ACORD CERTIFICATE OF INSURANCE

DATE (MM/DD/YY) 11/04/96

PRODUCER

J B L & K INSURANCE
PHONE# 222-1831
220 N W SECOND AVE
PORTLAND OR 97209

THIS CERTIFICATE IS ISSUED AS A MATTER OF INFORMATION ONLY AND CONFERS NO RIGHTS UPON THE CERTIFICATE HOLDER. THIS CERTIFICATE DOES NOT AMEND, EXTEND OR ALTER THE COVERAGE AFFORDED BY THE POLICES BELOW.

COMPANIES AFFORDING COVERAGE

COMPANY A: SAIF CORPORATION

INSURED

OREGON ELECTRIC CONSTRUCTION
DBA: ALLISON EC, SUNSET EC
G & H EC, SEC OF OR, OMNI EC
4824 NE 42ND PORTLA OR 97218

COMPANY B:

CITY OF NEWBERG
CITY RECORDER INDEX NO. 151

COMPANY C:

COMPANY D:

COVERAGES

THIS IS TO CERTIFY THAT THE POLICIES OF INSURANCE LISTED BELOW HAVE BEEN ISSUED TO THE INSURED NAMED ABOVE FOR THE POLICY PERIOD INDICATED, NOTWITHSTANDING ANY REQUIREMENT, TERM OR CONDITION OF ANY CONTRACT OR OTHER DOCUMENT WITH RESPECT TO WHICH THIS CERTIFICATE MAY BE ISSUED OR MAY PERTAIN, THE INSURANCE AFFORDED BY THE POLICIES DESCRIBED HEREIN IS SUBJECT TO ALL THE TERMS, EXCLUSIONS AND CONDITIONS OF SUCH POLICIES. LIMITS SHOWN MAY HAVE BEEN REDUCED BY PAID CLAIMS.

CO LTR	TYPE OF INSURANCE	POLICY NUMBER	POLICY EFFECTIVE DATE (MM/DD/YY)	POLICY EXPIRATION DATE (MM/DD/YY)	LIMITS	
	GENERAL LIABILITY				GENERAL AGGREGATE	$
	☐ COMMERCIAL GENERAL LIABILITY				PRODUCTS - COMP/OP AGG	$
	☐ CLAIMS MADE ☐ OCCUR				PERSONAL & ADV INJURY	$
	☐ OWNER'S & CONTRACTOR'S PROT				EACH OCCURRENCE	$
	☐ _____				FIRE DAMAGE (Any one fire)	$
					MED EXP (Any one person)	$
	AUTOMOBILE LIABILITY				COMBINED SINGLE LIMIT	$
	☐ ANY AUTO					
	☐ ALL OWNED AUTOS				BODILY INJURY (Per person)	$
	☐ SCHEDULED AUTOS					
	☐ HIRED AUTOS				BODILY INJURY (Per accident)	$
	☐ NON-OWNED AUTOS					
	☐ _____				PROPERTY DAMAGE	$
	GARAGE LIABILITY				AUTO ONLY - EA ACCIDENT	$
	☐ ANY AUTO				OTHER THAN AUTO ONLY:	
	☐ _____				EACH ACCIDENT	$
					AGGREGATE	$
	EXCESS LIABILITY				EACH OCCURRENCE	$
	☐ UMBRELLA FORM				AGGREGATE	$
	☐ OTHER THAN UMBRELLA FORM					$
A	WORKERS COMPENSATION AND EMPLOYERS' LIABILITY	812111	10/01/96	10/01/97	X STATUTORY LIMITS	
	THE PROPRIETOR/ PARTNERS/EXECUTIVE OFFICERS ARE: ☐ INCL ☐ EXCL				EACH ACCIDENT	$ 500,000
					DISEASE - POLICY LIMIT	$ 500,000
					DISEASE - EACH EMPLOYEE	$ 500,000
	OTHER					

DESCRIPTION OF OPERATIONS/LOCATIONS/VEHICLES/SPECIAL ITEMS

RE: NEWBERG WASTE WATER TREATMENT INSTRUMENTS & CONTROL SYSTEM IMPROVEMENTS

CERTIFICATE HOLDER

CITY OF NEWBERG

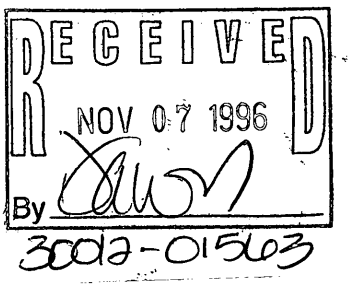
414 E 1ST ST
NEWBERG OR 97132

CANCELLATION

SHOULD ANY OF THE ABOVE DESCRIBED POLICIES BE CANCELLED BEFORE THE EXPIRATION DATE THEREOF, THE ISSUING COMPANY WILL ENDEAVOR TO MAIL 30 DAYS WRITTEN NOTICE TO THE CERTIFICATE HOLDER NAMED TO THE LEFT, BUT FAILURE TO MAIL SUCH NOTICE SHALL IMPOSE NO OBLIGATION OR LIABILITY OF ANY KIND UPON THE COMPANY, ITS AGENTS OR REPRESENTATIVES.

AUTHORIZED REPRESENTATIVE
Kerrie Woolworth SB A

© ACORD CORPORATION 1993


RECEIVED
NOV 07 1996
By
3003-015603

8-7-96 986-2200

Corp. Dw

1) Oregon Electric Group
ABN - 8/28/95
Principal & Address:
Oregon Electric Construction, Inc.
Glen Patterson - Pres & Sec.
4824 NE 42nd Ave
PDX, OR 97218

2) Oregon Electric Construction, Inc.
R/A - H.D. Allison
4824 NE 42nd
PDX, OR 97218

Pres. & Sec. - Glen Patterson

8/7/96 P/c Oregon Electric -
Jennifer Entout Amended Bond
8/5/96.

Orgn Elect. Group

need Confirmation of
Orgn Elect Construction, Inc.

