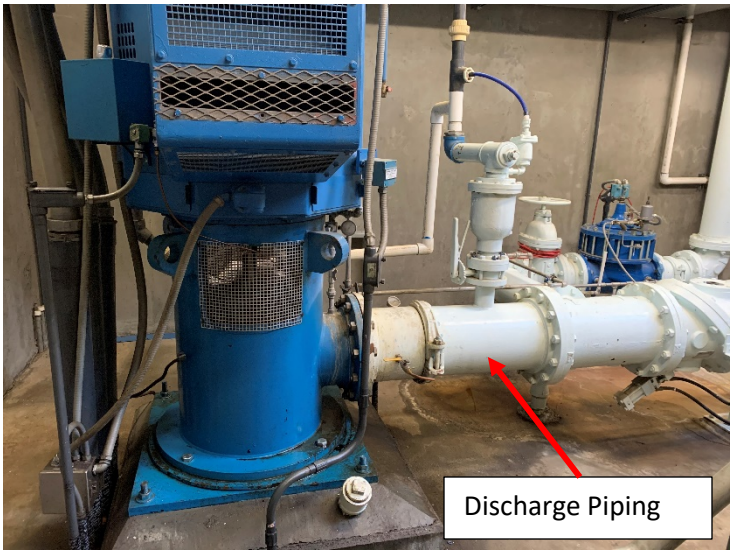
Well 24 Site Plan Image

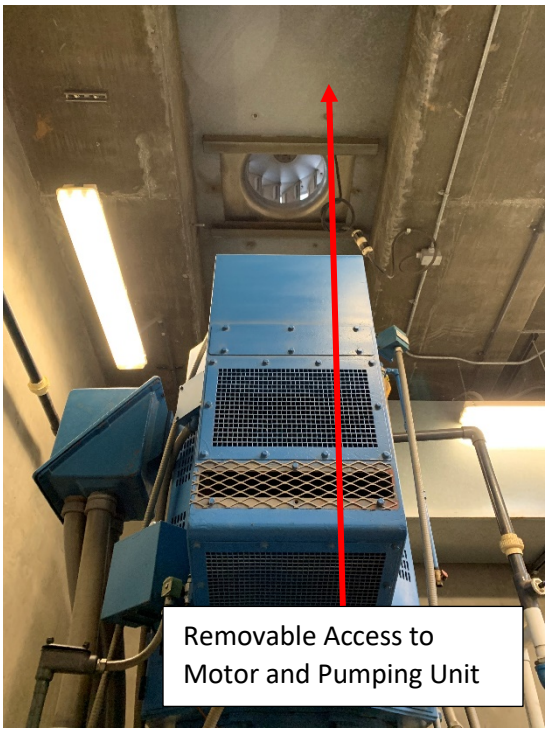




APPENDIX C

Well 24 Motor and Discharge Piping Photos





APPENDIX D

Maintenance Bond Example

MAINTENANCE BOND
FOR PUMPING EQUIPMENT
(By Supplier)
(Example)

KNOW ALL MEN BY THESE PRESENTS, that we,_____,
as Surety, hereinafter called Surety, are held and firmly bound unto Beaumont-Cherry Valley Water District, hereinafter called District, in the penal sum of $_____,
for the payment whereof (Supplier) and Surety bind themselves, their heirs, executors, administrators, successors, and assigns, jointly and severally, firmly by these present.

WHEREAS, Supplier has provided pumping equipment for District project _____
_____in accordance with the Specifications.

NOW, THEREFORE, the condition of the obligation is such that, if Supplier shall remedy any defects due to faulty materials or workmanship which shall appear within a period of 1 year from the date the project is accepted as provided for in the specification, then this obligation is to be void, otherwise to remain in full force and effect.

PROVIDED, HOWEVER, that the District shall give Supplier and Surety notice of observed defects with reasonable promptness.

Signed and sealed this_____day of_____, 20____

Supplier (SEAL)	Surety (SEAL)
Title	Title

APPENDIX E

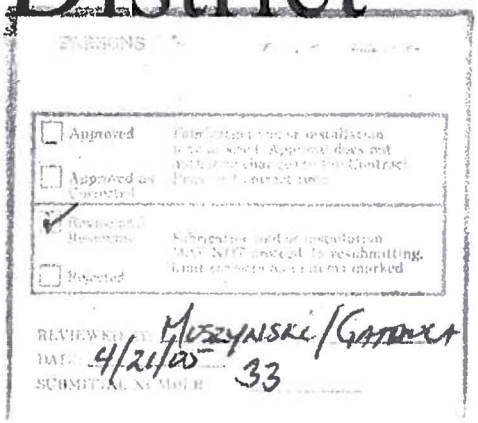
Well 24 Well and Pumping Unit Information

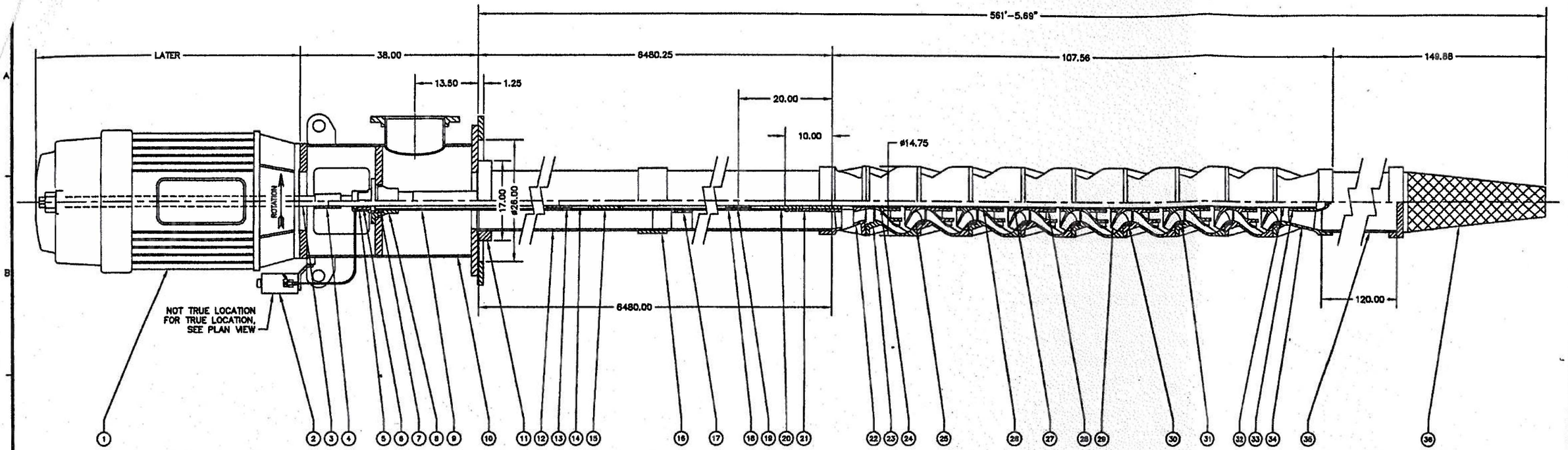
24

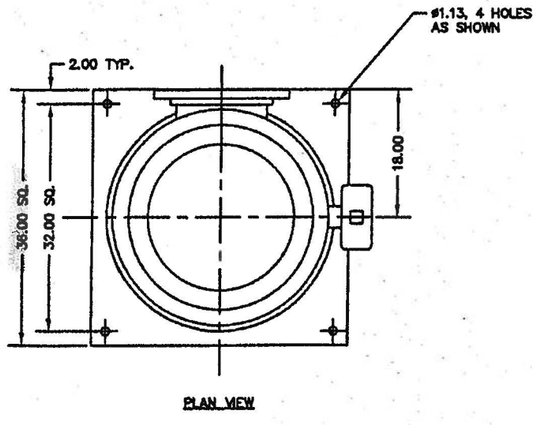
Sulzer Pump
Submittal Package
Serial # 79927

Pump & Motor Well
24

Beaumont Cherry
Valley Water District







PLAN VIEW

ITEM	QTY	DESCRIPTION	MATERIAL / ASTM NO.
1	1	U.S. ELECTRICAL MOTORS 600 HP, 1800 RPM, 3 PH, 460V, 60 HZ, WP-II ENCL., VERT. HOLLOW SHAFT MOTOR	
2	1	SOLENOID OILER ASSEMBLY - 110/120V	
3	1	UPPER HEADSHAFT - 2.18"	S.S. (A582 TP. 416 COND. A)
4	1	DRIVER COUPLING	S.S. (A582 TP. 416 COND. A)
5	1	TUBE TENSION NUT	CAST IRON (A48 CL. 30A)
6	1	TUBE TENSION NUT BEARING	BRONZE (B584 C93200)
7	1	PACKING SET	GARLOCK 431
8	1	TUBE TENSION PLATE	CAST IRON (A48 CL. 30A)
9	1	TUBE TENSION NIPPLE - 3.50"	STEEL (A53 GR. B TP. E)
10	1	DISCHARGE HEAD - 24.50" X 12"	STEEL (A36 & A53)
11	1	TOP COLUMN FLANGE	STEEL (A36)
12		THREADED COLUMN - 12"	BY OTHERS
13		LINESHAFT COUPLING	BY OTHERS
14		LINESHAFT - 2.18"	BY OTHERS
15		LINESHAFT SCREW BEARING	BY OTHERS
16		COLUMN COUPLING	BY OTHERS
17		TUBE STABILIZER	BY OTHERS
18		ENCLOSING TUBE - 3.50"	BY OTHERS
19	1	PUMPSHAFT COUPLING	S.S. (A582 TP. 416 COND. A)
20	2	TUBE ADAPTER SCREW BEARING	BRONZE (B584 C83600)
21	1	TUBE ADAPTER	CAST IRON (A48 CL. 40A)
22	1	DISCHARGE CASE	CAST IRON (A48 CL. 30A)
23	8	BOWL - 16CMC	CAST IRON (A48 CL. 30A)
24	1	COMBINATION BEARING	BRONZE (B584 C93200)
25	9	O-RING	BUNA-N
29	7	BOWL BEARING	BRONZE (B584 C93200)
27	8	LOCK COLLET	S.S. (A582 TP. 416 COND. A)
28	8	BUSHING	RUBBER (C425-65)
29	8	IMPELLER - 16CMC	BRONZE (B584 C83600)
30	8	IMPELLER SEAL RING	AL. BRZ (B148 C95400)
31	8	BOWL WEAR RING	NI. AL. BRZ (B148 C95500)
32	1	PUMPSHAFT - 2.18"	S.S. (A582 TP. 416 COND. A)
33	1	SUCTION CASE BEARING	BRONZE (B584 C93200)
34	1	SUCTION CASE	CAST IRON (A48 CL. 30A)
35		SUCTION PIPE - 12" NPT	BY OTHERS
36	1	CONE STRAINER	S.S. (A276-316 COND A)

NOTES:
1. ALL DIMENSIONS ARE IN INCHES UNLESS OTHERWISE SPECIFIED.
2. ALL BOLTING SHALL BE STEEL.
3. COATING: OD OF BOWL ASSY, ID OF HEAD ASSY, ID OF SOLEPLATE, AND OD & ID OF TUBE TENSION NUT ASSY SHALL BE COATED WITH CARBOLINE-891. OD OF HEAD ASSY AND SOLEPLATE SHALL BE COATED WITH SULZER STD. PRIMER & PAINT.
4. COLUMN THREADS: 12.742-6 N.S.-3
   ENCLOSING TUBE THREADS: 3.5625-10 N.S.-3 L.H.
   SHAFT THREADS: 2.1575-10 N.S.-2 L.H.
5. TOTAL COLUMN LENGTH = 6480.00
   TOTAL TUBE LENGTH (EXCL. TUBE TENSION NIPPLE) = 6480.00
   TOTAL SHAFT LENGTH (EXCL. UPPER HEADSHAFT) = 6462.25

CONDITIONS

FLOW	2600 USGPM
PUMP TOTAL HEAD	690 FEET
LIQUID PUMPED	WATER
SPECIFIC GRAVITY	1.00
TEMPERATURE	70° F.

CUSTOMER INFORMATION

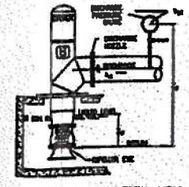
CUSTOMER	GANTRY CONSTRUCTORS, INC.
PURCHASE ORDER NO.	24-500-450
SITE	BEAUMONT CHERRY VALLEY W.D.
TAG NO.(S)	BEAUMONT WELL #24
APPLICATION	GENERAL WATER SERVICE

APPROX. WEIGHTS

DRIVER	5,100 LBS.
DISCHARGE HEAD ASSY	1,060 LBS.
SOLEPLATE	275 LBS.
BOWL ASSY (EXCL. SUCT. PIPE & STRAINER)	2,250 LBS.

JOB-RELATED INFORMATION

SERIAL NO.	79927
QUOTE NO.	122708.IN



PUMP TOTAL HEAD (H) = BOWL ASSEMBLY TOTAL HEAD LESS COLUMN & DISCHARGE HEAD LOSSES AS APPLICABLE

REFER TO HI 2.2-2000 PG. 21.22 FOR HEAD DEFINITIONS

THIS PRINT CERTIFIED CORRECT BY

SECTIONAL ILLUSTRATION: 24.50" X 12" HEAD ASSY - 12" X 3.50" X 2.18" COL ASSY - 16CMC, 8 STAGE BOWL ASSY.

NO.	REVISION	BY	DATE

SULZER
SULZER PUMPS HOUSTON INC.
600 KOCKAY ROAD
DICKINSON, TX 77539, USA
TEL: 281-534-6000

REV. SCALE	1 = 10"	DATE
DRAWN	N.G.	03/22/05
CHECKED	D.A.	03/05
APPROVED		

THIRD ANGLE PROJECTION
ENGINEERED PRODUCTS GROUP
DRAWING NO. H-8461-D

	Johnston Pump Company 800 Koomey Road, Brookshire, TX 77423	Order #: 79927

SUBJECT: Predicted Performance Curve

PREPARED BY: Gary Purcell – Project Manager DATE: April 8, 2005

Actual performance of the pumps tested will be similar to that shown on our predicted performance curve. When selecting an impeller trim, it is not possible to meet the test acceptance tolerances defined in Hydraulic Institute for more than 1 design point at a time. This fact is recognized and discussed in Hydraulic Institute as referenced on our predicted performance curve. Only 1 primary design point is required to meet the acceptance test tolerances as defined in Hydraulic Institute and only one point will be guaranteed. Primary Design point (Guaranteed Point) considered to be 2600 GPM @ 690 feet TDH @ 83% efficiency.

SULZER

JP Select 3.5.6.478

Pump Performance Datasheet

Customer	:	Quote number	:
Customer reference	:	Pump size	: 16CMC
Item number	:	Stages	: 8
Service	:	Based on curve number	: JT-16CMC-EC0554 Rev A
Quantity of pumps	: 1	Date last saved	: 13 Jan 2005

Operating Conditions

Flow, rated	: 2,600 USgpm
Head, rated	: 705 ft
Suction pressure, rated / max	: 0.00 / 0.00 psi.g
NPSH available, rated	: Ample

Site & Utility Data

Frequency	: 60 Hz

Performance

Speed	: 1,770 rpm
Impeller diameter, rated	: 11.63 in
Impeller diameter, maximum	: 12.00 in
Impeller diameter, minimum	: 11.00 in
Efficiency (bowl / pump)	: 83.30 / - %
NPSH required / margin required	: 28.68 / 3.00 ft
Ns / Nss	: 3,250 / 7,670 US units
MCSF	: 1,390 USgpm
Head, maximum, rated diameter	: 1,076 ft
Head rise to shutoff	: 52.69 %
Flow, best eff. point (BEP)	: 2,856 USgpm
Flow ratio (rated / BEP)	: 91.04 %
Diameter ratio (rated / max)	: 96.88 %
Head ratio (rated dia / max dia)	: 90.14 %
Viscous coefficients (CQ / CH / CE)	: 1.00 / 1.00 / 1.00
Selection status	: Acceptable

Liquid

Liquid type	: Water
Additional liquid description	:
Solids diameter, max	: 0.00 in
Temperature, max	: 68.00 deg F
Fluid density, rated / max	: 0.998 / 0.998 SG
Viscosity, rated	: 1.00 cP
-	:

Material

Material requested	: Cast Iron Bowl (Coated), Bronze Impeller (Std)
Material selected	: Ductile Iron Bowl (Coated), Bronze Impeller

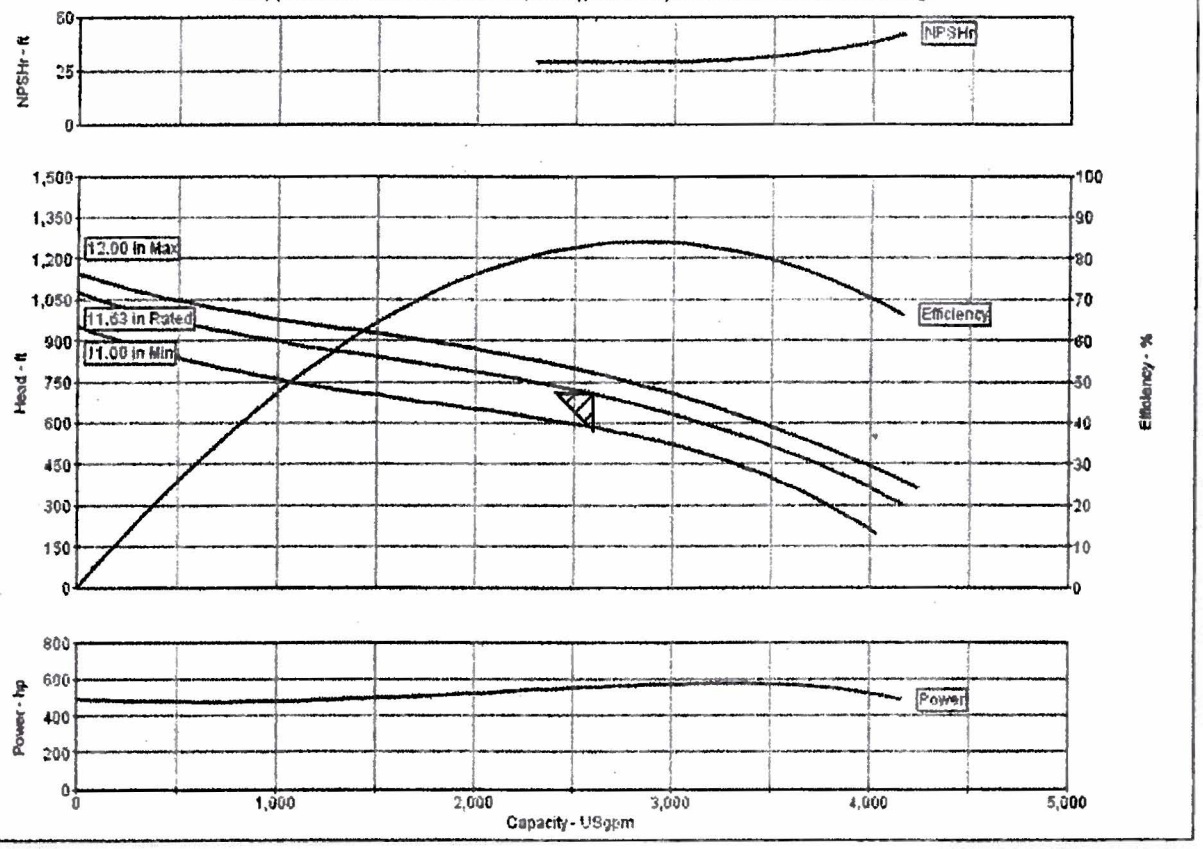
Pressure Data

Maximum working pressure	: 465.8 psi.g
Working pressure limit	: 660.0 psi.g
Suction pressure limit	: 150.0 psi.g
Hydrostatic test pressure	: 990.0 psi.g

Driver & Power Data

Driver sizing specification	: Rated power
Margin over specification	: 0.00 %
Service factor	: 1.15
Power, hydraulic	: 462 hp
Power (bowl / pump)	: 555 / -
Power, maximum, rated diameter	: 575 hp
Minimum recommended driver rating	: 600 hp / 447 kW

Pump performance. Corrected for construction, viscosity, friction and power losses of lineshaft and thrust bearings.



MOTOR

DATA

U.S. Electrical Motors

Division of Emerson Electric Co.
470 Wilson St.
La Habra, CA 90631
PH: 562 697-6338 FAX: 562 694-1326

Date: 1-11-05 Quotation: 1

Customer: Sulzer Issued by: Tod Macik
Attention: Ernie Ortiz
Fax:

Project: **Beaunont Cherry Valley**

Cc:

QUOTATION & ORDER MEMORANDUM

CURRENT	PHASE	CYCLES	VOLTS
AC	3	60	460

ITEM	QTY	H.P.	FRAME	SPEED	WEIGHT	TYPE	NET PRICE EACH
1	1	600	5012	1800	5100	RUE	

DESCRIPTION:

VHS, WPII, 1.15 SF, 50 degree C ambient, Premium Efficient, Ground in conduit box, Code F, NRR, Space Heater, 100 ohm bearing RTD's, 100 ohm winding RTD's, 300% EHT, Qty 1 PMC/Beta 440d-R vibration device, Class F insaulation

Price adders: Routine Test net each, Noise Test $ net each, Vibration Test net each.
Curves

Comments: NOTE : Due to the rapid changes taking place in the cost of materials, this quote expires in 30 days. Time may be extended with written approval.
Section 11145
Item J.4 pg 6 Full load efficiency will be 93.2%.
Section 11005
Item 2.02.15.b USEM will supply Qty 1 PMC/Beta M/N 440D-R vibration device.
Section 16150
Item 2.01.B.2 Motor frame will be steel.
Item 2.01.B.5 Standard USEM prep and paint will be supplied.

Lead-time: 10-12 wks Freight: Collect or third party
Net 30 days. F.O.B. Point of shipment

79927

EMERSON
Motor Technologies

EMERSON MOTOR COMPANY
8100 WEST FLORISSANT AVE.
P.O. BOX 3946 * BLDG. K * ST. LOUIS, MO 63136
FAX (314) 553-1101

DATE: 3/28/2005

P.O. NO.: 735233
USEM Order/Line NO.: 20018850 SO 100

TO: Sulzer-Brookshire *
800 Koomey Rd
Brookshire, TX, 77423
ATTN: GARY PURCELL

Model Number: NA
Catalog Number: NA
Submittals
CONF,LLC,SUBMITTALS

REVISIONS:
(NONE)

ALL DOCUMENTS HEREIN ARE CONSIDERED CERTIFIED BY US ELECTRICAL MOTORS.
THANK YOU FOR YOUR ORDER AND THE OPPORTUNITY TO SERVE YOU.

Features:

HOLD PRODUCTION
Horsepower ..... 00600.00~00000.00 ~ KW: 447.6
Enclosure ..... WPII
Poles ..... 04~00 ~ RPM: 1800~0
Frame Size ..... 5012~P
Phase/Frequency/Voltage.. 3~060~460 ~ Form Wound
Service Factor 1.15
Insulation Class ..... Class "F" ~ Insulife 5000
Altitude In Feet (Max) .. 3300 Ft.(1000 M)
Ambient In Degree C (Max) +40 C
Efficiency Class ..... Premium Efficiency
Application ..... Centrifugal Pump
Customer Part Number ....
Base Diameter (Inches) 24.5
Coupling Size ..... 2-3/16" Bore, 1/2" Key
NRR/SRC/Bolted Coupling ..... Non-Reverse Ratchet
Steady Bushing ..... Steady Bushing
Pricebook Thrust Value (lbs).. 10300
Customer Down Thrust (lbs) .. 30900 ← 4000 39000
Customer Shutoff Thrust (lbs).
Up Thrust (lbs) 6750
Momentary Up Thrust
Temperature Rise (Sine Wave): "F" Rise @ SF (Resist)
Starting Method ..... Direct-On-Line Start
Duty Cycle ..... Continuous Duty
Efficiency Value ..... 93.2 % ~ Guaranteed
Load Inertia (lb-ft2): NEMA ~ NEMA Inertia: 2202.00 ~ 1.00
Number Of Starts Per Hour: NEMA
Motor Type Code ..... RUE
Rotor Inertia (LB-FT²) 135. LB-FT²
Qty. of Bearings PE (Shaft) 1
Qty. of Bearings SE (OPP) 1
Bearing Number PE (Shaft) 6219-J/C3
Bearing Number SE (OPP) 29428-EJ —NACH

EMERSON
Motor Technologies

EMERSON MOTOR COMPANY
8100 WEST FLORISSANT AVE.
P.O. BOX 3946 * BLDG. K * ST. LOUIS, MO 63136
FAX (314) 553-1101

DATE: 3/28/2005

P.O. NO.: 735233
USEM Order/Line NO.: 20018850 SO 100

TO: Sulzer-Brookshire *
800 Koomey Rd
Brookshire, TX, 77423
ATTN: GARY PURCELL

Model Number: NA
Catalog Number: NA
Submittals
CONF,LLC,SUBMITTALS

REVISIONS:
(NONE)

ALL DOCUMENTS HEREIN ARE CONSIDERED CERTIFIED BY US ELECTRICAL MOTORS.
THANK YOU FOR YOUR ORDER AND THE OPPORTUNITY TO SERVE YOU.

Accessories:
Counter CW Rotation FODE
300% Extra High Thrust
Ground Lug In Conduit Box
Insul. Bearing - Upper Bracket
115 Volt Space Heaters
Stainless Steel Hardware
Bearing RTD-100 Ohm,3 Lead
Both Bearings
Winding RTD's-100 Ohm,3 Lead
Water Cooled Bearings
Q-1 Accessory Outlet Box ~ Same Side As Main O/B
1" NPT Conduit Opening
One Box with Terminal Board
Special Features Plate Info:
JOB# 79927
PMC/Beta 440D-R Vib. Switch
Q-1 Upper/Short End Bracket
Std. Mounting Position
Q-1 Lower/Pulley End Bracket
Std. Mounting Position
Test Requirements:
Short Commer. Test - Unwit
Sound Test - Unwitnessed
Vibration Test-Unwit. (IPS)

USE THE DATA PROVIDED BELOW TO SELECT THE APPROPRIATE DIMENSION PRINT

Horsepower	600
Pole(s)	04
Voltage(s)	460
Frame Size	5012P
Outlet Box AF	10.94
Outlet Box AA	3.50
Accessory Outlet Box DM	1

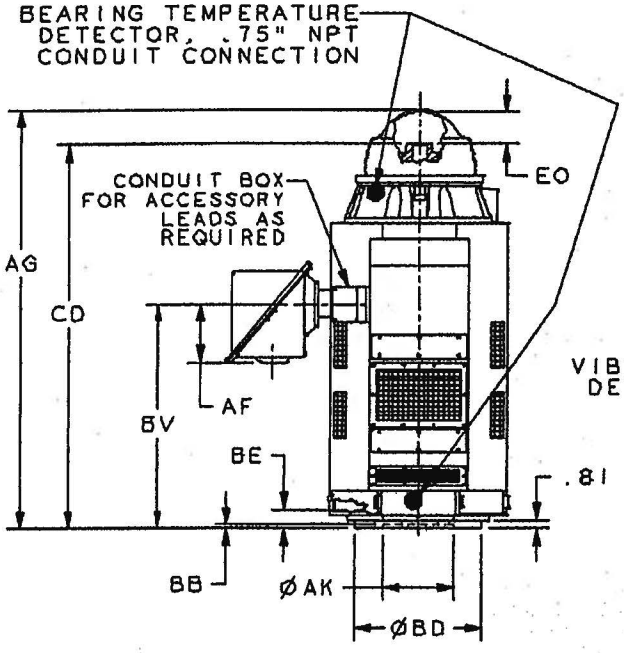
VERTICAL MOTORS

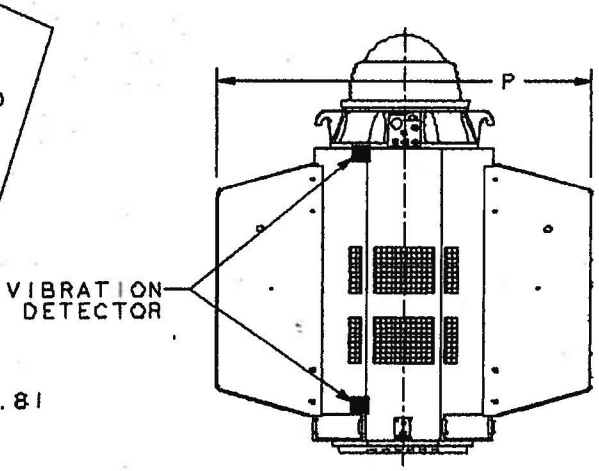
WEATHER PROTECTED TYPE II
FRAME: 5000PH, P, PA
TYPE: RU

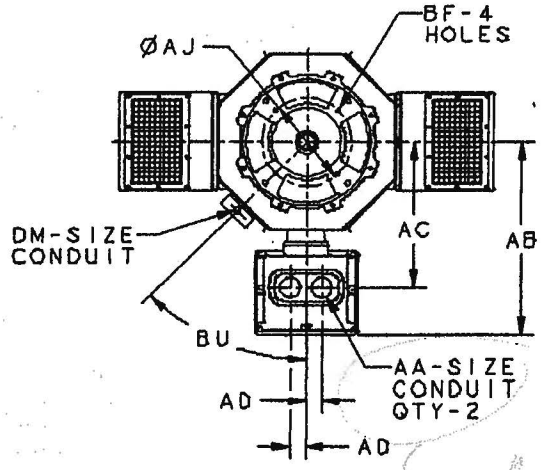
09-2266-22

EFFECTIVE: 18-NOV-02
SUPERSEDES: 14-NOV-02

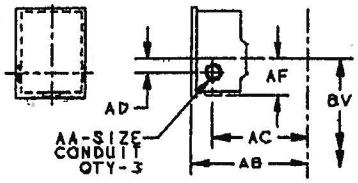
SHEET 1 OF 1







5600 CUBIC INCH CONDUIT BOX



OUTSIDE DIMENSIONS
HEIGHT: 24"
WIDTH: 18"
DEPTH: 14"

TOLERANCES	
FACE RUNOUT	.007 F.I.R.
PERMISSIBLE ECCENTRICITY OF MOUNTING RABBET	.007 F.I.R.
MAXIMUM SHAFT END PLAY	.010

FRAME	BD MAX	BE	AJ	BF	AK +.005	BB MIN
5000PH	20.00	2.18	14.750	.88	13.500	.25
5000P[3]	24.50		14.750	.69	13.500	
			22.000	.94		
5000PA	30.50		26.000	.81	22.000	

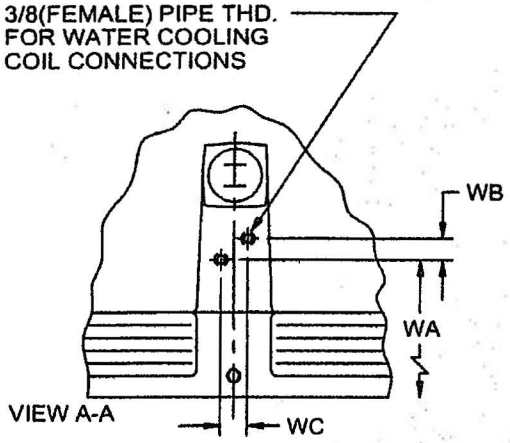
DM
3/4 NPT
1 NPT
1-1/2 NPT

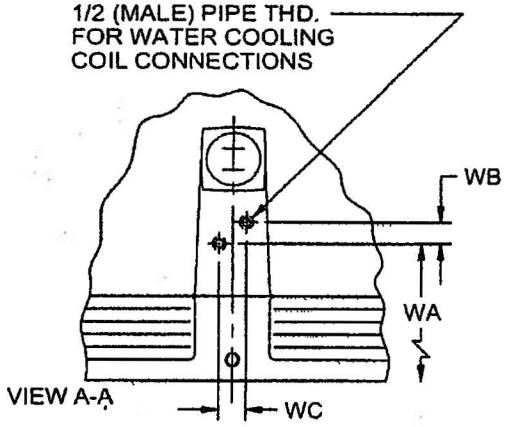
FRAME	HP	VOLTS	C/BOX VOLUME (CU.IN.)	AA	AB	AC	AD	AF	BU
5000	ALL	0-4800	3400	3-1/2 NPT	36.50	27.88	3.50	10.94	45°
	ALL	4801-6900	9600		36.13	30.13	4.00	10.81	

FRAME	P	AG	BV	CD	EO
5008	72.00	63.84	27.00	57.06	6.42
5012		78.84	42.00	72.30	

1: DIMENSIONS MAY VARY .25" DUE TO CASTING AND/OR FABRICATION VARIATIONS.
2: DIMENSIONS AND TOLERANCES ARE SHOWN IN INCHES.
3: 5000P HAS TWO BOLT CIRCLES.