→ P/C Bonding Company –
letter that their bond covers
orgn Electrical Group –

30012-01563

COPY

RESOLUTION 96-1978

A RESOLUTION AWARDING THE WASTEWATER TREATMENT PLANT INSTRUMENTATION AND CONTROL CONTRACT TO OREGON ELECTRIC CONSTRUCTION, INC. AND AUTHORIZING THE CITY MANAGER TO ENTER INTO THE AGREEMENT WITH OREGON ELECTRIC CONSTRUCTION, INC.

RECITALS

1. The wastewater treatment plant control system is obsolete. Replacement parts are not available and much of the control is done manually, with limited automatic controls.

2. Replacement of these control systems are included in the FY 95/96 and FY 96/97 Capital Improvement budget.

3. Bids were advertised in accordance with ORS Chapter 279 on Public Contracts and Purchasing.

4. The lowest responsible bidder was Oregon Electric Construction, Inc. in the amount of $127,760.17.

NOW, THEREFORE, it is resolved by the Newberg City Council as follows:

1. The City Council awards the bid to Oregon Electric Construction, Inc. and authorizes the City Manager to enter into a contract with Oregon Electric Construction, Inc., to provide construction of the Instrumentation and Control System modifications at the wastewater treatment plant, in an amount of $127,760.17, with approval of the City Attorney as to form and content.

ADOPTED by the Newberg City Council this 1st day of July, 1996.

Duane R. Cole, City Recorder

ATTEST by the Mayor this 9 day of July, 1996.

Donna Proctor, Mayor

k:\wp\tabby\council\icaward.res

CITY OF NEWBERG
CITY RECORDER INDEX NO. 1511

City of Newberg Wastewater Treatment Plant

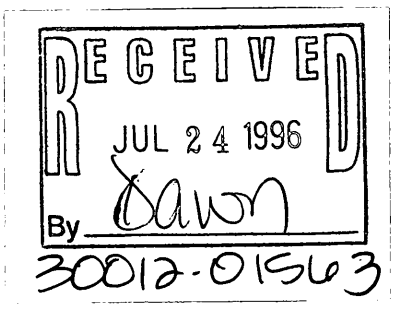
INSTRUMENTATION AND CONTROL IMPROVEMENTS

PROJECT MANUAL

May 1996

HDR Engineering, Inc.

22


RECEIVED
JUL 24 1996
By Dawn
30012-01563

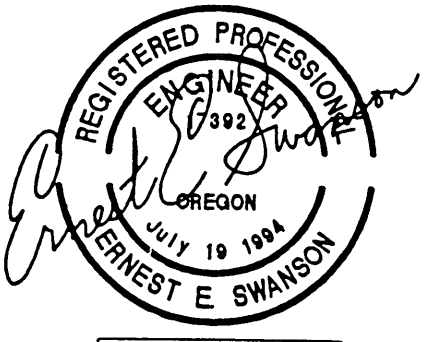
CITY OF NEWBERG
CITY RECORDER INDEX NO. 1511

CONTRACT MANUAL

City of Newberg WWTP

INSTRUMENTATION AND CONTROL SYSTEM IMPROVEMENTS

I hereby certify that the Contract Drawings and the Contract Manual were prepared by me or under my direct supervision and that I am a duly registered Engineer under the laws of the State of Oregon.



EXPIRES 06/30/96

HDR Engineering, Inc.
Suite 1200
500 108th Avenue NE
Bellevue, WA 98004
Telephone: 206 453-1523
Fax: 206 453-7107

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SECTION 00020

INVITATION TO BID

Notice is hereby given that the City of Newberg is inviting proposals for the **Instrumentation and Control System Improvements**. The work to be performed under this contract includes the furnishing of labor, materials and equipment for the upgrade of the control system at the City's Wastewater Treatment Plant.

RECEIPT OF BIDS

Sealed bids will be received by the Owner, the City of Newberg.

Bids will be received at 719 E. First Street, Newberg, OR 97132 until 2:00 PDT, **June 12, 1996.** Bid shall be on a firm lump sum basis.

DOCUMENT EXAMINATION AND PROCUREMENTS

The Contract Documents may be examined at the City of Newberg, Office of Community Development, 719 E. First Street, Newberg, OR 97132, (503) 537-1210, or at the office of the Engineer: HDR Engineering, Inc., 4500 Kruse Way, Suite 300, Lake Oswego, OR 97035, (503) 635-9760.

Copies of the Contract Documents are also on file at the Construction Data Plan Center and the Daily Journal of Commerce Plan Center.

Copies of the Contract Documents may be purchased at: HDR Engineering, Inc., 4500 Kruse Way, Suite 300, Lake Oswego, OR 97035, (503) 635-9760.

The cost of Contract Documents is $25.

No partial sets of Specifications or Drawings will be issued. No refunds for any contract documents will be made.

A PREBID CONFERENCE of the job will be held at **10:00 a.m. May 29, 1996, at the City of Newberg Wastewater Treatment Plant.**

Each Proposal must be submitted on the prescribed form and accompanied by a certified check or bid bond executed on the prescribed form, payable to City of Newberg in an amount not less than ten percent of the amount bid.

Bidders must be registered with the Construction Contractors Board. Proposals submitted by unregistered contractors will be rejected at the time bids are opened as nonresponsive. Each bid must contain a statement as to whether the Bidder is a resident Bidder, as defined in ORS 279.029.

No bid will be received or considered by the Owner unless the bid contains a statement by the bidder as part of his bid that provisions required by ORS 279.350 shall be met.

The right is reserved to reject all Proposals or any Proposal not conforming to the intent of the Contract Documents, and to postpone the award of the contract for a period of time which, however, will not extend beyond 90 days from the bid opening date; and to consider the Proposal which is to the best interest of the City.

Date: _____ _____

Greg Scoles
Community Development Director

END OF SECTION

SECTION 00100

INSTRUCTIONS TO BIDDERS

1. DEFINED TERMS

Terms used in these Instructions to Bidders, which are defined in Section 00700 - General Conditions, have the meanings assigned to them in the General Conditions.

Certain additional terms used in these Instructions to Bidders have the meanings indicated below which are applicable to both the singular and plural thereof.

1.1 BIDDER--one who submits a Bid directly to OWNER as distinct from a sub-bidder, who submits a bid to a BIDDER.

1.2 Issuing Office--the office from which the Bidding Documents are to be issued and where the bidding procedures are to be administered.