EFFECTIVE: 10-NOV-03	VERTICAL MOTORS WATER COOLING ACC. FOR EXTRA HIGH THRUST FRAME: 449 THRU 8012 TYPE: HU, EU, JU, RU, HV4, EV4, JV4, RV4	PRINT: 09-1831
SUPERSEDES: 10-JUL-02		SHEET: 1 OF 1



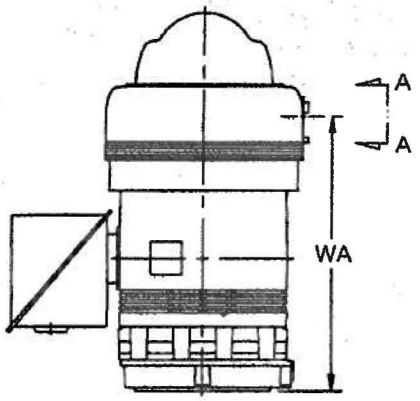


FRAMES

5006
5008(HU)
5009
5808
5809(HU)
5810

FRAMES

449
5008(RU)
5012
5807
5809(EU,JU)
5811
6808
6810
8006
8007
8008
8009
8010
8011
8012



ALL DIMENSIONS ARE IN INCHES

	FRAME	WA	WB	WC
	449	42.50	1.88	1.63
	5006	36.00	1.75	1.75
	5008(HU)	40.00	1.75	1.75
	5008(RU)	43.50	1.75	1.88
	5009	44.00	1.75	1.75
	5012	58.50	1.75	1.88
	5807	48.19	1.88	1.63
	5808	44.25	1.50	1.75
	5809(HU)	48.25	1.50	1.75
	5809(EU,JU)	53.19	1.88	1.63
	5810	52.25	1.50	1.75
	5811	61.19	1.88	1.63
	6808	57.44	1.88	1.63
	6810	68.44	1.88	1.63
	8006	61.94	1.88	1.63
	8007	65.94	1.88	1.63
	8008	69.94	1.88	1.63
	8009	73.94	1.88	1.63
	8010	77.94	1.88	1.63
	8011	81.94	1.88	1.63
	8012	85.94	1.88	1.63

1: FOR ALL UNITS A MINIMUM OF 4 GPM OF WATER MUST BE MAINTAINED AT INLET AT A MAXIMUM OF 125 PSI AND A MAXIMUM TEMPERATURE OF 90°F. EXTERNAL WATER CONNECTION MUST BE SELF-DRAINING TO PREVENT COOLING COIL RUPTURES AT FREEZING TEMPERATURES.

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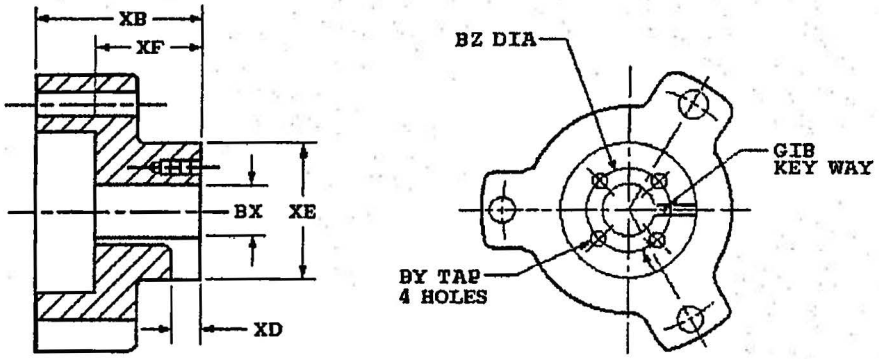
US MOTORS

VERTICAL HOLLOSHAFT COUPLING DIMENSIONS

Standard Coupling Dimensions



Coupling Part Number	143112
BX Nominal	2 3/16
Actual Bore	2.188
BY	3/8-16
BZ	3 1/4
XB	5 1/8
XD	1/2
XE	5
XF	3 5/8
SQ. KEY	1/2

Notes:

1. All Rough casting dimensions may vary by 0.25" due to casting variations.
2. All tapped holes are Unified National Course, Right Hand thread.
3. Coupling bore dimension "BX" is machined with a tolerance of - .000", +.001" up to 1.50" bore inclusive. Larger bores: -.000", +.002".

Home Email

MOTOR PERFORMANCE

MODEL NO.	CATALOG NO.	PHASE	TYPE	FRAME
NA	NA	3	RUE	5012P

ORDER NO.	20018850	LINE NO.	100

MPI:	85302
HP:	600
POLES:	4
VOLTS:	460
HZ:	60
SERVICE FACTOR:	1.15
EFFICIENCY (%):	
S.F.	94.1
FULL	94.5
3/4	95.2
1/2	95
1/4	92.5
POWER FACTOR (%):	
S.F.	89.1
FULL	89.1
3/4	88.1
1/2	83.8
1/4	68
NO LOAD	6.3
LOCKED ROTOR	20.8
AMPS:	
S.F.	771
FULL	667
3/4	502
1/2	353
1/4	223
NO LOAD	152.4
LOCKED ROTOR	4733
NEMA CODE LETTER	G
NEMA DESIGN LETTER	#
FULL LOAD RPM	1775
NEMA NOMINAL EFFICIENCY (%)	94.5
GUARANTEED EFFICIENCY (%)	93.6
MAX KVAR	103.2
AMBIENT (°C)	40
ALTITUDE (FASL)	3300
SAFE STALL TIME-HOT (SEC)	16
SOUND PRESSURE (DBA @ 1M)	85
TORQUES:	
BREAKDOWN{% F.L.}	175
LOCKED ROTOR{% F.L.}	60
FULL LOAD{LB-FT}	1776

The Above Data Is Typical, Sinewave Power Unless Noted Otherwise

EMERSON.
Motor Technologies

EMERSON MOTOR COMPANY
ST. LOUIS, MO

MOTORS

NAMEPLATE DATA

CATALOG NUMBER:				NAMEPLATE PART #:	422705-006		
MODEL		FR	5012P	TYPE	RUE	ENCL	WPII
SHAFT END BRG	6219-J/C3 - QTY 1			OPP END BRG	29428-EJ - QTY 1		
PH	3	MAX AMB	40 C	ID#	(ref: Order#: 20018850, Type: SO, Line#: 100)		
INSUL CLASS	F	Asm. Pos.		DUTY	CONT		

HP	600		RPM	1775		HP		RPM	
VOLTS	460					VOLTS			
FL AMPS	667.0					FL AMPS			
SF AMPS	771.0					SF AMPS			
SF	1.15	DESIGN	#	CODE	G	SF		DESIGN	CODE
NEMA NOM EFFICIENCY	94.5	NOM PF	89.1	KiloWatt	447.6	NEMA NOM EFFICIENCY		NOM PF	
GUARANTEED EFFICIENCY	93.6	MAX KVAR	103.2	HZ	60	GUARANTEED EFFICIENCY		MAX KVAR	HZ

UL DATA (IF APPLICABLE):

DIVISION		CLASS I		GROUP I	
TEMP CODE		CLASS II		GROUP II	

VFD DATA (IF APPLICABLE):

VOLTS			
AMPS			
TORQUE 1		TORQUE 2	
VFD LOAD TYPE 1		VFD LOAD TYPE 2	
VFD HERTZ RANGE 1		VFD HERTZ RANGE 2	
VFD SPEED RANGE 1		VFD SPEED RANGE 2	
SERVICE FACTOR		FL SLIP	
NO. POLES		MAGNETIZING AMPS	
VECTOR MAX RPM		Encoder PPR	
Radians / Seconds		Encoder Volts	

TEAO DATA (IF APPLICABLE):

HP (AIR OVER)		HP (AIR OVER M/S)		RPM (AIR OVER)		RPM (AIR OVER M/S)	
FPM AIR VELOCITY		FPM AIR VELOCITY M/S		FPM AIR VELOCITY SEC			

ADDITIONAL NAMEPLATE DATA:

Decal / Plate	WD=499495	Customer PN	
Notes		Non Rev Ratchet	NRR
Max Temp Rise		OPP/Upper Oil Cap	30 QT/28.4 L
Thermal (WDG)	OVER TEMP PROT 2	SHAFT/Lower Oil Cap	GREASE
Altitude			
EPACT Note		EPACT Compliance	
COS		Marine Duty	
Balance	0.08 IN/SEC	Arctic Duty	
3/4 Load Eff.	95.2	Inrush Limit	
Motor Weight	5100	Direction of Rotation	
Sound Level		Special Note 1	JOB# 79927
Vertical Thrust	30900	Special Note 2	
Thrust Percentage	300% EHT	Special Note 3	
Bearing Life		Special Note 4	
Starting Method		Special Note 5	
Number of Starts		Special Note 6	
200/208V 60Hz Max Amps		SH Max. Temp.	
190V 50 hz Max Amps		SH Voltage	SH VOLTS=115V
380V 50 Hz Max Amps		SH Watts	SH WATTS=384W
NEMA Inertia		Load Inertia	
Sumpheater Voltage		Sumpheater Wattage	
Special Accessory Note 1	BEARING SET POINTS	Special Accessory Note 16	
Special Accessory Note 2	ALARM= 90C	Special Accessory Note 17	AFFIX N/P 915591
Special Accessory Note 3	SHUTDOWN= 100C	Special Accessory Note 18	
Special Accessory Note 4		Special Accessory Note 19	
Special Accessory Note 5		Special Accessory Note 20	
Special Accessory Note 6		Special Accessory Note 21	
Special Accessory Note 7		Special Accessory Note 22	
Special Accessory Note 8		Special Accessory Note 23	
Special Accessory Note 9		Special Accessory Note 24	
Special Accessory Note 10		Special Accessory Note 25	
Special Accessory Note 11		Special Accessory Note 26	
Special Accessory Note 12		Special Accessory Note 27	
Special Accessory Note 13		Special Accessory Note 28	
Special Accessory Note 14		Special Accessory Note 29	
Special Accessory Note 15		Special Accessory Note 30	

EMERSON
Motor Technologies

EMERSON MOTOR COMPANY
ST. LOUIS, MO

MOTORS

TYPICAL NAMEPLATE DATA
ACTUAL MOTOR NAMEPLATE LAYOUT MAY VARY
SOME FIELDS MAY BE OMITTED

SHOP DRAWING TRANSMITTAL

To: Gantry Constructors, Inc.
P. O. Box 819
Clarkdale, AZ 86324

Attention: Glen Lamoreaux
FAX (928) 649-0925

From: Parsons
100 West Walnut Street.
Pasadena, CA 91124

Date Received: 5/4/05
Date Returned: 5/11/05

Project: **Outfitting Well No. 24**

The following Shop Drawings submitted by Sulzer Pump for the above-mentioned project have been examined with the resulting action as indicated. Approval of the submittal indicates only that no deviation from specific requirements of the contract documents has been found, except as noted. Nothing in this approval shall be construed as revising, in any way, the requirements for a fully integrated and operable system as specified. Neither does an approval provide authorization to deviate from Contract Documents without specific designated approval for each such deviation.

Submittal No.	Description	Spec. Section	Action
33A	Vertical Turbine Pump	11145	(b) (e)

(a) Approved
(b) Approved as Corrected/Noted
(c) Revise and Resubmit
(d) Rejected
(e) See attached comment sheet.

Signed: Steve Gratwick
Steve Gratwick
Project Manager

Copies of Submittal to:
2 Gantry Constructors, Inc., Glen L.
1 Field Inspector, BCVWD
1 Shop Dwg. File, Job. No. 723185.97000

Transmitted via:
Hand Deliver
Hand Deliver
(Method: i.e., mail, hand deliver, express mail, return receipt requested, etc.)

PARSONS
SUBMITTAL REVIEW COMMENTS

PROJECT: Well No. 24 Outfitting JOB NO: 723185.97000

PROJECT MANAGER: Steve Gratwick SUBMITTAL NO: 33A

SUBMITTAL TITLE: Vertical Turbine Pump

SPECIFICATION SECTION: 11145 DATE: 5/11/05

REVIEWED BY: V. Muszynski / E. Gatdula DISCIPLINE: Equipment

COMMENTS:

Electrical Comments:

1. Acceptable
2. Acceptable
3. Provide the regular size power terminal box with 2-3 ½" hubs.
4. For large motors, the space heater lead wires are always provided with a standard separate terminal box.
5. Noted
6. Acceptable

Mechanical Comments:

1. Acceptable
2. Acceptable
3. Acceptable
4. Acceptable
5. Acceptable
6. Acceptable
7. Acceptable

Note: This form shall remain attached to the submittal throughout its review and shall be kept as a permanent record.

Glen Lemoreaux 951-755-0367

Purcell, Gary

3 pages

From: Purcell, Gary
Sent: Monday, May 02, 2005 3:57 PM
To: Ortiz, Ernesto; Griego, Leonard

Attachments: 79927-Motor Data.pdf; Oiler Assembly.pdf

Ernie,

Sulzer comments to Submittal # 33 for "Outfitting Well No. 24" are attached

Electrical comments
1)600 HP would be the normal size selection for this application. 700HP could be supplied at an adder. OK
2)Motor and Bearing RTD's are Platinum. OK
3)Oversize terminal box w/ Qty 3 - 4" hubs can be supplied for an adder of $1437 each
4)Separate terminal box can be supplied for an adder of $675. Hubs on Space Heater box will be 1". See attached drawing for accessory box location.
5) See attached drawing for accessory location.
6)Weather Protected Two is specified.

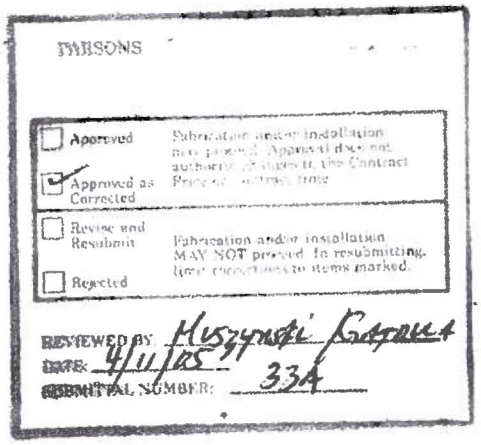
Mechanical Comments
1) The size of this plate is 36"x36"x1.25" and will be grouted and installed separately.
2)Non-Reversing Ratchet is supplied
3)Bowl casting are to be made from A48Class 30 cast iron which has a minimum tensile of 30,000 psi.
4)Bearings are located at locations26/28/33 per sectional drawing.
5)Discharge flange does meet ANSIB16.1 150psi rating.
6)Impeller is of the enclosed design.
7)Capacity for the oiler assembly is Two Gallons, schematic drawing attached

I hope these comments help to clarify the issues

79927-Motor Data.pdf (1 MB) Oiler Assembly.pdf (28 KB)

Thanks,

Gary Purcell
Project Management
SULZER Pumps Houston Inc.
800 Koomey Road, Brookshire, TX, 77423,USA
Tel. 281-934-6314
Mobile phone 281-389-0303
Fax 281-934-6194
E-mail mailto:gary.purcell@sulzer.com
Internet http://www.sulzerpumps.com



Gary Purcell

PRELIMINARY
NOT FOR CONSTRUCTION

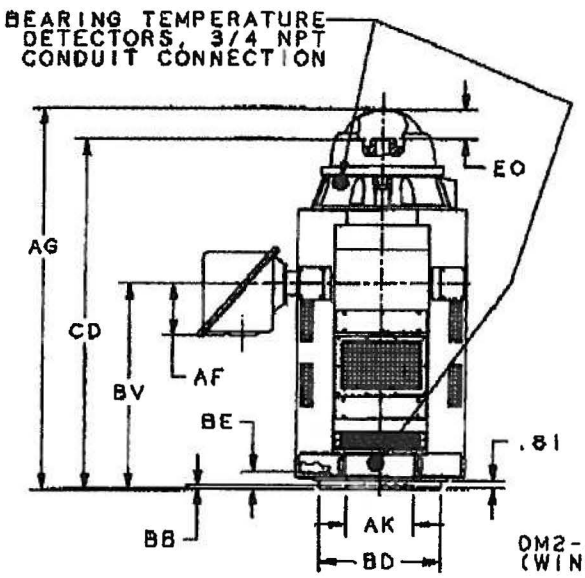
VERTICAL MOTORS

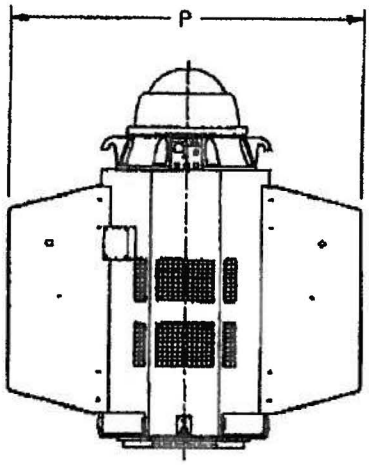
WEATHER PROTECTED TYPE II
FRAME: 5000PH, P, PA
TYPE: RU

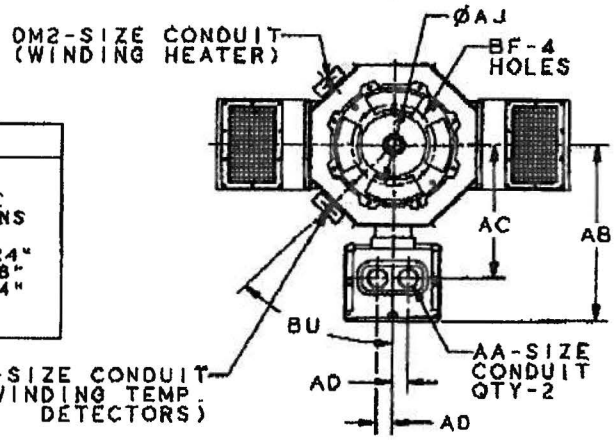
09-2266-30

EFFECTIVE: 22-APR-05
SUPERSEDES: NEW

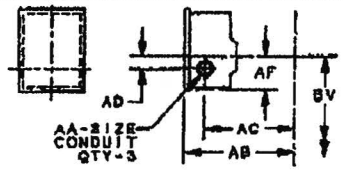
SHEET 1 OF 1







5600 CUBIC INCH CONDUIT BOX



OUTSIDE DIMENSIONS
HEIGHT: 24"
WIDTH: 18"
DEPTH: 14"

TOLERANCES	
FACE RUNOUT	.007 F.I.R.
PERMISSIBLE ECCENTRICITY OF MOUNTING RABBET	.007 F.I.R.
MAXIMUM SHAFT END PLAY	.010

FRAME	AJ	AK +.005	BB MIN	BD MAX	BE	BF
5000PH	14.750	13.500	.25	20.00	2.19	.89
5000P[3]	14.750	13.500		24.50		.89
	22.000					.94
5000PA	26.000	22.000		30.50		.81

DM1	DM2
1 NPT	3/4 NPT
1-1/4 NPT	1 NPT
1-1/2 NPT	1-1/2 NPT
2 NPT	

FRAME	HP	VOLTS	C/BOX VOLUME (CU.IN.)	AA	AB	AC	AD	AF	BU
5000	ALL	0-4800	3400	3-1/2 NPT	36.50	27.88	3.00	10.94	45°
	ALL	4801-8900	5600		36.13	30.13	4.00	10.81	

FRAME	P	AG	BV	CD	EO
5008	72.00	63.84	27.00	57.06	6.42
5012		78.84	42.00	72.30	

1: DIMENSIONS MAY VARY .25" DUE TO CASTING AND/OR FABRICATION VARIATIONS.
2: DIMENSIONS AND TOLERANCES ARE SHOWN IN INCHES.
3: 5000P HAS TWO BOLT CIRCLES.

09-2268

U.S. ELECTRICAL MOTORS
DIVISION OF EMERSON ELECTRIC CO.

DO NOT USE FOR CONSTRUCTION PURPOSES UNLESS CERTIFIED

Code: IS-OA

INSTALLATION INSTRUCTIONS
OILER ASSEMBLY

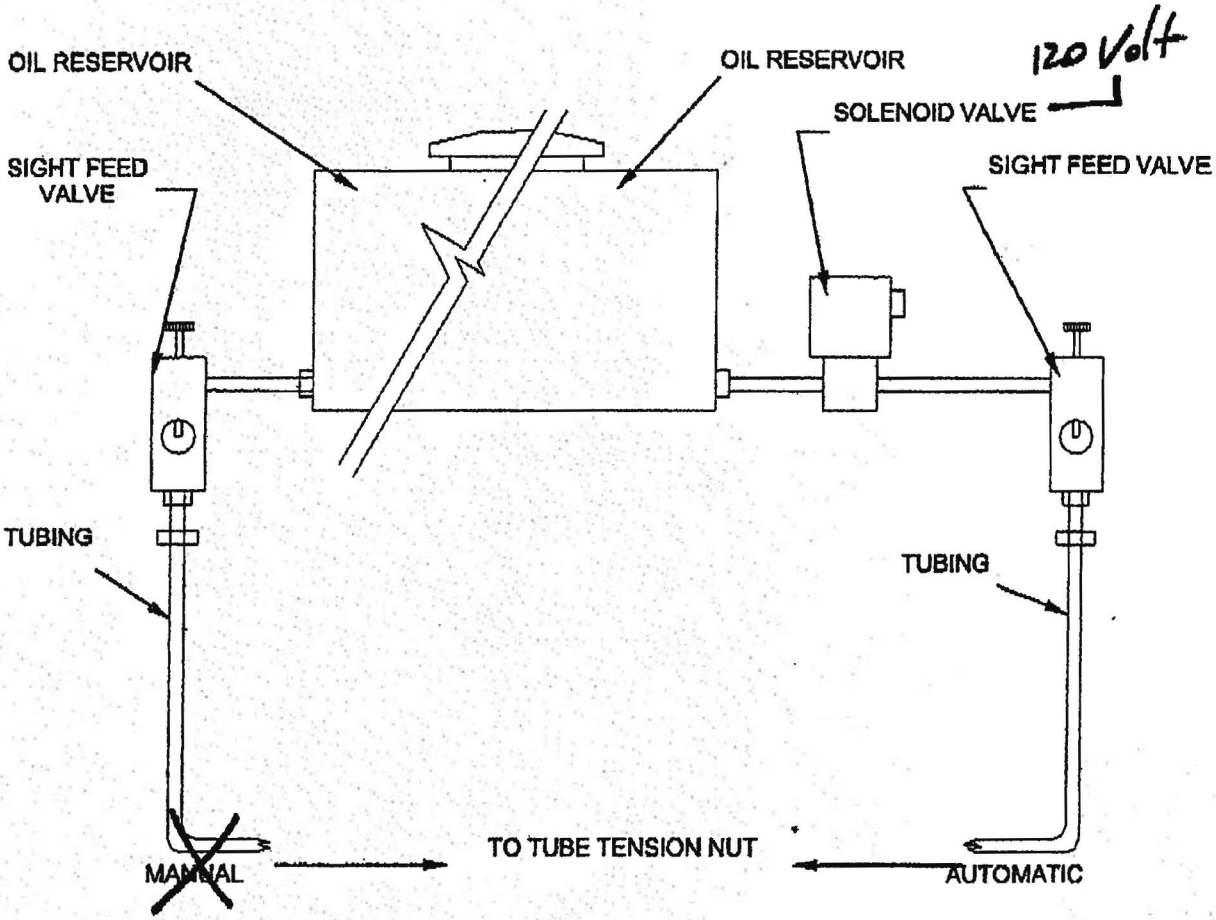
(1) Bolt the oil reservoir and bracket to the head.

(2) Connect the oil reservoir to the tube tension nut with the fittings and tubing supplied.

(3) Install a pipe plug in the opposite end of the oil reservoir.

(4) Verify that the solenoid valve is the correct voltage and connect it to the electrical power.

(5) Fill the oil reservoir with the proper viscosity turbine oil. (See lubrication sheet 'Lubrication Chart.')



Johnston Pump Company
800 KOOMEY RD.
BROOKSHIRE, TEXAS 77423

Gratwick, Stephen

From: Glen Lamoreaux [glamoreaux@gantryconstructors.com]
Sent: Monday, August 08, 2005 10:36 AM
To: Gratwick, Stephen
Subject: Fw: 79927 Perf Curve
Importance: High

Pump curves for well 24
----- Original Message -----
From: Ortiz, Ernesto
To: Glamoreaux@gantryconstructors.com
Sent: Monday, August 08, 2005 9:34 AM
Subject: FW: 79927 Perf Curve

Attached is the performance test curve for the City of Beaumont Well no. 24. Please let me know when you have the approval so we can ship the bowl assembly and the rest of the parts for this order

<<16CMC-8_79927A_TC-12101.xls>>

Ernie Ortiz
New Equipment Sales
Sulzer Pumps (US) Inc.
Phone No. 909-594-9959, ext. 332
Fax No. 909-594-1335
E-Mail: ernesto.ortiz@sulzer.com
Internet http://www.sulzerpumps.com

From: Purcell, Gary
Sent: Monday, August 08, 2005 9:21 AM
To: Ortiz, Ernesto; Griego, Leonard; Evans, Danny; Treybig, Doug
Subject: FW: 79927 Perf Curve

Ernie/Leonard

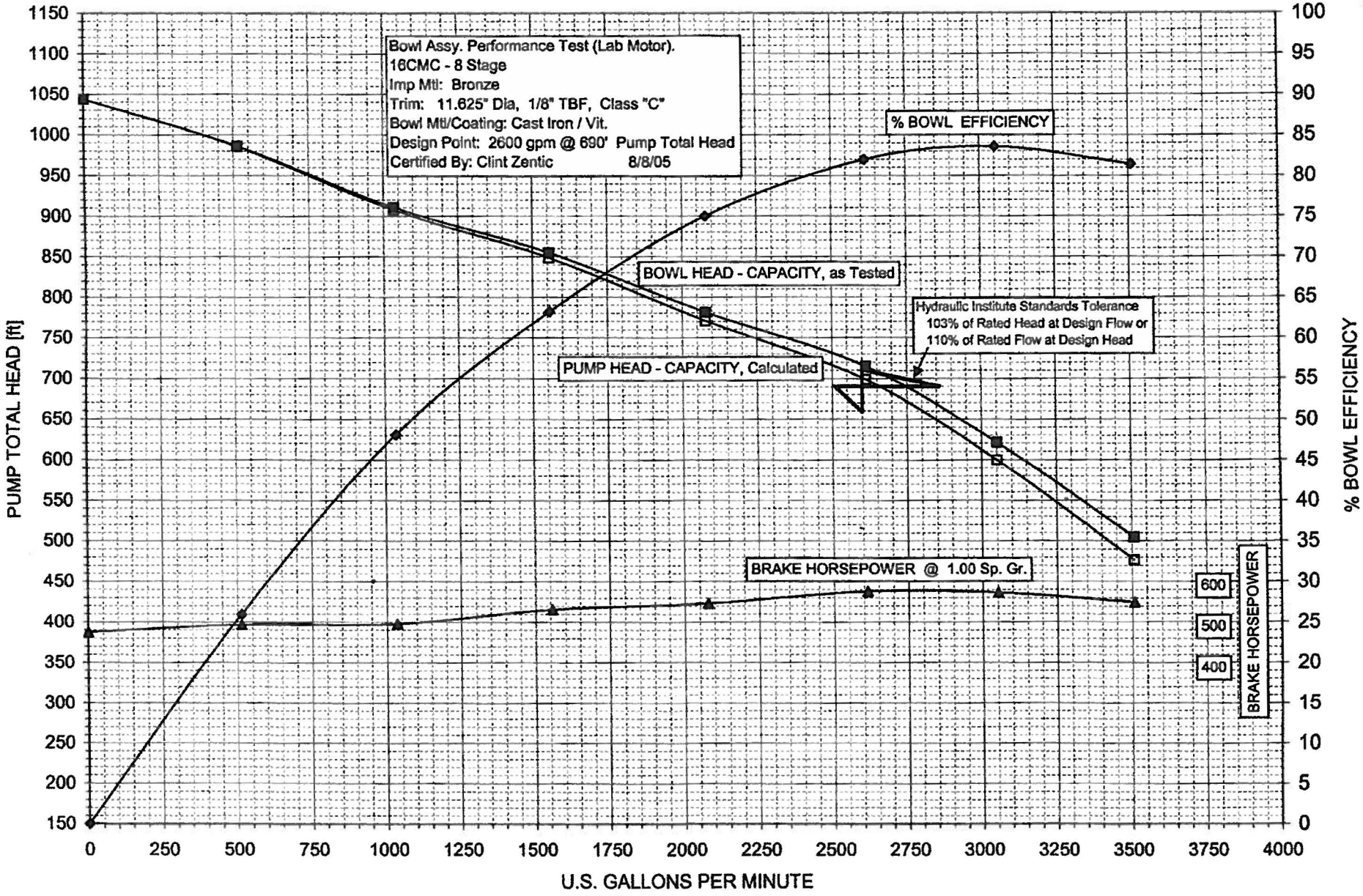
Please forward to Glen with Garney ASAP. The pump will be available to ship with Edmund if approval is received shortly.

Doug/Dan

The curve looks fine, please prepare for shipment. Let Gary know this is the same client that will probably accept Saturday or Sunday delivery.

Thanks,

Sulzer Pumps Houston Inc.
Brookshire, Texas
Customer: Gantry Constructin
Job#:79927 A, TC-12101, Rev #: 0
PO #: 24-500-450, Tag: Beaumont Well #24, End User: City of Beaumont, Fluid: Water
1775 RPM



16CMC-8_79927A_TC-121011.xls

Sulzer Pumps Houston Inc.

Performance Test: Set up and Test Data Sheet

Test Curve No.: 12101

Job Number: 79927
Unit: A
Customer: Gentry Constructors, Inc.
Pump Category: Turbine

	Primary	Inducer
Model:	16CMC	
Stages:	8	
Test Imp. Dia (in):	11.625	
Calc'd Imp. Dia (in):		
TBF / CL:	[illegible]	
Imp. Material:	836-Bronze	
Bowl Material:	131-Cast Iron	
Bowl ID Coating:	[illegible]	

Specific Speed: Ns
Suction Type: Bell
Discharge Head: Lab
Column Pipe: Lab

Pipe ID @ Gauge: 12.000 Inches
Water To Floor: 8 Inches
Floor To Gauge: 8 Inches
Press Tap Location: Bowl

Pump Driver: Lab
Motor H.P. / R.P.M.: 800 / 1770
PH / CY / V: 3 / 60 / 2300
Motor S / N: 25208

Water Temp: 88.4 °F

Head Constant: 2.321

Impeller Adjustment: 3/8"
Acceptance Criteria by: CZ 8/1/05 see app. check
Rated RPM: 1775
Flow: 2600.0 GPM
Head: 690.0 FT
Power: 558.0 BHP
Efficiency: 82.000 %
Test Lab Water Sg: 0.995 As Tested
Job Specific Gravity: 1.00 Job

Fluid: Water
Application:
Marking: PO: 24-500-460
Tag: Beaumont Well #24
End User: City of Beaumont

DAQ Test
Flow Meter: 16" Mag 0-20,000 GPM- id# 357
Power Meter: 1250 HP- id# 198
Press Meter: 0-500 PSig- id# 204
Tachometer: 3600RPM id# 293
Temp Meter: 50-140F id# 292
Test Line: 16" HP

Revision:
Rev Date:
Comment:

Comments: Non-witnessed performance test (1 unit) at full speed with lab driver. Test bowl assembly only with lab 16" HP discharge head and lab 12" T.O.E. column pipe. Plot as tested bowl head and calculated pump head (690' PTH, requires 707' BATH). Plot as tested bowl efficiency. Customer motor = 600HP. Customer curve approval required.

Project Manager: Gary Purcell

@ Test - Floor to bottom of baseplate: 8.00 In.
Total Pump Length (TPL): 186.00 In.
@ Test - Submergence over Suction Bell: 14.17 Ft.