2. COPIES OF BIDDING DOCUMENTS

2.1 Complete sets of the Bidding Documents in the number and for the price stated in the Advertisement or Invitation to Bid may be obtained from the Issuing Office.

2.2 Complete sets of Bidding Documents must be used in preparing Bids; neither OWNER nor ENGINEER assume any responsibility for errors or misinterpretations resulting from the use of incomplete sets of Bidding Documents.

2.3 OWNER and ENGINEER in making copies of Bidding Documents available on the above terms do so only for the purpose of obtaining Bids for the Work and do not confer a license or grant for any other use.

3. QUALIFICATIONS OF BIDDERS

To demonstrate qualifications to perform the Work, each BIDDER must be prepared to submit within 5 days after Bid opening, upon OWNER's request, detailed written evidence, such as financial data, previous experience, present commitments, and other such data as may be called for below (or elsewhere in the Contract Documents). Each Bid must contain evidence of BIDDER's qualification to do business in Oregon. BIDDER must be registered with the Oregon Construction Contractor's Board in accordance with ORS 701 prior to submitting a bid.

4. EXAMINATION OF CONTRACT DOCUMENTS AND SITE

4.1 It is the responsibility of each BIDDER before submitting a Bid to:

4.1.1 Examine thoroughly the Contract Documents and other related data identified in the Bidding Documents (including "technical data" referred to in Paragraph 4.2. below).

4.1.2 Visit the site to become familiar with and satisfy BIDDER as to the general, local and site conditions that may affect cost, progress, performance or furnishing of the Work.

Site visits can be scheduled with **Mr. Alan Lee at telephone (503)** 537-1252 to make an appointment.

4.1.3 Consider federal, state and local Laws and Regulations that may affect cost, progress, performance or furnishing of the Work.

4.1.4 Study and carefully correlate BIDDER's knowledge and observations with the Contract Documents and such other related data.

4.1.5 Promptly notify ENGINEER of all conflicts, errors, ambiguities or discrepancies in or between the Contract Documents and such other related documents.

When conflicts, errors, ambiguities or discrepancies are discovered in or between Contract Documents and/or other related documents, and when said conflicts, etc.,have not been resolved through the interpretations by ENGINEER as described in Paragraph 6., BIDDER shall include in the Bid the greater quantity or better quality of Work, or compliance with the more stringent requirement resulting in a greater cost. Such greater cost shall be included in the Bid.

4.2 Reference is made to the Supplementary Conditions for identification of:

4.2.1 Those reports of explorations and tests of subsurface conditions at or contiguous to the site which have been utilized by ENGINEER in preparation of the Contract Documents. BIDDER may rely upon the general accuracy of the "technical data" contained in such reports but not upon other data, interpretations, opinions or information contained in such reports or otherwise relating to the subsurface conditions at the site, nor upon the completeness thereof for the purposes of bidding or construction.

4.2.2 Those drawings of physical conditions in or relating to existing surface and subsurface structures (except Underground Facilities) which are at or contiguous to the site that have been utilized by ENGINEER in preparation of the Contract Documents. BIDDER may rely upon the general accuracy of the "technical data" contained in such drawings but not upon other data, interpretations, opinions or information shown or indicated in such drawings or otherwise relating to such structures, nor upon the completeness thereof for the purposes of bidding or construction.

4.2.3 Copies of such reports and drawings will be made available by OWNER to any BIDDER on request. Those reports and drawings are not part of the Contract Documents, but the "technical data" contained therein upon which BIDDER is entitled to rely as provided in Paragraph 4.2. of the General Conditions has been identified and established in Paragraph SC-4.2. of the Supplementary Conditions. BIDDER is responsible for any interpretation or conclusion drawn from any "technical data" or any such data, interpretations, opinions or information.

4.3 Information and data shown or indicated in the Contract Documents with respect to existing Underground Facilities at or contiguous to the site is based upon information and data furnished to the ENGINEER by others, and OWNER and ENGINEER do not assume responsibility for the accuracy or completeness thereof unless it is expressly provided otherwise in the Supplementary Conditions.

4.4 Provisions concerning responsibilities for the adequacy of data furnished to prospective BIDDERS with respect to subsurface conditions, other physical conditions and Underground Facilities, and possible changes in the Contract Documents due to differing or unanticipated conditions appear in Paragraphs 4.2. and 4.3. of the General Conditions.

4.5 Before submitting Bid, each BIDDER will be responsible to obtain such additional or supplementary examinations, investigations, explorations, tests, studies and data concerning conditions (surface, subsurface and Underground Facilities) at or contiguous to the site or otherwise, which may affect cost, progress, performance or furnishing of the Work or which relate to any aspect of the means, methods, techniques, sequences or procedures of construction to be employed by BIDDER and safety precautions and programs incident thereto or which BIDDER deems necessary to

determine its Bid for performing and furnishing the Work in accordance with the time, price and other terms and conditions of the Contract Documents.

4.6 On request, OWNER will provide each BIDDER access to the site to conduct such examinations, investigations. explorations, tests and studies as each BIDDER deems necessary for submission of a Bid. BIDDER must fill all holes and clean up and restore the site to its former conditions upon completion of such explorations, investigations, tests and studies.

4.7 The submission of a Bid will constitute an incontrovertible representation by BIDDER (i) that BIDDER has complied with every requirement of this Article 4, (ii) that without exception the Bid is premised upon performing and furnishing the Work required by the Contract Documents and applying the specific means, methods, techniques, sequences or procedures of construction (if any) that may be shown or indicated or expressly required by the Contract Documents, (iii) that BIDDER has given ENGINEER written notice of all conflicts, errors, ambiguities and discrepancies in the Contract Documents and the written resolutions thereof by ENGINEER are acceptable to BIDDER, and when said conflicts, etc., have not been resolved through the interpretations by ENGINEER as described in Paragraph 6., BIDDER has included in the Bid the greater quantity or better quality of Work, or compliance with the more stringent requirement resulting in a greater cost, and (iv) that the Contract Documents are generally sufficient to indicate and convey understanding of all terms and conditions for performing and furnishing the Work.

4.8 The provisions of I-4.1. through 4.8., inclusive, do not apply to Asbestos, Polychlorinated biphenyls (PCBs), Petroleum, Hazardous Waste or Radioactive Material covered by Paragraph 4.5 of the General Conditions.