Test Point Number	1	2	3	4	5	6	7	8	9					
Target Flow (gpm)	2620.0	524.0	1048.0	1572.0	2096.0	2620.0	3073.0	3625.0	0.0					
Actual Flow Rate (gpm)	2618.5	517.93	1043.6	1586.9	2093.2	2630.5	3075.1	3632.4	0.0					
Bowl Discharge Pressure (psi)	312.4	431.6	398.4	372.5	340.7	311.3	270.8	219.2	456.8					
Head (ft)	725.0	1001.5	924.6	864.5	790.7	722.4	628.4	508.7	1060.1					
Gage Elev.Corr. (ft)	1.33	1.33	1.33	1.33	1.33	1.33	1.33	1.33	1.33					
Velocity Head Loss (ft)	0.9	0.0	0.1	0.3	0.5	0.9	1.2	1.6	0.0					
Total Head (ft)	727.2	1002.9	926.0	866.1	792.8	724.6	631.0	511.6	1061.5					
Watt Reading (kW)	461.39	397.94	399.64	426.60	439.56	461.46	461.06	440.69	383.63					
Input H.P.	618.5	533.4	536.0	571.7	589.2	618.6	618.0	591.0	514.2					
Volt (Ref)	2281.4	2282.5	2281.7	2277.5	2278.7	2278.9	2279.3	2281.9	2283.5					
Amps(Ref)	131.7	114.5	113.1	124.2	125.4	131.4	130.9	125.5	110.7					
Job Motor Efficiency														
Lab Motor Efficiency	0.945	0.943	0.943	0.944	0.944	0.945	0.945	0.944	0.942					
B.H.P.	584.5	503.0	505.4	539.7	556.2	584.6	584.1	557.9	484.4					
Actual Test Speed (rpm):	1788	1790	1790	1787	1788	1787	1789	1787	1790					
Rated Speed (rpm):	1775	1775	1775	1775	1775	1775	1775	1775	1775					
Rated Flow Rate (gpm)	2599	514	1035	1566	2078	2613	3052	3609	0					
Rated Total Bowl Hd (Ft):	716.64	988.17	910.59	854.62	781.07	714.93	621.12	504.76	1043.76					
Rated B.H.P.@ Lab Sg:	571.81	490.49	492.83	528.90	544.16	572.68	570.45	546.71	472.35					
Rated B.H.P.@ Job Sg:	574.48	492.77	495.12	531.36	546.70	575.52	573.09	549.24	474.54					
Rated Bowl Efficiency:	81.9%	26.0%	48.1%	63.2%	75.0%	82.0%	83.5%	81.4%	0.0%					
Calculated Pump Hd (Ft):	700.63	985.38	907.71	848.36	770.62	698.77	599.82	476.75	1043.76					

Tested By: Darryl Clark
Witnessed By: ————
Certified By: Clint Zentic 8/8/05
Date of Test: 8/8/2005

16CMC-8_79927A_TC-12101.xls

APPENDIX F

New 600 hp Electric Motor Information

SULZER EMS

620 South Rancho Avenue
Colton CA 92324-3243
Phone: 909-825-7971
www.sulzer.com

Sulzer EMS - Colton
620 S Rancho Ave
Colton, CA 92324

909-825-7971

PACKING SLIP

SULZER

SHIPPER

Beaumont Cherry Valley Water
560 Magnolia Avenue
Beaumont, CA 92223

Ship Trx Id .....: SID029300
Document date ..: 7/30/2020
Project .....: 3100288
Customer PO ...: 1268
Mode of delivery : OT Our Truck
Delivery terms ...: NFC No Freight. Charges (Inte

Manufacture:
Unit Id ....:
Model .....:

Shipped in/on ...:

Quantity	Description	Weight
1.00	85777 US VHS 600HP	0.00

New
600hp
for
#24
8-20-2020

Freight Carrier Signature _____

Printed Name James Bean

Shipper Signature _____ Shipment Date

The purchase and sale of the goods covered by this packing slip shall be subject to the terms and conditions shown on the reverse side.

Job File Copy

1. Applicability and Validity - Any repairs, modification, manufacture and/or sale of replacement parts and/or other customer support services (hereinafter referred to as "Work") rendered by Sulzer EMS (hereinafter referred to as "Contractor") on the Customer's equipment or any part thereof (hereinafter referred to as "Equipment") shall be made or supplied in accordance with the General Terms and Conditions set forth herein, which together with the quotations of Contractor, if any, shall constitute the complete agreement of the Contractor and Customer resulting from the acceptance of the quotations of the Contractor or of an order from the Customer and supersede any other agreement or representation, verbal or in writing with respect to the subject matter herein. These General Terms and Conditions shall be valid in all respects and any purported additional or different terms contained in the Customer's order or response to quotation or any other document shall be deemed objected to by the Contractor without need of further notice and shall not be effective or binding unless agreed to in writing by Contractor. Customer's assent to the General Terms and Conditions set forth herein shall be conclusively presumed from Customer's failure to object thereto in writing as well as any direction from the Customer to Contractor to proceed with the order or Customer's acceptance of all or part of the products or services ordered. General or special terms and conditions stipulated by the Customer which are in contradiction with these terms and conditions shall be valid only if and to the extent they have been accepted by the Contractor in writing. Contractor shall have the right to subcontract any or all work covered by the contract. Any assignment of this contract or any rights hereunder by Customer without the prior written consent of the Contractor shall be void. Should any provision herein prove to be invalid or not enforceable by a competent court, such invalidity or non-enforceability shall not affect the validity of the remaining terms and conditions. The Contractor and the Customer shall use their best efforts to agree on a provision that has commercially and legally the most similar effect as the invalid or non-enforceable provision.

2. Performance of Work - The Contractor shall perform the Work in accordance with the Terms and Conditions set forth herein, and in any other documents which refer to the Work and are signed by both the Contractor and the Customer (hereinafter together referred to as "Contract").

3. Price - Prices are stated in U.S. dollars and except as may be specifically provided on Contractor's Proposal or Confirmation of Order or as may be otherwise agreed upon in writing by Contractor and Customer. The price stated on Contractor's Proposal or Confirmation of Order is net without any deductions whatsoever. All additional costs, including (but not limited to) charges for freight, packing, carriage, insurance, customs duties, fees for export, transit, import and such other permits and certificates as may be necessary, any federal, state or local property, license, privilege, sales, use, excise, gross receipts or other like taxes which may now or hereafter be applicable, shall be borne by the Customer. If charges for packing, freight, carriage, insurance, customs duties or other additional costs are separately stated on Contractor's Proposal or Confirmation of Order and included in the price stated thereon, Contractor reserves the right to adjust its price should the costs on which such additional charges are based be modified. In addition, an appropriate price adjustment shall apply in case the work completion date and/or shipping date has been subsequently extended due to any reasons stated in Art. 5 hereinafter entitled "Work Completion/Shipping".

4. Customer's Obligations -The Customer shall take all necessary and reasonable measures to support Contractor in the execution of the Contract. At the request of Contractor, Customer will expeditiously provide Contractor all available information regarding the Equipment or part thereof, such as but not limited to operational data, log sheets, quality on lubricants, fuel, steam, cooling water etc. The Customer shall (1) immediately notify Contractor of any contamination that may exist in any part of its facility or on the Equipment where Work may or is being performed where such contamination may be due to any hazardous material, including but not limited to, asbestos containing parts, insulation or gaskets or nuclear radiation and (2) be obligated, at its own expense, to decontaminate its facility or parts of the Equipment to be repaired or replaced hereunder, which may be contaminated due to any hazardous material, so that such hazardous material shall be reduced or eliminated to a level in which the facility is safe to occupy and/or such parts may be handled and/or shipped in a safe manner and in accordance with all applicable laws and regulations and industry accepted standards without special licensing from any Government Regulatory Authority. Notwithstanding anything contained in this Contract to the contrary, until said decontamination or radioactive environment has been reduced to a safe, legal and industry accepted standard for occupancy by Contractor's personnel without the need for special protective clothing, the Contractor shall be under no obligation to remove, disassemble, repair, reassemble or reinstall or provide any other service to such Equipment.

5. Work Completion/Shipping - The dates specified for Work completion and/or shipping on Contractor's Proposal or Confirmation of Order are "the best estimate" and are based upon prompt receipt of necessary parts, material, replacement part(s) and information. These dates shall be reasonably extended for a minimum time period equaling the length of delay if;

(a) information required by Contractor from Customer to execute the order is not received in a timely manner or if changes are made which delay Work completion and/or shipping as agreed upon by Contractor and Customer;

(b) Contractor is not able to complete or ship the Work by reason of hindrances which, despite due care, Contractor cannot avoid (inclusive of those occurring in the field service of its major suppliers or third parties), such as epidemics, act of civil or military authority, mobilization of armed services, war, riots, strikes, boycotts, picketing, lock-outs or other disturbances, serious breakdowns, accidents, labor conflicts, delayed or deficient delivery of manufactured products, the need to scrap important components due to defective casting, official or other measures of whatever kind, transport difficulties, natural catastrophes and acts of God; or

(c) if Customer or a third party is behind schedule with work which it has to carry out, or late in fulfilling its contractual obligations (including, but not limited to, failure by Customer to observe terms of payment). Notwithstanding anything contained herein to the contrary, Contractor shall not be liable for any loss or damage to Customer resulting from any delay in delivery, whether due to non-conformance as mentioned above or otherwise.

6. Termination - 6.1 Contractor's Default

In the event that the Contractor fails to comply with a material obligation in connection with the performance of the Work ("Contractor's Default"), the Customer shall give the Contractor written notice of Contractor's Default, specifying its nature and stating that the Customer intends to terminate the Contract. If the Contractor fails to remedy the Contractor's Default or fails to offer a reasonable plan to cure the Contractor's Default within a reasonable time after the receipt of said notification, but not less than thirty (30) days after Customer's written notification, the Customermay terminate the Contract.

6.2 Customer's Default

In the event the Customer fails to comply with a material obligation in connection with the Contract, including but not limited to Customer's failure to comply with Article 4 above, or if the Customer fails to fulfill its payment obligations in accordance with Article 11 below (hereinafter collectively referred to as "Customer's Default"), the Contractor shall give the Customer written notice of Customer's Default, specifying its nature and stating that the Contractor intends to interrupt the Work or to terminate the Contract. If the Customer fails to remedy the Customer's Default within a reasonable time after the receipt of said notification, including the failure of the payment of Contractor's invoice not later than five (5) days after Contractor's reminder, the Contractor may interrupt the Work or forthwith terminate the Contract.

6.3 Payments

6.3.1 In the event the Contract is terminated by the Contractor due to Customer's Default, the Customer shall pay to the Contractor

(a) the agreed prices for the portion of the Work completed;

(b) the costs and expenses incurred by the Contractor directly connected with the Work in addition to that in a) above under the Contract prior to the date of termination; and

(c) Contractor's customary profit; and such other cost and expenses, including any cancellation charges under subcontracts, as the Contractor may incur in connection with such termination.

6.3.2 In the event the Contract is terminated by the Customer due to Contractor's Default, the Contractor shall be entitled to payments under (a) and (b) above only.

7. Title and Risk of Loss or Damage - The title and right of possession to Equipment repaired or to be repaired remains with the Customer, subject to applicable lien rights of Contractor. Customer agrees that Contractor shall retain a security interest in the goods sold or repaired hereunder to secure any portion of the price not paid when due, and will, on request, execute a security agreement in such form as is required by Contractor which may be filed with appropriate local and state authorities.

Risk of loss of or damage to the replacement part(s) and/or repaired Equipment shall pass from Contractor to Customer upon delivery of such replacement part(s) and/or repaired Equipment EXW (ex works) as per INCOTERMS 2000 at Contractor's facility, regardless of whether title has passed to or already rests in Customer, transport is arranged or supervised by Contractor, or erection or start-up is carried out under the direction or supervision of Contractor.

If delivery of the replacement part(s) and/or repaired Equipment is delayed at the request of Customer or due to other reasons beyond Contractor's control, the risk of loss on said replacement part(s) and/or repaired Equipment shall pass to Customer at time of the original anticipated date of delivery of the replacement part(s) and/or repaired Equipment at EXW (ex works) as per INCOTERMS 2000 at Contractor's facility. From this time forward the replacement part(s) and/or repaired Equipment shall be stored and insured for the account of and at the risk of Customer. All scrap, if any resulting from the manufacture of products shall remain the property of Contractor.

8. Warranty - 8.1 The Contractor warrants that the Work will be performed in a workmanlike manner and will be as described in the Contract. Should any failure to conform with this warranty appear within twelve months after completion of the Work or the shipping date, whichever occur first, the Contractor shall, in complete fulfillment of all its liabilities under this warranty, if within the warranty period, given prompt written notice by the Customer, correct at its expense and at its option by reworking, repair or replacement any non-conformity which shall appear under proper storage, installation, maintenance and use of the replacement parts and/or services performed. No Work furnished by Contractor shall be deemed to be defective by reason of normal wear and tear, failure to resist erosive or corrosive action of any fluid or gas, Customer's failure to properly store, install, operate or maintain the Work in accordance with good industry practices or specific recommendations of Contractor, or Customer's failure to provide complete and accurate information to Contractor concerning the operational application of the Work. The Customer shall make the replacement part(s) available for correction. The warranty contained in this Article will terminate immediately, if the Customer or a third party undertakes inappropriate or improper modifications or repairs or if the Customer, in case of a defect, does not immediately take all appropriate steps to mitigate damages and notify the Contractor in writing of its obligations to remedy such defect. Correction of non-conformities in the manner and for the period of time provided above shall constitute fulfillment of all liabilities of the Contractor to the Customer with respect to such Equipment. Contractor shall not be liable for costs of removal, reinstallation, or gaining access. The re-performance, repair or replacement of the Work or spare or replacement parts by Contractor under the provisions of the Warranty section of this agreement shall consitute Contractor's sole obligation and Customer's sole and exclusive remedy for all claims of defects regarding the Work.

8.2 No warranties other than expressly stated herein shall be granted hereunder.

8.3 Contractor shall not be liable for any loss or damage from its failure to discover or repair latent defects or inherent defects in the Customer's Equipment design nor shall Contractor be liable for any warranty obligation for Customer provided parts regardless of installation of such parts by Contractor.

ALL OTHER WARRANTIES, EXPRESS OR IMPLIED, INCLUDING BUT NOT LIMITED TO THE IMPLIED WARRANTIES OF FITNESS FOR A PARTICULAR PURPOSE AND MERCHANTABILITY ARE HEREBY DISCLAIMED. CONTRACTOR MAKES NO OTHER WARRANTY OR REPRESENTATION OF ANY KIND WITH RESPECT TO THE EQUIPMENT OR SERVICES OTHER THAN AS SPECIFIED IN THIS SECTION 8.

9. Inspection and Testing - If inspection and testing are made by Customer to demonstrate the ability of the replacement part(s) and/or repaired Equipment to operate under the Contract conditions and to fulfill the warranties herein set forth, Customer is to make all preparations and incur all expenses incidental to said inspection and testing. Contractor will have the right of representation at said inspection and testing but will make no charge for the expense of such representation unless otherwise mentioned in Contractor's Proposal or Confirmation of Order or as may be otherwise agreed upon in writing by Contractor and Customer. Customer's failure to make such inspection and testing shall be deemed to be a waiver of Customer's right of inspection and testing.

10. Limitation of Liability - 10.1 Notwithstanding anything to the contrary in this contract, including all the documents making part thereof and to the maximum extent permitted by the law, in no event shall Contractor be liable to the Customer for any indirect, punitive, special, incidental or consequential damages in connection with this contract, including but not limited to, loss of profits or interruption of production, loss of opportunity or business, or claims by the Customer's client for such damages, whether such liability is based on contract, tort (including negligence), statute or any other basis of legal liability. The remedies of Customer set forth herein are exclusive, and Contractor's liability with respect to any contract or sale or anything done in connection therewith, whether such liability is based on any contract, indemnity, tort (including negligence), warranty, strict liability or otherwise, shall not exceed the Contract amount of the Work upon which such liability is based. All such liability shall terminate upon the expiration of the warranty period, if not sooner terminated.

10.2 The remedies of the Customer set forth in the Contract are exclusive and in lieu of any other right or remedy.

11. Terms of Payments - 11.1 The invoices shall be deemed correct unless the Customer notifies the Contractor otherwise in writing not later than twenty (20) days after the date of the invoice. Except as otherwise provided by Contractor's Proposal or Confirmation of Order, payments shall be made by the Customer net cash without deduction upon receipt of the invoice to such bank accounts and in such currency as stated in the invoice. All installment deliveries shall be separately invoiced and paid for without regard to subsequent deliveries.

11.2 The Contractor is entitled to charge interest at a rate of 1% per month on amounts not paid within thirty (30) days from the date of the invoice.

11.3 The Contractor shall be entitled to immediately stop or suspend the performance of its Work in the event the Customer fails to make any payment due.

12. Changes in Product design/ Proprietary Information - Contractor reserves the right to change, discontinue or modify the design and/or construction of any of its products and to substitute material equal to or superior to that originally specified. All information, including plans, designs, drawings, specification and data, furnished or prepared by Contractor specifically in connection with its performance hereunder, shall be deemed provided to the Customer on a confidential basis and shall remain Contractor's exclusive property. Such materials have been developed at Contractor's expense and contain Contractor's trade secrets. Customer shall not copy or reproduce such information for any purpose other than operation and maintenance except as may be approved by Contractor in writing. Customer also shall not, either directly or indirectly, communicate to a third party or use such information or any data derived therefrom for any purpose other than as set forth herein without the prior written consent of Contractor. Any and all such information submitted in connection with a Proposal which does not result in an order shall be returned to Contractor upon request.

13. Tooling - Charges for dies, tools and/or gauges do not convey ownership or the right to remove from Contractor's premises. Tool charges if shown on the invoice constitute only a part of the actual tool cost. Contractor assumes the remainder of the original costs and the cost of maintenance. Customer, however, may purchase such dies and/or gauges upon request, at the discretion of the Contractor.

14. Patents - Contractor warrants that the replacement part(s) and any component part thereof, in the particular form sold by Contractor, shall be delivered free of any rightful claim of any third party for infringement of any patent. If notified promptly in writing, and given authority, information and assistance, Contractor shall defend or may settle, at its expense, any suit or proceeding against Customer so far as based on a claimed infringement which would result in a breach of this warranty, and Contractor shall pay all damages and costs awarded therein against Customer due to such breach. The foregoing states Contractor's entire liability for patent infringement.

The preceding paragraph shall not apply to any replacement part(s) and any component part thereof manufactured to Customer's design, or to the use of any replacement part(s) and any component part thereof sold hereunder in conjunction with any other product in a combination not furnished by Contractor as part of this transaction. As to any such replacement part(s), component part or use in such combination, Contractor assumes no liability whatsoever for patent infringement and Customer shall indemnify and hold Contractor harmless against any infringement claims arising therefrom.

15. Place of Jurisdiction and Applicable Law - This Contract shall be governed by the laws of the State of California. Any disputes arising out of this Contract shall be resolved by informal mediation in any manner that the parties may agree within forty-five (45) days of written request for mediation by one party to the other. Any dispute that cannot be resolved through mediation shall be resolved by binding arbitration conducted in English in the State of California under the Commercial Rules of the American Arbitration Association. The arbitration shall be conducted by three arbitrators chosen in accordance with said Rules. The arbitrators are not entitled to award damages in excess of compensatory damages. Judgment upon the award may be entered in any court having jurisdiction.The customer is to ensure that the equipment or any component therein or its workplace (to the extent that any Sulzer employee is required to perform work there) shall not contain Hazardous Material. (Example: The Customer shall be obligated, at his own expense, to make its workplace free of any hazardous material or decontaminate its equipment or such parts of the equipment to be repaired or replaced hereunder, which may be contaminated due to hazardous material, including but not limited to arsenic, asbestos, benzene, carbon tetrachloride, lead, cadmium or chemicals restricted pursuant to any Government Regulatory Authority. It shall be the customer's obligation, at their own cost and expense, to assume the responsibility as generator and manage any Hazardous or Regulated Waste arising from the decontamination of its equipment in accordance with applicable laws and regulations. Until this decontamination has been done, Sulzer shall be under no obligation or liability to continue its performance of work.)

SULZER

ELECTRICAL REPORT

85777

REFER TO THIS NUMBER WHEN CALLING

W.O. No. 85777 **Date** 7/13/20 **Marks**

BILL TO: Beaumont-Cherry Valley Water **SHIP TO:** Beaumont-Cherry Valley Water

Nameplate Data

Brand US VHS Motor **Encl** WPI

Rating 600 **Type**

Speed 1780 **Model** FD06

Frame 5012P **Ser. No.** X 02 7640398-0005 R 00 03

Auxiliary Equipment Nameplates

Data	As found	As returned
AC Volts	460	
AC Amps	667	
Rotor Data		

Marks:

Cause of Failure or Reason for Service

What was Done

AC Stator Winding Tests (as connected at high voltage; if multi-speed 1-winding, then test at high-speed)

Resistance	□, ØA	□, ØB	□, ØC
As rec'd : Wdg 1	0.00844Ω	0.00844Ω	0.00842Ω
In Progress			
As left : Wdg 1	0.00841Ω	0.00846Ω	0.00841Ω
As rec'd : Wdg 2			
As left: Wdg 2			

	Surge results /Init	Hipot VDC; µA	Stator Polar-Index
As rec'd	OK to 4kV	2160/0.47µA	
In Progerss			
After bake			
After rwd			
Final	OK to 4kV	2160/0.45µA	

Winding Insulation Resistance to Ground in Megohms

	Stator								
As rec'd	4113MΩ								
After bake									
Final	4143MΩ								

Device ☐ Megger ☐ DC High-pot ☐ AC High-pot ☐ 1000 vdc ☐ 500 vdc ☐ 9000 vdc ☐ 2000 vac ☐ 2500 vac

Bearings Installed

If Vertical,Axial endplay final 0.008 Initials AC

Comments (if any)

SULZER

85777

NO LOAD RUN TEST AFTER REPAIR

REFER TO THIS NUMBER WHEN CALLING

W.O. No. 85777 **Date** 7/13/20 **Marks**

BILL TO: Beaumont-Cherry Valley Water **SHIP TO:** Beaumont-Cherry Valley Water

Nameplate Data

Brand	US VHS Motor	**Encl**	WPI	**Auxiliary Equipment Nameplates**
Rating	600	**Type**		
Speed	1780	**Model**	FD06	
Frame	5012P	**Ser. No.**	X 02 7640398-0005 R 00 03	

Connected for 460 **Lubricant** O- end Mobil Polyrex EM P-end Shipped dry

If Heaters installed, are they original? ○ Yes ◉ No Replacement Heater: Size 251 Voltage 115

If original, then test at full voltage & record test results for volts and amp.

	Volts
A - B	457.6
B - C	460.5
C -A	456.7
Armature	
Shunt	

	Amps
ØA	111.7
ØB	124.6
ØC	124.6
Armature	
Shunt	

	Vibration Amp, mils		Vibration Vel., in./sec.		Brg Temp	
	P - end	O - end	P - end	O - end		
Horizontal	.21	.08	.025	.009		hrs.
Vertical						° F P-end
Axial	.06		.011			° F O-end
Meas. RPM	1800				GM	Initials

Squirrel cage rotor test, final

Direction of rotation, final CCW

Interpole Polarity VAC In Interpole Polarity VAC Out

Comments (if any)

Auxiliary Device Test Sheet

85777

REFER TO THIS NUMBER WHEN CALLING

Customer: Beaumont-Cherry Valley Water **Date** 7/13/20

Marks <Unrelated Table>

AC Volts 460
AC Amps 667
Rotor Data
Auxiliary Equipment Nameplates

Arm Volts
AC Amps 667
Field Volts
Field Amps

Device Test Notes

Device Name	Megger	DC High Potential	RsistØA	ResistØB	ResistØC	Surge	Intls
Wnd RTD #1	10931MΩ	1210/0.11µA	111.53Ω	111.53Ω			AC
Wnd RTD #2	10931MΩ	1210/0.11µA	111.73Ω	111.72Ω			AC
Wnd RTD #3	10931MΩ	1210/0.11µA	111.65Ω	111.65Ω			AC
Wnd RTD #4	10931MΩ	1210/0.11µA	111.55Ω	111.56Ω			AC
Wnd RTD #5	10931MΩ	1210/0.11µA	111.60Ω	111.61Ω			AC
Wnd RTD #6	10931MΩ	1210/0.11µA	111.79Ω	111.78Ω			AC
Brg RTD #1	10146MΩ	1200/0.12µA	111.87Ω	111.882Ω			AC
Brg RTD #2	10322MΩ	1200/0.12µA	112.12Ω	111.13Ω			AC
Heater #1	10336MΩ	1350/0.14µA	33.98Ω				AC

SULZER

85777

REFER TO THIS NUMBER WHEN CALLING

WORK ORDER PHOTOS & DRAWINGS

W.O. No. 85777 **Date** 7/13/20 **Marks**

BILL TO: Beaumont-Cherry Valley Water **SHIP TO:** Beaumont-Cherry Valley Water

Nameplate Data

Brand	US VHS Motor	**Encl**	WPI	**Auxiliary Equipment Nameplates**
Rating	600	**Type**		
Speed	1780	**Model**	FD06	
Frame	5012P	**Ser. No.**	X 02 7640398-0005 R 00 03	

Incoming View

SULZER

WORK ORDER PHOTOS & DRAWINGS

85777

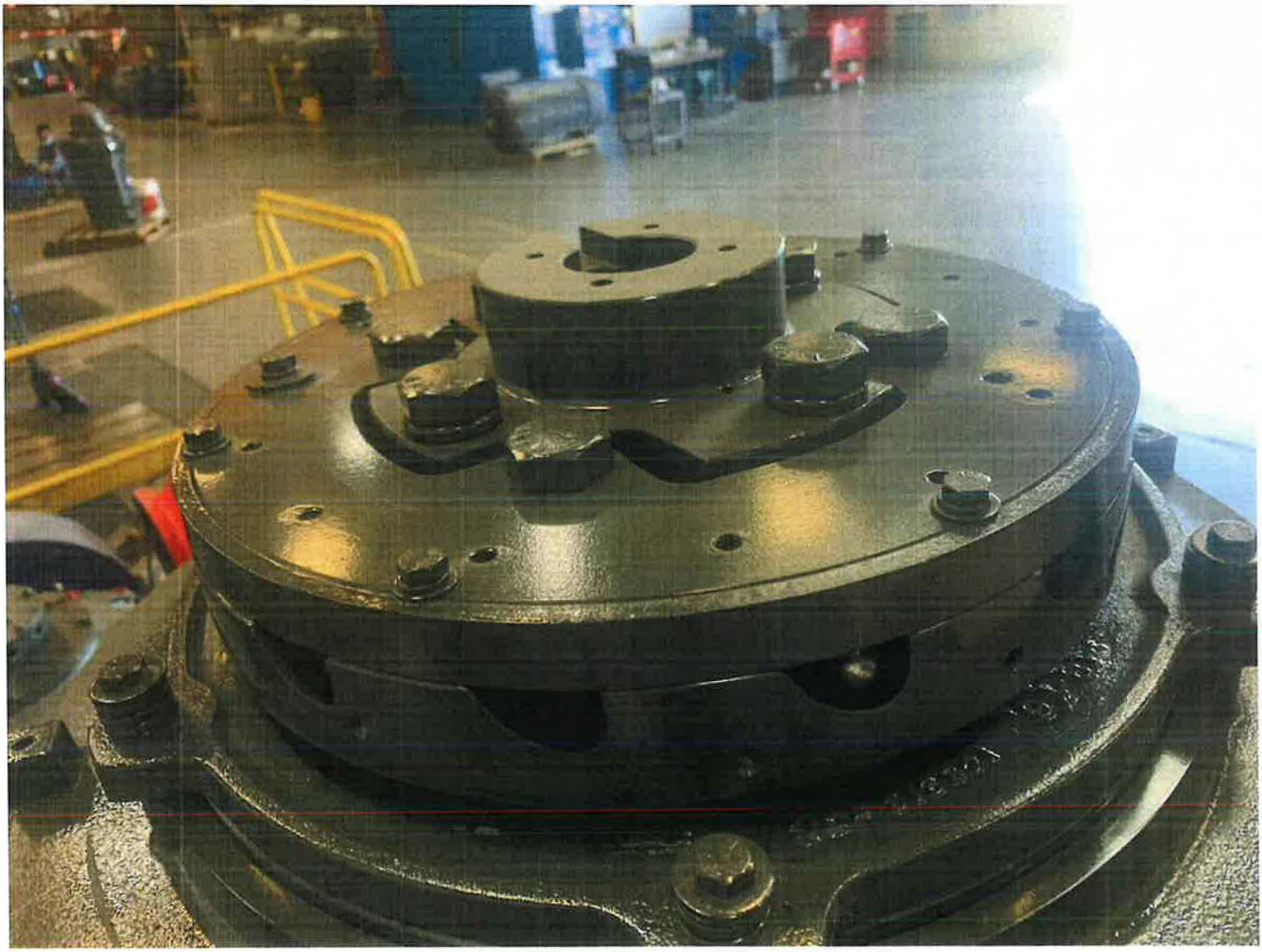
REFER TO THIS NUMBER WHEN CALLING

W.O. No. 85777 **Date** 7/13/20 **Marks**

BILL TO: Beaumont-Cherry Valley Water **SHIP TO:** Beaumont-Cherry Valley Water

Nameplate Data

Brand	US VHS Motor	**Encl**	WPI	**Auxiliary Equipment Nameplates**
Rating	600	**Type**		
Speed	1780	**Model**	FD06	
Frame	5012P	**Ser. No.**	X 02 7640398-0005 R 00 03	



Incoming View

SULZER

WORK ORDER PHOTOS & DRAWINGS

85777

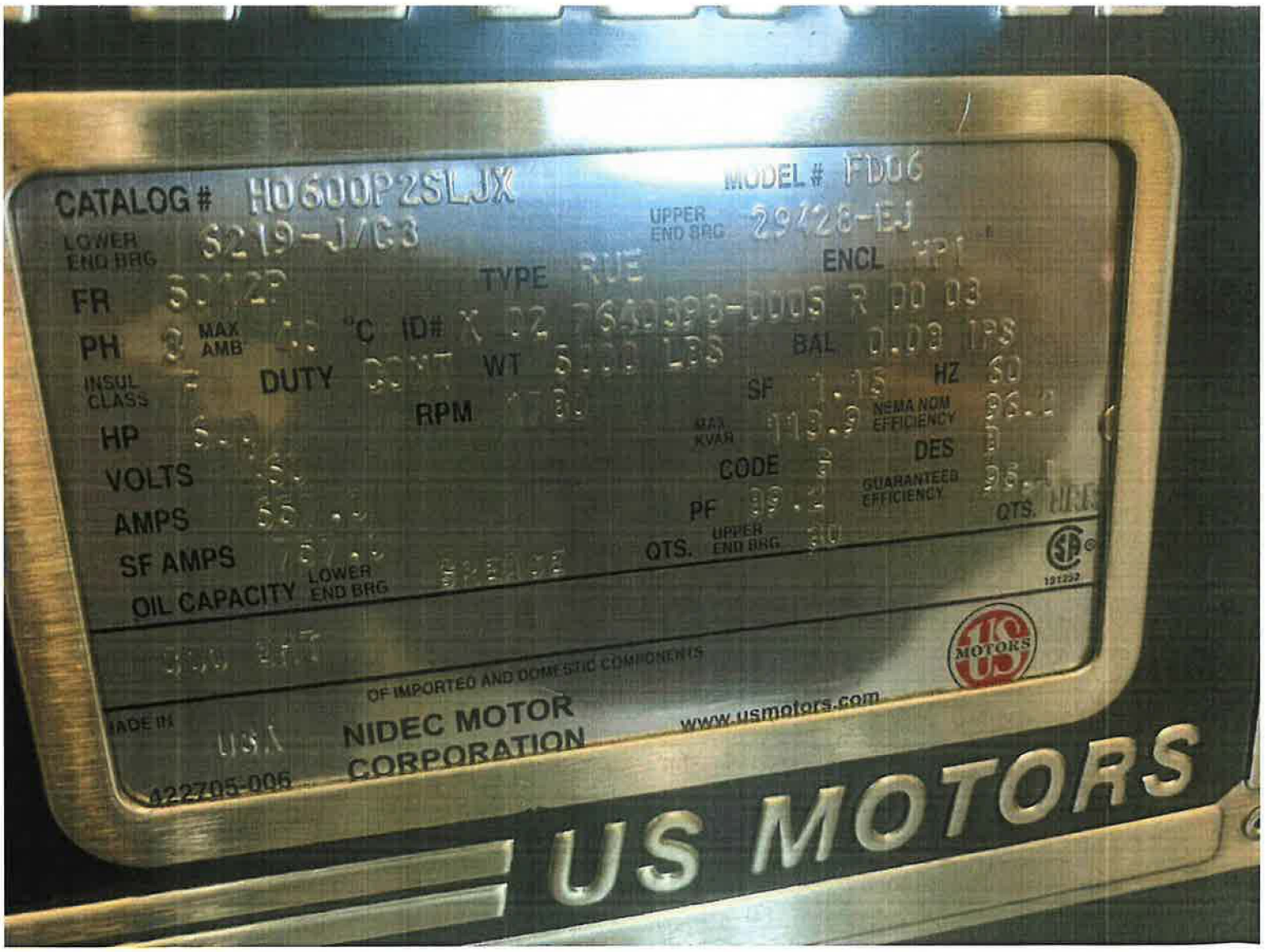
REFER TO THIS NUMBER WHEN CALLING

W.O. No. 85777 **Date** 7/13/20 **Marks**

BILL TO: Beaumont-Cherry Valley Water **SHIP TO:** Beaumont-Cherry Valley Water

Nameplate Data

Brand	US VHS Motor	**Encl**	WPI	**Auxiliary Equipment Nameplates**
Rating	600	**Type**		
Speed	1780	**Model**	FD06	
Frame	5012P	**Ser. No.**	X 02 7640398-0005 R 00 03	



Name Plate

SULZER

85777

WORK ORDER PHOTOS & DRAWINGS

REFER TO THIS NUMBER WHEN CALLING

W.O. No. 85777 **Date** 7/13/20 **Marks**

BILL TO: Beaumont-Cherry Valley Water **SHIP TO:** Beaumont-Cherry Valley Water

Nameplate Data

Brand	US VHS Motor	**Encl**	WPI	**Auxiliary Equipment Nameplates**
Rating	600	**Type**		
Speed	1780	**Model**	FD06	
Frame	5012P	**Ser. No.**	X 02 7640398-0005 R 00 03	

Incoming View

W.O. No. 85777 **Date** 7/13/20 **Marks**

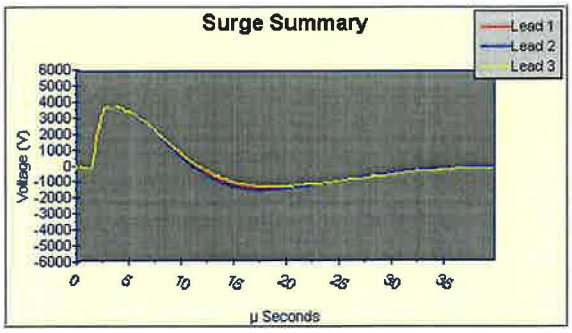
BILL TO: Beaumont-Cherry Valley Water **SHIP TO:** Beaumont-Cherry Valley Water

Nameplate Data

Brand	US VHS Motor	**Encl**	WPI	**Auxiliary Equipment Nameplates**
Rating	600	**Type**		
Speed	1780	**Model**	FD06	
Frame	5012P	**Ser. No.**	X 02 7640398-0005 R 00 03	

Nameplate Information		Motor ID 85777	
Location	620 Rancho	Location	620 RANCHO
Model		Manufacturer	
Serial Number		HP/KW	0
Volts-Rating		Volts-Operating	0
Amps-Rating		Amps-Operating	0
Insulation		Enclosure	
RPM	0	Service Factor	0
Frame		Freq-Hz	0
LR Code		LR Amps	0
NEMA Design		Max Amb °C	0
NEMA nom eff	0	Duty Cycle	
Manuf's Type		Manuf Dt Cd	

Results Summary		Test Date/Time 7/14/2020 7:06:37 PM	
Test ID:	460 Incoming w/rotor	Repair/Job #	
Tested By		Tested For	
Room #		MCC	
Location	620 Rancho	Location	620 RANCHO
Temp Status	No Test Performed	PI Status	No Test Performed
Temp		Volts (V)	0
Resist Status	PASS	DA Ratio	0.0
L1-L2 (Ohms)	0.00844	PI Ratio	0.0
L2-L3 (Ohms)	0.00844	HiPot	PASS
L3-L1 (Ohms)	0.00842	Volts (V)	2160
Max Delta R %	0.269	I(µA)	0.47
Coil 1 (Ohms)	0.00421	Resist (Mohm)	4570
Coil 2 (Ohms)	0.00423	Surge Status	PASS
Coil 3 (Ohms)	0.00421	Peak Volt(V) L1	4040
Megohm Status	PASS	Peak Volt(V) L2	4040
Volts (V)	1010	Peak Volt(V) L3	4040
I(µA)	0.25	Max P-P EAR(%)	2.0/2.1/2.1
Resist (Mohm)	4113	EAR 1-2/2-3/3-1(%)	No Test



Incoming surge-test.