5. AVAILABILITY OF LANDS FOR WORK, ETC.

5.1 The lands upon which the Work is to be performed, rights-of-way and easements for access thereto and other lands designated for use by CONTRACTOR in performing the Work are identified in the Contract Documents. All additional lands and access thereto required for temporary construction facilities, construction equipment or storage of materials and equipment to be incorporated in the Work are to be obtained and paid for by CONTRACTOR. Easements for permanent structures or permanent changes in existing facilities are to be obtained and paid for by OWNER unless otherwise provided in the Contract Documents.

6. INTERPRETATIONS AND ADDENDA

6.1 All questions about the meaning or intent of the Bidding Documents are to be directed to ENGINEER in writing. Interpretations or clarifications considered necessary by ENGINEER in response to such questions will be issued by Addenda mailed or delivered to all parties recorded by ENGINEER as having received the Bidding Documents. Questions received less than 10 days prior to the date for opening of Bids may not be answered. Only questions answered by formal written Addenda will be binding. Oral and other interpretations or clarifications will be without legal effect.

6.2 Addenda may also be issued to modify the Bidding Documents as deemed advisable by OWNER or ENGINEER.

7. BID SECURITY

7.1 Each Bid must be accompanied by Bid security made payable to OWNER in an amount of ten (10) percent of BIDDER's maximum Bid price and in the form of a certified or bank check or a Bid Bond issued by a surety meeting the requirements of paragraph 5.1. of the General Conditions.

7.2 The Bid security of Successful BIDDER will be retained until such BIDDER has executed the Agreement, furnished the required contract security and certificates of insurance and met the other conditions of the Notice of Award, whereupon the Bid security will be returned. If the Successful BIDDER fails to execute and deliver the Agreement and furnish the required contract security and certificates of insurance within 15 days after the Notice of Award, OWNER may annul the Notice of Award and the Bid security of that BIDDER will be forfeited. The Bid security of other BIDDERS whom OWNER believes to have a reasonable chance of receiving the award may be retained by OWNER until the earlier of the 7th day after the Effective Date of the Agreement or the 36th day (time period for award plus 1 day) after the Bid opening, whereupon Bid security furnished by such BIDDERS will be returned.

Bid security with Bids which are not competitive will be returned within 7 days after the Bid opening.

8. CONTRACT TIMES

The number of days within which, or the dates by which, the Work is to be substantially completed and also completed and ready for final payment is set forth in the Agreement or incorporated therein by reference to the attached Bid form.

9. LIQUIDATED DAMAGES

Provisions for liquidated damages, if any, are set forth in the Agreement.

10. SUBSTITUTE AND "OR-EQUAL" ITEMS

The Contract, if awarded, will be on the basis of materials and equipment described in the drawings or specified in the Specifications without consideration of possible substitute or "or-equal" items. Whenever it is indicated in the drawings or specified in the Specifications that a "substitute" or "or-equal" item of material or equipment may be furnished or used by CONTRACTOR if acceptable to ENGINEER, application for such acceptance will not be considered by ENGINEER until after the Effective Date of the Agreement. The procedure for submission of any such application by CONTRACTOR and consideration by ENGINEER is set forth in Paragraphs 6.7.1., 6.7.2. and 6.7.3. of the General Conditions and may be supplemented in the General Requirements.

11. SUBCONTRACTORS, SUPPLIERS AND OTHERS

11.1 List Subcontractors in Bid.

BIDDER shall list on the Bid form in the place provided the name, address, and description of Work of each Subcontractor to whom BIDDER proposes to subcontract portions of the Work in excess of 5 percent of the total amount of Bid.

11.3 No CONTRACTOR shall be required to employ any Subcontractor, Supplier, other person or organization against whom CONTRACTOR has reasonable objection.

12. BID FORM

12.1 The Bid form is included with the Bidding Documents; additional copies may be obtained from the Issuing Office.

12.2 All blanks on the Bid form must be completed by printing in black ink or by typewriter.

12.3 Bids by corporations must be executed in the corporate name by the president or a vice-president (or other corporate officer accompanied by evidence of authority to sign) and the

corporate seal must be affixed and attested by the secretary or an assistant secretary. The corporate address and state of incorporation must be shown below the signature.

12.4 Bids by partnerships must be executed in the partnership name and signed by a partner, whose title must appear under the signature and the official address of the partnership must be shown below the signature.

12.5 All names must be typed or printed in black ink below the signature.

12.6 The Bid shall contain an acknowledgement of receipt of all Addenda (the numbers of which must be filled in on the Bid form).

12.7 The address and telephone number for communications regarding the Bid must be shown.

12.8 Evidence of authority to conduct business as an out-of-state corporation in the state where the Work is to be performed shall be provided in accordance with Paragraph 3 above. State CONTRACTOR license number must also be shown.

13. SUBMISSION OF BIDS

Bids shall be submitted on the prescribed Bid form, provided with contained in the Bidding Documents, at the time and place indicated in the Advertisement or Invitation to Bid, addressed to City of Newberg, and shall be enclosed in an opaque sealed envelope, marked with the Project title and, the name and address of BIDDER, and accompanied by the Bid security and other required documents. If the Bid is sent through the mail or other delivery system, the sealed envelope shall be enclosed in a separate envelope with the notation "BID ENCLOSED" on the face of it.

14. MODIFICATION AND WITHDRAWAL OF BIDS

14.1 Bids may be modified or withdrawn by an appropriate document duly executed in the manner that a Bid must be executed and delivered to the place where Bids are to be submitted at any time prior to the opening of Bids.

The appropriate document shall be in the form of a letter. No other communication including telephonic or fax will be accepted.

15. OPENING OF BIDS

Bids will be opened and (unless obviously non-responsive) read aloud publicly at the place where Bids are to be submitted. An abstract of the amounts of the base Bids and major alternates (if any) will be made available to BIDDERS after the opening of Bids.

16. BIDS TO REMAIN SUBJECT TO ACCEPTANCE

All Bids will remain subject to acceptance for the time period specified for Notice of Award, but OWNER may, in sole discretion, release any Bid and return the Bid security prior to that date.