SULZER

85777

REFER TO THIS NUMBER WHEN CALLING

WORK ORDER PHOTOS & DRAWINGS

W.O. No. 85/// **Date** 7/13/20 **Marks**

BILL TO: Beaumont-Cherry Valley Water **SHIP TO:** Beaumont-Cherry Valley Water

Nameplate Data

Brand	US VHS Motor	**Encl**	WPI	**Auxiliary Equipment Nameplates**
Rating	600	**Type**		
Speed	1780	**Model**	FD06	
Frame	5012P	**Ser. No.**	X 02 7640398-0005 R 00 03	

Nameplate Information		Motor ID 85777	
Location	620 Rancho	Location	620 RANCHO
Model		Manufacturer	
Serial Number		HP/KW	0
Volts-Rating		Volts-Operating	0
Amps-Rating		Amps-Operating	0
Insulation		Enclosure	
RPM	0	Service Factor	0
Frame		Freq-Hz	0
LR Code		LR Amps	0
NEMA Design		Max Amb °C	0
NEMA nom eff	0	Duty Cycle	
Manuf's Type		Manuf Dt Cd	

Results Summary		Test Date/Time 7/17/2020 1:11:11 PM	
Test ID: 85777 rtd's after instalation	RTD Test	Repair/Job #	
Tested by S.P.		Tested For	
Room #		MCC	
Location	620 Rancho	Location	620 RANCHO
Temp Status	No Test Performed	PI Status	No Test Performed
Temp		Volts (V)	0
Resist Status	PASS	DA Ratio	0.0
L1-L2 (Ohms)	110.49	PI Ratio	0.0
L2-L3 (Ohms)	0.0	HiPot	PASS
L3-L1 (Ohms)	0.0	Volts (V)	1200
Max Delta R %	0.000	I(µA)	0.08
Coil 1 (Ohms)	110.49	Resist (Mohm)	14430
Coil 2 (Ohms)	0.0	Surge Status	No Test Performed
Coil 3 (Ohms)	0.0	Peak Volt(V) L1	0
Megohm Status	PASS	Peak Volt(V) L2	0
Volts (V)	1010	Peak Volt(V) L3	0
I(µA)	0.07	Max P-P EAR(%)	0.0/0.0/0.0
Resist (Mohm)	14844	EAR 1-2/2-3/3-1(%)	--/--/--

RTDs-test

W.O. No. 85777 **Date** 7/13/20 **Marks**

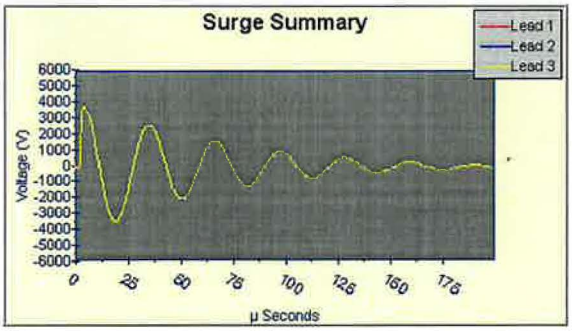
BILL TO: Beaumont-Cherry Valley Water **SHIP TO:** Beaumont-Cherry Valley Water

Nameplate Data

Brand	US VHS Motor	**Encl**	WPI	**Auxiliary Equipment Nameplates**
Rating	600	**Type**		
Speed	1780	**Model**	FD06	
Frame	5012P	**Ser. No.**	X 02 7640398-0005 R 00 03	

Nameplate Information		Motor ID 85777	
Location	620 Rancho	Location	620 RANCHO
Model		Manufacturer	
Serial Number		HP/KW	0
Volts-Rating		Volts-Operating	0
Amps-Rating		Amps-Operating	0
Insulation		Enclosure	
RPM	0	Service Factor	0
Frame		Freq-Hz	0
LR Code		LR Amps	0
NEMA Design		Max Amb °C	0
NEMA nom eff	0	Duty Cycle	
Manuf's Type		Manuf Dt Cd	

Results Summary		Test Date/Time 7/17/2020 1:06:19 PM	
Test ID: 85777 after installing rtd's	460V BEFORE VPI	Repair/Job #	
Tested By S.P.		Tested For	
Room #		MCC	
Location	620 Rancho	Location	620 RANCHO
Temp Status	No Test Performed	PI Status	No Test Performed
Temp		Volts (V)	0
Resist Status	PASS	DA Ratio	0.0
L1-L2 (Ohms)	0.00832	PI Ratio	0.0
L2-L3 (Ohms)	0.00829	HiPot	PASS
L3-L1 (Ohms)	0.00832	Volts (V)	2160
Max Delta R %	0.381	I(µA)	0.41
Coil 1 (Ohms)	0.00417	Resist (Mohm)	5262
Coil 2 (Ohms)	0.00415	Surge Status	PASS
Coil 3 (Ohms)	0.00414	Peak Volt(V) L1	4040
Megohm Status	PASS	Peak Volt(V) L2	4040
Volts (V)	1010	Peak Volt(V) L3	4040
I(µA)	0.22	Max P-P EAR(%)	1.5/1.6/1.4
Resist (Mohm)	4560	EAR 1-2/2-3/3-1(%)	1/1/0



Surge-test after RTD install

SULZER

85777

REFER TO THIS NUMBER WHEN CALLING

WORK ORDER PHOTOS & DRAWINGS

W.O. No. 85777 **Date** 7/13/20 **Marks**

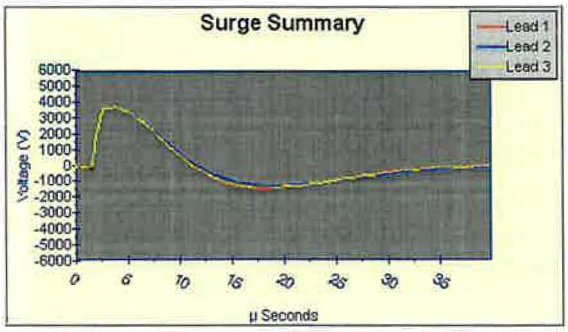
BILL TO: Beaumont-Cherry Valley Water **SHIP TO:** Beaumont-Cherry Valley Water

Nameplate Data

Brand	US VHS Motor	**Encl**	WPI	**Auxiliary Equipment Nameplates**
Rating	600	**Type**		
Speed	1780	**Model**	FD06	
Frame	5012P	**Ser. No.**	X 02 7640398-0005 R 00 03	

Nameplate Information		Motor ID 85777	
Location	620 Rancho	Location	620 RANCHO
Model		Manufacturer	
Serial Number		HP/KW	0
Volts-Rating		Volts-Operating	0
Amps-Rating		Amps-Operating	0
Insulation		Enclosure	
RPM	0	Service Factor	0
Frame		Freq-Hz	0
LR Code		LR Amps	0
NEMA Design		Max Amb °C	0
NEMA nom eff	0	Duty Cycle	
Manuf's Type		Manuf Dt Cd	

Results Summary		Test Date/Time 7/28/2020 2:49:00 PM	
Test ID:	460 FINAL	Repair/Job #	
Tested By		Tested For	
Room #		MCC	
Location	620 Rancho	Location	620 RANCHO
Temp Status	No Test Performed	PI Status	No Test Performed
Temp		Volts (V)	0
Resist Status	PASS	DA Ratio	0.0
L1-L2 (Ohms)	0.00841	PI Ratio	0.0
L2-L3 (Ohms)	0.00846	HiPot	PASS
L3-L1 (Ohms)	0.00841	Volts (V)	2160
Max Delta R %	0.587	I(µA)	0.45
Coil 1 (Ohms)	0.00418	Resist (Mohm)	4783
Coil 2 (Ohms)	0.00423	Surge Status	PASS
Coil 3 (Ohms)	0.00423	Peak Volt(V) L1	4040
Megohm Status	PASS	Peak Volt(V) L2	4040
Volts (V)	1000	Peak Volt(V) L3	4040
I(µA)	0.24	Max P-P EAR(%)	2.3/1.8/1.8
Resist (Mohm)	4143	EAR 1-2/2-3/3-1(%)	No Test



Final surge-test.

W.O. No. 85777 **Date** 7/13/20 **Marks**

BILL TO: Beaumont-Cherry Valley Water **SHIP TO:** Beaumont-Cherry Valley Water

Nameplate Data

Brand	US VHS Motor	**Encl**	WPI	**Auxiliary Equipment Nameplates**
Rating	600	**Type**		
Speed	1780	**Model**	FD06	
Frame	5012P	**Ser. No.**	X 02 7640398-0005 R 00 03	

Nameplate Information		Motor ID 85777	
Location	620 Rancho	Location	620 RANCHO
Model		Manufacturer	
Serial Number		HP/KW	0
Volts-Rating		Volts-Operating	0
Amps-Rating		Amps-Operating	0
Insulation		Enclosure	
RPM	0	Service Factor	0
Frame		Freq-Hz	0
LR Code		LR Amps	0
NEMA Design		Max Amb °C	0
NEMA nom eff	0	Duty Cycle	
Manuf's Type		Manuf Dt Cd	

Results Summary		Test Date/Time 7/28/2020 3:17:40 PM	
Test ID:	RTD Test	Repair/Job #	
Tested By	AC	Tested For	
Room #		MCC	
Location	620 Rancho	Location	620 RANCHO
Temp Status	No Test Performed	PI Status	No Test Performed
Temp		Volts (V)	0
Resist Status	PASS	DA Ratio	0.0
L1-L2 (Ohms)	111.53	PI Ratio	0.0
L2-L3 (Ohms)	0.0	HiPot	PASS
L3-L1 (Ohms)	0.0	Volts (V)	1210
Max Delta R %	0.000	I(µA)	0.11
Coil 1 (Ohms)	111.53	Resist (Mohm)	10697
Coil 2 (Ohms)	0.0	Surge Status	No Test Performed
Coil 3 (Ohms)	0.0	Peak Volt(V) L1	0
Megohm Status	PASS	Peak Volt(V) L2	0
Volts (V)	1010	Peak Volt(V) L3	0
I(µA)	0.09	Max P-P EAR(%)	0.0/0.0/0.0
Resist (Mohm)	10931	EAR 1-2/2-3/3-1(%)	--/--/--

Final RTD Test

SULZER

85777

WORK ORDER PHOTOS & DRAWINGS

REFER TO THIS NUMBER WHEN CALLING

W.O. No. 85/// **Date** 7/13/20 **Marks**

BILL TO: Beaumont-Cherry Valley Water **SHIP TO:** Beaumont-Cherry Valley Water

Nameplate Data

Brand	US VHS Motor	**Encl**	WPI	**Auxiliary Equipment Nameplates**
Rating	600	**Type**		
Speed	1780	**Model**	FD06	
Frame	5012P	**Ser. No.**	X 02 7640398-0005 R 00 03	

Nameplate Information		Motor ID 85777	
Location	620 Rancho	Location	620 RANCHO
Model		Manufacturer	
Serial Number		HP/KW	0
Volts-Rating		Volts-Operating	0
Amps-Rating		Amps-Operating	0
Insulation		Enclosure	
RPM	0	Service Factor	0
Frame		Freq-Hz	0
LR Code		LR Amps	0
NEMA Design		Max Amb °C	0
NEMA nom eff	0	Duty Cycle	
Manuf's Type		Manuf Dt Cd	

Results Summary		Test Date/Time 7/28/2020 3:23:04 PM	
Test ID:	120V Heater test	Repair/Job #	
Tested By	AC	Tested For	
Room #		MCC	
Location	620 Rancho	Location	620 RANCHO
Temp Status	No Test Performed	PI Status	No Test Performed
Temp		Volts (V)	0
Resist Status	PASS	DA Ratio	0.0
L1-L2 (Ohms)	33.98	PI Ratio	0.0
L2-L3 (Ohms)	0.0	HiPot	PASS
L3-L1 (Ohms)	0.0	Volts (V)	1350
Max Delta R %	0.000	I(µA)	0.14
Coil 1 (Ohms)	33.98	Resist (Mohm)	9662
Coil 2 (Ohms)	0.0	Surge Status	No Test Performed
Coil 3 (Ohms)	0.0	Peak Volt(V) L1	0
Megohm Status	PASS	Peak Volt(V) L2	0
Volts (V)	1010	Peak Volt(V) L3	0
I(µA)	0.10	Max P-P EAR(%)	0.0/0.0/0.0
Resist (Mohm)	10336	EAR 1-2/2-3/3-1(%)	--/--/--

Final Heater circuit test

W.O. No. 85777 **Date** 7/13/20 **Marks**

BILL TO: Beaumont-Cherry Valley Water **SHIP TO:** Beaumont-Cherry Valley Water

Nameplate Data

Brand US VHS Motor **Encl** WPI **Auxiliary Equipment Nameplates**

Rating 600 **Type**

Speed 1780 **Model** FD06

Frame 5012P **Ser. No.** X 02 7640398-0005 R 00 03

Nameplate Information		Motor ID 85777	
Location	620 Rancho	Location	620 RANCHO
Model		Manufacturer	
Serial Number		HP/KW	0
Volts-Rating		Volts-Operating	0
Amps-Rating		Amps-Operating	0
Insulation		Enclosure	
RPM	0	Service Factor	0
Frame		Freq-Hz	0
LR Code		LR Amps	0
NEMA Design		Max Amb °C	0
NEMA nom eff	0	Duty Cycle	
Manuf's Type		Manuf Dt Cd	

Results Summary		Test Date/Time 7/28/2020 3:27:30 PM	
Test ID:	RTD Test	Repair/Job #	
Tested By	AC	Tested For	
Room #		MCC	
Location	620 Rancho	Location	620 RANCHO
Temp Status	No Test Performed	PI Status	No Test Performed
Temp		Volts (V)	0
Resist Status	PASS	DA Ratio	0.0
L1-L2 (Ohms)	111.87	PI Ratio	0.0
L2-L3 (Ohms)	0.0	HiPot	PASS
L3-L1 (Ohms)	0.0	Volts (V)	1200
Max Delta R %	0.000	I(µA)	0.12
Coil 1 (Ohms)	111.87	Resist (Mohm)	9807
Coil 2 (Ohms)	0.0	Surge Status	No Test Performed
Coil 3 (Ohms)	0.0	Peak Volt(V) L1	0
Megohm Status	PASS	Peak Volt(V) L2	0
Volts (V)	1000	Peak Volt(V) L3	0
I(µA)	0.10	Max P-P EAR(%)	0.0/0.0/0.0
Resist (Mohm)	10146	EAR 1-2/2-3/3-1(%)	--/--/--