17. AWARD OF CONTRACT

17.1 OWNER reserves the right to reject any or all Bids, including without limitation the rights to reject any or all nonconforming, nonresponsive, unbalanced or conditional Bids and to reject the Bid of any BIDDER if OWNER believes that it would not be in the best interest of the Project to make an award to that BIDDER, whether because the Bid is not responsive or the BIDDER is unqualified or of doubtful financial ability or fails to meet any other pertinent standard or criteria established by

OWNER. OWNER also reserves the right to waive all informalities not involving price, time or changes in the Work and to negotiate contract terms with the Successful BIDDER. Discrepancies between the multiplication of units of Work and unit prices will be resolved in favor of the unit prices. Discrepancies between the indicated sum of any column of figures and the correct sum thereof will be resolved in favor of the correct sum. Discrepancies between words and figures will be resolved in favor of the words.

Any or all bids will be rejected if OWNER has reason to believe that collusion exists among the BIDDERS.

17.2 In evaluating Bids, OWNER will consider the qualifications of BIDDERS, whether or not the Bids comply with the prescribed requirements, and such alternates, unit prices and other data, as may be requested in the Bid form or prior to the Notice of Award.

17.3 OWNER may consider the qualifications and experience of Subcontractors, Suppliers, and other persons and organizations proposed for those portions of the Work as to which the identity of Subcontractors, Suppliers, and other persons and organizations must be submitted as provided in the Supplementary Conditions. OWNER also may consider the operating costs, maintenance requirements, performance data and guarantees of major items of materials and equipment proposed for incorporation in the Work when such data is required to be submitted prior to the Notice of Award.

17.4 OWNER may conduct such investigations as OWNER deems necessary to assist in the evaluation of any Bid and to establish the responsibility, qualifications and financial ability of BIDDERS, proposed Subcontractors, Suppliers and other persons and organizations to perform and furnish the Work in accordance with the Contract Documents to OWNER's satisfaction within the prescribed time.

17.5 If the contract is to be awarded, it will be awarded to lowest BIDDER whose evaluation by OWNER indicates to OWNER that the award will be in the best interests of the Project.

17.6 If the contract is to be awarded, OWNER will give Successful BIDDER a Notice of Award within 35 days after the day of the Bid opening. No other act of OWNER or others will constitute acceptance of a Bid.

18. CONTRACT SECURITY

Paragraph 5.1. of the General Conditions and the Supplementary Conditions set forth OWNER's requirements as to performance and payment Bonds. When the Successful BIDDER delivers the executed Agreement to OWNER, it must be accompanied by the required performance and payment Bonds.

19. SIGNING OF AGREEMENT

When OWNER gives a Notice of Award to the Successful BIDDER, it will be accompanied by the required number of unsigned counterparts of the Agreement. Within 15 days thereafter CONTRACTOR shall sign and deliver the required number of counterparts of the Agreement to OWNER with the required Bonds and certificates of insurance. Within 15 days thereafter OWNER shall deliver one fully signed counterpart to CONTRACTOR.

20. PREBID CONFERENCE

A prebid conference will be held as described in the Invitation to Bid. Representatives of OWNER and ENGINEER will be present to discuss the Project. BIDDERS are encouraged to attend and

participate in the conference. OWNER will transmit to all prospective BIDDERS of record such Addenda as ENGINEER and OWNER considers necessary in response to questions arising at the conference. Oral statements may not be relied upon and will not be binding or legally effective.

END OF SECTION

SECTION 00301

BID FORM

PROJECT IDENTIFICATION: **City of Newberg Instrumentation and Control Systems Improvements**

DATE: 6/12/96

THIS BID IS SUBMITTED TO:

Community Development Director
City of Newberg
719 E. First Street
Newberg, OR 97132

herein after referred to as OWNER.

1. ENTER INTO AGREEMENT

The undersigned BIDDER proposes and agrees, if this Bid is accepted, to enter into an Agreement with OWNER in the form included in the Contract Documents to perform and furnish all Work as specified or indicated in the Contract Documents for the Bid Price and within the Bid Times indicated in this Bid and in accordance with the other terms and conditions of the Contract Documents.

2. BIDDER ACCEPTS

BIDDER accepts all of the terms and conditions of the Advertisement or Invitation to Bid and Instructions to Bidders, including without limitation those dealing with the disposition of Bid security. This Bid will remain subject to acceptance for 35 days after the day of Bid opening. BIDDER will sign and deliver the required number of counterparts of the Agreement with the Bonds and other documents required by the Bidding Requirements within 15 days after the date of OWNER's Notice of Award.

3. BIDDER'S REPRESENTATIONS.

In submitting this Bid, BIDDER represents, as more fully set forth in the Agreement, that:

a. BIDDER has examined and carefully studied the Bidding Documents and the following Addenda receipt of all which is hereby acknowledged: (List Addenda by Number and Date)

Addenda No.	Date
None	

b. BIDDER has visited the site and become familiar with and is satisfied as to the general, local and site conditions that may affect cost, progress, performance and furnishing of the Work.

c. BIDDER is familiar with and is satisfied as to all federal, state and local Laws and Regulations that may affect cost, progress, performance and furnishing of the Work.

BIDDER has obtained and carefully studied (or assumes responsibility for having done so) all such additional or supplementary examinations, investigations, explorations, tests, studies and data concerning conditions (surface, subsurface and Underground Facilities) at or contiguous to the site or otherwise which may affect cost progress, performance or furnishing of the Work or which relate to any aspect of the means, methods, techniques, sequences and procedures of construction to be employed by BIDDER and safety precautions and programs incident thereto.

BIDDER does not consider that any additional examinations, investigations, explorations, tests, studies or data are necessary for the determination of this Bid for performance and furnishing of the Work in accordance with the times, price and other terms and conditions of the Contract Documents.

f. BIDDER has correlated the information known to BIDDER, information and observations obtained from visits to the site, reports and drawings identified in the Contract Documents and all additional examinations, investigations, explorations, tests, studies and data with the Contract Documents.

g. BIDDER has given ENGINEER written notice of all conflicts, errors, ambiguities or discrepancies in the Contract Documents and the written resolution thereof by ENGINEER is acceptable to BIDDER, and the Contract Documents are generally sufficient to indicate and convey understanding of all terms and conditions for performing and furnishing the Work for which this Bid is submitted.

Where conflicts, errors, ambiguities or discrepancies have been discovered in or between Contract Documents and/or other related documents, and where said conflicts, etc., have not been resolved through the interpretations or clarifications by ENGINEER as described in the Instructions to Bidders, because of insufficient time or otherwise, BIDDER has included in the Bid the greater quantity or better quality of Work, or compliance with the more stringent requirement resulting in a greater cost.

h. The BIDDER is aware of the liquidated damages provisions in the AGREEMENT.

i. This Bid is genuine and not made in the interest of or on behalf of any undisclosed person, firm or corporation and is not submitted in conformity with any agreement or rules of any group, association, organization or corporation; BIDDER has not directly or indirectly induced or solicited any other BIDDER to submit a false or sham Bid; BIDDER has not solicited or induced any person, firm or corporation to refrain from bidding; and BIDDER has not sought by collusion to obtain for itself any advantage over any other BIDDER or over OWNER.

4. BID PRICES

BIDDER will complete the Work in accordance with the Contract Documents for the following lump sum price:

One Hundred Twenty Seven Thousand Seven Hundred Sixty Dollars and 17/100
(In writing)

Dollars $ 127,760.17
(in figures)

5. COMPLETION

BIDDER agrees that the Work will be substantially completed and completed and ready for final payment in accordance with paragraph 14.13. of the General Conditions on or before the dates or within the number of calendar days indicated in the Agreement.

a. Required Bid Security in the form of Bid Bond.

b. A tabulation of subcontractors, suppliers and other persons and organizations required to be identified in this Bid.

Electrical: Oregon Electrical Group

Panel Fabrication: United Pacific Controls

Equipment: United Pacific Controls

Other: _____

c. Non-collision affidavit must be subscribed and sworn before a Notary Public.

6. ADDRESS FOR COMMUNICATIONS

Communications concerning this Bid shall be addressed to the address of BIDDER indicated below.

Oregon Electric Group
932 SE Stephens
Portland, OR 97214
Phone:234-9391 Fax:231-3587

9. DEFINED TERMS

Terms used in this Bid which are defined in the General Conditions or Instructions will have the meanings indicated in the General Conditions or Instructions.

SUBMITTED on June 12, 1996.

State CONTRACTOR License No. 26-95C.

If BIDDER is:

An Individual

By _____ (SEAL)
(Individual's name)

doing business as _____

Business address: _____

Phone No.: _____

A Partnership

By _____ (SEAL)
(Firm name)

_____
(General partner)

Business address: _____

Phone No.: _____

A Corporation

By Oregon Electric Construction, Inc. (SEAL)
(Corporation name)

Oregon
(State of incorporation)

By Glenn W. Patterson (SEAL)
(Name of person authorized to sign)

President/Secretary/Treasurer
(Title)

(Corporate Seal)

Attest _____
(Secretary)

Business address: 4824 NE 42nd Avenue

Portland, OR 97218

Phone No.: (503) 288-5305

Date of Qualification to do business is _____

A Joint Venture

By _____(SEAL)
(Name)

_____
(Address)

By _____(SEAL)
(Name)

_____
(Address)

Phone number and address for receipt of official communications:

_____

_____

NOTE: Each joint venturer must sign. The manner of signing for each individual, partnership and corporation that is a party to the joint venture should be in the manner indicated above

END OF SECTION

NONCOLLUSION AFFIDAVIT

State of Oregon)
) ss.
County of Multnomah)

Contract Bid Name City of Newberg Instrumer and Control Sys. Improve.

I state that I am President (Title) of Oregon Electric Group (name of Firm) and that I am authorized to make this affidavit on behalf of this firm and its owner, directors, and officers. I am the person responsible in this firm for the price(s) and the amount of this Bid.

I state that:

(1) The price(s) and amount of this Bid have been arrived at independently and without consultation, communication or agreement with any other Contractor, Bidder, or potential Bidder, except as disclosed on the attached appendix.

(2) That neither the price(s) nor the amount of this Bid, and neither the approximate price(s) nor approximate amount of this Bid, have been disclosed to any other firm or person who is a Bidder or potential Bidder, and they will not be disclosed before Bid opening.

(3) No attempt has been made or will be made to induce any firm or person to refrain from bidding on this contract, or to submit a Bid higher than this Bid, or to submit any intentionally high or noncompetitive Bid or other form of complementary Bid.

(4) The Bid of this firm is made in good faith and not pursuant to any agreement or discussion with, or inducement from, any firm or person to submit a complementary or other noncompetitive Bid.

(5) Oregon Electric Group (name of this firm), its affiliates, subsidiaries, officers, directors and employees are not currently under investigation by any governmental agency and have not in the last four years been convicted of or found liable for any act prohibited by State or Federal law in any jurisdiction, involving conspiracy or collusion with respect to bidding on any public contract, except as described in the attached appendix.

I state that Oregon ElectricGroup (name of this firm) understands and acknowledges that the above representations are material and important, and will be relied on by the Unified Sewerage Agency in awarding the contract(s) for which this Bid is submitted. I understand and this firm understand that any misstatement in this affidavit is and shall be treated as fraudulent concealment from the Unified Sewerage Agency of the true facts relating to the submission of Bids for this contract.

Glenn W Pettit

Oregon Electric Group / President
(Name of Company/Position)

Sworn to and subscribed before me this 12 day of June, 1996.

Notary Public for Oregon
This commission expires _____

FIREMAN'S FUND INSURANCE COMPANIES

☐ THE AMERICAN INSURANCE COMPANY
☒ NATIONAL SURETY CORPORATION
☐ ASSOCIATED INDEMNITY CORPORATION
☐ AMERICAN AUTOMOBILE INSURANCE COMPANY

BID OR PROPOSAL BOND

RECEIVED JUN 3 1996

KNOW ALL MEN BY THESE PRESENTS:

That We, Oregon Electric Construction, Inc.