Final P-End Bearing RTD Test

SULZER

85777

WORK ORDER PHOTOS & DRAWINGS

REFER TO THIS NUMBER WHEN CALLING

W.O. No. 85777 **Date** 7/13/20 **Marks**

BILL TO: Beaumont-Cherry Valley Water **SHIP TO:** Beaumont-Cherry Valley Water

Nameplate Data

Brand	US VHS Motor	**Encl**	WPI	**Auxiliary Equipment Nameplates**
Rating	600	**Type**		
Speed	1780	**Model**	FD06	
Frame	5012P	**Ser. No.**	X 02 7640398-0005 R 00 03	

Nameplate Information		Motor ID 85777	
Location	620 Rancho	Location	620 RANCHO
Model		Manufacturer	
Serial Number		HP/KW	0
Volts-Rating		Volts-Operating	0
Amps-Rating		Amps-Operating	0
Insulation		Enclosure	
RPM	0	Service Factor	0
Frame		Freq-Hz	0
LR Code		LR Amps	0
NEMA Design		Max Amb °C	0
NEMA nom eff	0	Duty Cycle	
Manuf's Type		Manuf Dt Cd	

Results Summary		Test Date/Time 7/28/2020 3:32:01 PM	
Test ID:	RTD Test	Repair/Job #	
Tested By	AC	Tested For	
Room #		MCC	
Location	620 Rancho	Location	620 RANCHO
Temp Status	No Test Performed	PI Status	No Test Performed
Temp		Volts (V)	0
Resist Status	PASS	DA Ratio	0.0
L1-L2 (Ohms)	112.12	PI Ratio	0.0
L2-L3 (Ohms)	0.0	HiPot	PASS
L3-L1 (Ohms)	0.0	Volts (V)	1200
Max Delta R %	0.000	I(µA)	0.12
Coil 1 (Ohms)	112.12	Resist (Mohm)	9898
Coil 2 (Ohms)	0.0	Surge Status	No Test Performed
Coil 3 (Ohms)	0.0	Peak Volt(V) L1	0
Megohm Status	PASS	Peak Volt(V) L2	0
Volts (V)	1000	Peak Volt(V) L3	0
I(µA)	0.10	Max P-P EAR(%)	0.0/0.0/0.0
Resist (Mohm)	10322	EAR 1-2/2-3/3-1(%)	--/--/--

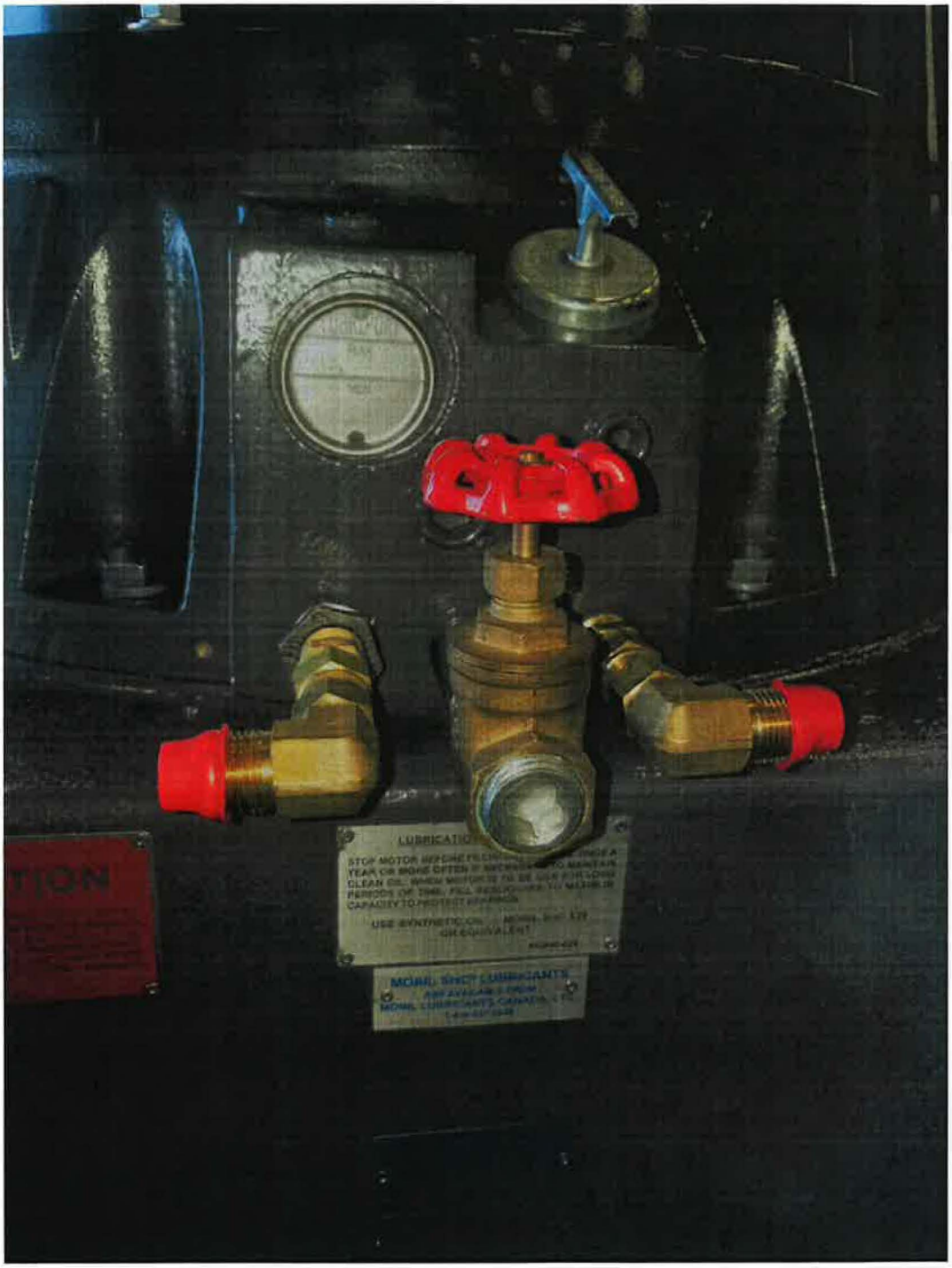
Final O-End Bearing RTD Test

W.O. No. 85777 **Date** 7/13/20 **Marks**

BILL TO: Beaumont-Cherry Valley Water **SHIP TO:** Beaumont-Cherry Valley Water

Nameplate Data

Brand	US VHS Motor	**Encl**	WPI	**Auxiliary Equipment Nameplates**
Rating	600	**Type**		
Speed	1780	**Model**	FD06	
Frame	5012P	**Ser. No.**	X 02 7640398-0005 R 00 03	



Final

SULZER

85777

WORK ORDER PHOTOS & DRAWINGS

REFER TO THIS NUMBER WHEN CALLING

W.O. No. 85777 **Date** 7/13/20 **Marks**

BILL TO: Beaumont-Cherry Valley Water **SHIP TO:** Beaumont-Cherry Valley Water

Nameplate Data

Brand	US VHS Motor	**Encl**	WPI	**Auxiliary Equipment Nameplates**
Rating	600	**Type**		
Speed	1780	**Model**	FD06	
Frame	5012P	**Ser. No.**	X 02 7640398-0005 R 00 03	

Final

W.O. No. 85777 **Date** 7/13/20 **Marks**

BILL TO: Beaumont-Cherry Valley Water **SHIP TO:** Beaumont-Cherry Valley Water

Nameplate Data

Brand	US VHS Motor	**Encl**	WPI	**Auxiliary Equipment Nameplates**
Rating	600	**Type**		
Speed	1780	**Model**	FD06	
Frame	5012P	**Ser. No.**	X 02 7640398-0005 R 00 03	

Final

SULZER

85777

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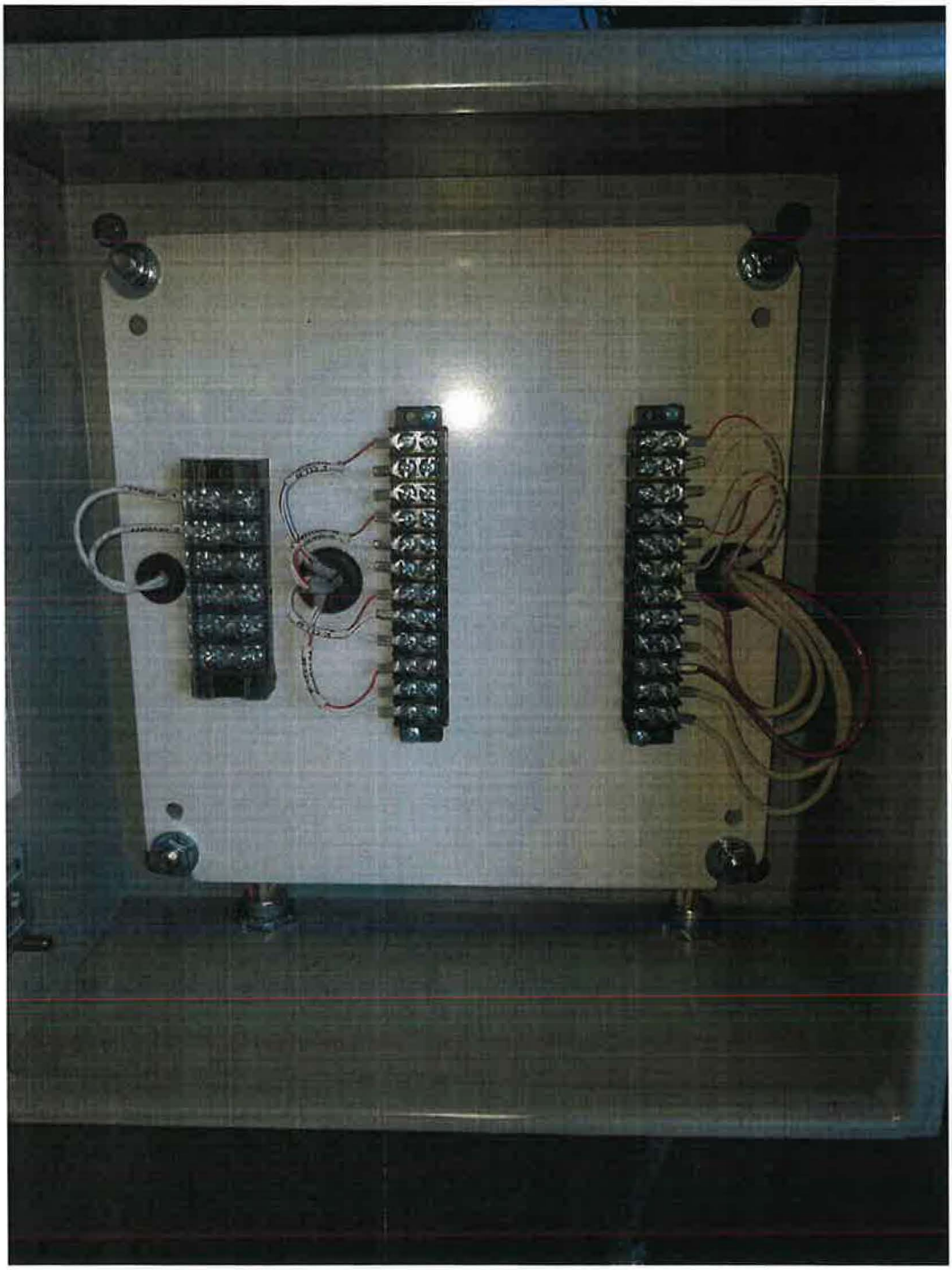
Rating	600	**Type**		
Speed	1780	**Model**	FD06	
Frame	5012P	**Ser. No.**	X 02 7640398-0005 R 00 03	



Final

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Speed	1780	**Model**	FD06	
Frame	5012P	**Ser. No.**	X 02 7640398-0005 R 00 03	

Sulzer EMS

620 S. Rancho Ave
Colton, CA 92324
909-825-7971

Customer:		Contact:	
		Phone:	
		Date:	7/29/2020 5:54:49 PM
Job Number:	85777	Voltage:	
Serial No:		Current:	
Manufacturer:		Horsepower:	
Model:		RPM:	
Type:	3-Phase Induction	Power Factor:	
Frame:		Efficiency:	
Enclosure:		Field V:	
Poles:		Field A:	

Time	A-B (V)	B-C (V)	C-A (V)	A (A)	B (A)	C (A)	KW	RPM
00:00:00	457.6	460.5	456.7	111.7	130.0	124.6	7.63	0

Tested By: _____ Date: _____

Page 1

Final run-test at full voltage and no-load.

APPENDIX G

Well 24 SCE Efficiency Test (2018)

SOUTHERN CALIFORNIA EDISON
An EDISON INTERNATIONAL Company

Confidential/Proprietary Information

March 5, 2018

DWAN LEE
BEAUMONT CHERRY VALLEY WATER
560 MAGNOLIA AVENUE
BEAUMONT, CA 92223-2258

HYDRAULIC TEST RESULTS: WELL #24
Location: 38001 BROOKSIDE, CHERRY VLY, CA 92223
Cust #: 0-000-0808 Serv. Acct. #: 026-4419-17
Meter: V349N-004848 Pump Ref.#: 27551

In accordance with your request, an energy efficiency test was performed on your turbine well pump on February 21, 2018. If you have any questions regarding the results which follow, please contact Anthony Jimenez at +1 (909) 820-5209.

Equipment
HP: 600.0
Pump: SULZER No: 79927
Motor: US No: 00720018850100R01

Results	Test 1	Test 2
Discharge Pressure, PSI	**80.2**	**91.5**
Standing Water Level, Feet	**411.0**	**411.0**
Drawdown, Feet	**67.0**	**49.0**
Discharge Head, Feet	**185.3**	**211.4**
Pumping Water Level, Feet	**478.0**	**460.0**
Total Head, Feet	**663.3**	**671.4**
Capacity, GPM	**2,430**	**2,315**
GPM per Foot Drawdown	**36.3**	**47.2**
Acre Feet Pumped in 24 Hours	**10.741**	**10.232**
kW Input to Motor	**476.0**	**476.0**
HP Input to Motor	**638.3**	**638.3**
Motor Load (%)	**100.5**	**100.5**
Measured Speed of Pump, RPM	**1,774**	**1,775**
Customer Meter, GPM	**2,634**	
kWh per Acre Foot	**1,064**	**1,117**
Overall Plant Efficiency (%)	**63.8**	**61.5**

Test 1 is the normal operation of this pump at the time of the above test(s). The other results were obtained by throttling the discharge. We were unable to measure the water levels with our sounder line and the airline is inoperative or missing, therefore, an ultrasonic sounder was used to obtain the water levels.

Ronald Ford
Manager
Hydraulic Services

SOUTHERN CALIFORNIA EDISON
An EDISON INTERNATIONAL Company

Confidential/Proprietary Information

March 5, 2018

DWAN LEE
BEAUMONT CHERRY VALLEY WATER
560 MAGNOLIA AVENUE
BEAUMONT, CA 92223-2258

PUMPING COST ANALYSIS: WELL #24
Location: 38001 BROOKSIDE, CHERRY VLY, CA 92223

CSS Cust #:	0-000-0808	CRM Cust #:	0064455441	Pump Ref.#:	27551
CSS Serv. Acct.:	026-4419-17	CRM Serv. Acct.:	0052209348	Meter:	V349N-004848

The following energy efficiency analysis is presented as an aid to your cost accounting. This is an estimate based on the conditions present during the Edison pump test performed on February 21, 2018, billing history for the past 12 months, and your current rate of TOU-PA3B.

Assuming that water requirements will be the same as for the past year, and all operating conditions (annual hours of operation, head above, and water pumping level) will remain the same as they were at the time of the pump test, it is estimated that:

1. Overall plant efficiency can be improved from 63.8 % to 70.0 %.
2. This can save you up to 158,013 kWh and $15,800.82 annually.
3. These kWh savings translate to a 68.74 - ton decrease in CO_2

		Plant Efficiency	
	Existing	Improved	Savings
Total kWh	**1,773,036**	**1,615,023**	**158,013**
kW Input	**476.0**	**433.6**	**42.4**
kWh per Acre Foot	**1,064**	**969**	**95**
Acre Feet per Year	**1,666.7**		
Average Cost per kWh	**$0.10**		
Average Cost per Acre Foot	**$106.38**	**$96.90**	**$9.48**
Overall Plant Efficiency (%)	**63.8**	**70.0**	
Total Annual Cost	**$177,303.60**	**$161,502.78**	**$15,800.82**

It is sincerely hoped that this information will prove helpful to you, and that your concerns over maintaining optimum pumping efficiency will be continued. If you have any questions regarding this report, please contact Anthony Jimenez at +1 (909) 820-5209.

Ronald Ford
Manager
Hydraulic Services