(hereinafter called the principal), as principal, and National Surety Corporation, a corporation organized and doing business under and by virtue of the laws of the State of Illinois, and duly licensed for the purpose of making, guaranteeing or becoming sole surety upon bonds or undertakings required or authorized by the laws of the State of Oregon as Surety, are held and firmly bound unto City of Newberg (hereinafter called the Obligee

in the just and full sum of ten percent of bid amount

Dollars ($ 10% of bid) lawful money of the United States of America, for the payment of which, well and truly to be made, we hereby bind ourselves and our and each of our successors and assigns, jointly and severally, firmly by these presents.

THE CONDITION OF THIS OBLIGATION IS SUCH THAT, WHEREAS, the above bounden principal as aforesaid, is about to enter into and submit to the obligee a bid or proposal for the Newberg WWTP Instruments and Control Improvements

in accordance with the plans and specifications filed in the office of the obligee and under the notice inviting proposals thereof

NOW, THEREFORE, if the bid or proposal of said principal shall be accepted, and the contract for such work be awarded to the principal thereupon by the said obligee, and said principal shall enter into a contract and bond for the completion of said work as required by law, then this obligation to be null and void, otherwise to be and remain in full force and effect.

IN WITNESS WHEREOF, said Principal and said Surety have caused these presents to be duly signed and sealed this 31st day of May, 19 96

Oregon Electric Construction, Inc.

By Glenn W Patterson

National Surety Corporation

By Stacy A. Flynn
Stacy A. Flynn Attorney-in-Fact

360277—4.81

GENERAL
POWER OF
ATTORNEY

NATIONAL SURETY CORPORATION

KNOW ALL MEN BY THESE PRESENTS: That NATIONAL SURETY CORPORATION, a Corporation duly organized and existing under the laws of the State of Illinois, and having its Home Office in the City of Chicago, County of Cook, State of Illinois, has made, constituted and appointed, and does by these presents make, constitute and appoint

--- STACY A. FLYNN ---

PORTLAND OR

its true and lawful Attorney(s)-in-Fact, with full power and authority hereby conferred in its name, place and stead, to execute, seal, acknowledge and deliver any and all bonds, undertaking, recognizances or other written obligations in the nature thereof ----------

and to bind the Corporation thereby as fully and to the same extent as if such bonds were signed by the President, sealed with the corporate seal of the Corporation and duly attested by its Secretary, hereby ratifying and confirming all that the said Attorney(s)-in-Fact may do in the premises.

This power of attorney is granted pursuant to Article VII, Sections 44 and 45 of By-laws of NATIONAL SURETY CORPORATION now in full force and effect.

"Article VII. *Appointment and Authority of Resident Secretaries, Attorney-in-Fact and Agents to accept Legal Process and Make Appearances.*

Section 44. *Appointment.* The Chairman of the Board of Directors, the President, any Vice-President or any other person authorized by the Board of Directors, the Chairman of the Board of Directors, the President or any Vice-President may, from time to time, appoint Resident Assistant Secretaries and Attorneys-in-Fact to represent and act for and on behalf of the Corporation and Agents to accept legal process and make appearances for and on behalf of the Corporation.

Section 45. *Authority.* The authority of such Resident Assistant Secretaries, Attorneys-in-Fact and Agents shall be as prescribed in the instrument evidencing their appointment. Any such appointment and all authority granted thereby may be revoked at any time by the Board of Directors or by any person empowered to make such appointment."

This power of attorney is signed and sealed under and by the authority of the following Resolution adopted by the Board of Directors of NATIONAL SURETY CORPORATION at a meeting duly called and held on the 29th day of June, 1984, and said Resolution has not been amended or repealed:

"RESOLVED, that the signature of any Vice-President, Assistant Secretary, and Resident Assistant Secretary of this Corporation, and the seal of this Corporation may be affixed or printed on any power of attorney, on any revocation of any power of attorney, or on any certificate relating thereto, by facsimile, and any power of attorney, any revocation of any power of attorney, or certificate bearing such facsimile signature or facsimile seal shall be valid and binding upon the Corporation."

IN WITNESS WHEREOF, NATIONAL SURETY CORPORATION has caused these presents to be signed by its Vice-President, and its corporate seal to be hereunto affixed this 6th day of February, 19 95.

NATIONAL SURETY CORPORATION

By _____
Vice-President

STATE OF CALIFORNIA
COUNTY OF MARIN } ss.

On this 6th day of February, 19 95, before me personally came M. A. Mallonee, to me known, who, being by me duly sworn, did depose and say: that he is Vice-President of NATIONAL SURETY CORPORATION, the Corporation described in and which executed the above instrument; that he knows the seal of said Corporation; that the seal affixed to the said instrument is such corporate seal; that it was so affixed by order of the Board of Directors of said Corporation and that he signed his name thereto by like order.

IN WITNESS WHEREOF, I have hereunto set my hand and affixed my official seal, the day and year herein first above written.

OFFICIAL NOTARY SEAL
A. KRIEGER
Notary Public — California
MARIN COUNTY
My Comm. Exp. MAR 20,1995

_____
Notary Public

CERTIFICATE

STATE OF CALIFORNIA
COUNTY OF MARIN } ss.

I, the undersigned, Resident Assistant Secretary of NATIONAL SURETY CORPORATION, an ILLINOIS Corporation, DO HEREBY CERTIFY that the foregoing and attached POWER OF ATTORNEY remains in full force and has not been revoked; and furthermore that Article VII, Sections 44 and 45 of the By-laws of the Corporation, and the Resolution of the Board of Directors; set forth in the Power of Attorney, are now in force.

Signed and sealed at the County of Marin. Dated the 31st day of May, 19 96.

_____
Resident Assistant Secretary

380711 NS 8 93

SECTION 00301

BID FORM

PROJECT IDENTIFICATION: **City of Newberg Instrumentation and Control Systems Improvements**

DATE: _____

THIS BID IS SUBMITTED TO:

Community Development Director
City of Newberg
719 E. First Street
Newberg, OR 97132

herein after referred to as OWNER.

1. ENTER INTO AGREEMENT

The undersigned BIDDER proposes and agrees, if this Bid is accepted, to enter into an Agreement with OWNER in the form included in the Contract Documents to perform and furnish all Work as specified or indicated in the Contract Documents for the Bid Price and within the Bid Times indicated in this Bid and in accordance with the other terms and conditions of the Contract Documents.

2. BIDDER ACCEPTS

BIDDER accepts all of the terms and conditions of the Advertisement or Invitation to Bid and Instructions to Bidders, including without limitation those dealing with the disposition of Bid security. This Bid will remain subject to acceptance for 35 days after the day of Bid opening. BIDDER will sign and deliver the required number of counterparts of the Agreement with the Bonds and other documents required by the Bidding Requirements within 15 days after the date of OWNER's Notice of Award.

3. BIDDER'S REPRESENTATIONS.

In submitting this Bid, BIDDER represents, as more fully set forth in the Agreement, that:

a. BIDDER has examined and carefully studied the Bidding Documents and the following Addenda receipt of all which is hereby acknowledged: (List Addenda by Number and Date)

Addenda No.	Date
_____	_____
_____	_____
_____	_____
_____	_____

b. BIDDER has visited the site and become familiar with and is satisfied as to the general, local and site conditions that may affect cost, progress, performance and furnishing of the Work.

c. BIDDER is familiar with and is satisfied as to all federal, state and local Laws and Regulations that may affect cost, progress, performance and furnishing of the Work.

BIDDER has obtained and carefully studied (or assumes responsibility for having done so) all such additional or supplementary examinations, investigations, explorations, tests, studies and data concerning conditions (surface, subsurface and Underground Facilities) at or contiguous to the site or otherwise which may affect cost progress, performance or furnishing of the Work or which relate to any aspect of the means, methods, techniques, sequences and procedures of construction to be employed by BIDDER and safety precautions and programs incident thereto.

BIDDER does not consider that any additional examinations, investigations, explorations, tests, studies or data are necessary for the determination of this Bid for performance and furnishing of the Work in accordance with the times, price and other terms and conditions of the Contract Documents.

f. BIDDER has correlated the information known to BIDDER, information and observations obtained from visits to the site, reports and drawings identified in the Contract Documents and all additional examinations, investigations, explorations, tests, studies and data with the Contract Documents.

g. BIDDER has given ENGINEER written notice of all conflicts, errors, ambiguities or discrepancies in the Contract Documents and the written resolution thereof by ENGINEER is acceptable to BIDDER, and the Contract Documents are generally sufficient to indicate and convey understanding of all terms and conditions for performing and furnishing the Work for which this Bid is submitted.

Where conflicts, errors, ambiguities or discrepancies have been discovered in or between Contract Documents and/or other related documents, and where said conflicts, etc., have not been resolved through the interpretations or clarifications by ENGINEER as described in the Instructions to Bidders, because of insufficient time or otherwise, BIDDER has included in the Bid the greater quantity or better quality of Work, or compliance with the more stringent requirement resulting in a greater cost.

h. The BIDDER is aware of the liquidated damages provisions in the AGREEMENT.

i. This Bid is genuine and not made in the interest of or on behalf of any undisclosed person, firm or corporation and is not submitted in conformity with any agreement or rules of any group, association, organization or corporation; BIDDER has not directly or indirectly induced or solicited any other BIDDER to submit a false or sham Bid; BIDDER has not solicited or induced any person, firm or corporation to refrain from bidding; and BIDDER has not sought by collusion to obtain for itself any advantage over any other BIDDER or over OWNER.

4. BID PRICES

BIDDER will complete the Work in accordance with the Contract Documents for the following lump sum price:

_____
(In writing)

Dollars $_____
(in figures)

5. COMPLETION

BIDDER agrees that the Work will be substantially completed and completed and ready for final payment in accordance with paragraph 14.13. of the General Conditions on or before the dates or within the number of calendar days indicated in the Agreement.

a. Required Bid Security in the form of _____.

b. A tabulation of subcontractors, suppliers and other persons and organizations required to be identified in this Bid.

Electrical: _____

Panel Fabrication: _____

Equipment: _____

Other: _____

c. Non-collision affidavit must be subscribed and sworn before a Notary Public.

6. ADDRESS FOR COMMUNICATIONS

Communications concerning this Bid shall be addressed to the address of BIDDER indicated below.

_____

_____

_____

_____

9. DEFINED TERMS

Terms used in this Bid which are defined in the General Conditions or Instructions will have the meanings indicated in the General Conditions or Instructions.

SUBMITTED on _____, 1996.

State CONTRACTOR License No. _____.

If BIDDER is:

An Individual

By _____(SEAL)
(Individual's name)

doing business as _____

Business address: _____

Phone No.: _____

A Partnership

By_____(SEAL)
(Firm name)

_____
(General partner)

Business address: _____

Phone No.: _____

A Corporation

By _____(SEAL)
(Corporation name)

_____
(State of incorporation)

By_____(SEAL)
(Name of person authorized to sign)

_____
(Title)

(Corporate Seal)

Attest _____
(Secretary)

Business address: _____

_____

Phone No.: _____

Date of Qualification to do business is _____

A Joint Venture

By _____(SEAL)
(Name)

_____
(Address)

By _____(SEAL)
(Name)

_____
(Address)

Phone number and address for receipt of official communications:

_____

_____

NOTE: Each joint venturer must sign. The manner of signing for each individual, partnership and corporation that is a party to the joint venture should be in the manner indicated above

END OF SECTION

NONCOLLUSION AFFIDAVIT

State of _____)
) ss.
County of _____)

Contract Bid Name _____

I state that I am _____ (Title) of _____ (name of Firm) and that I am authorized to make this affidavit on behalf of this firm and its owner, directors, and officers. I am the person responsible in this firm for the price(s) and the amount of this Bid.

I state that:

(1) The price(s) and amount of this Bid have been arrived at independently and without consultation, communication or agreement with any other Contractor, Bidder, or potential Bidder, except as disclosed on the attached appendix.

(2) That neither the price(s) nor the amount of this Bid, and neither the approximate price(s) nor approximate amount of this Bid, have been disclosed to any other firm or person who is a Bidder or potential Bidder, and they will not be disclosed before Bid opening.

(3) No attempt has been made or will be made to induce any firm or person to refrain from bidding on this contract, or to submit a Bid higher than this Bid, or to submit any intentionally high or noncompetitive Bid or other form of complementary Bid.

(4) The Bid of this firm is made in good faith and not pursuant to any agreement or discussion with, or inducement from, any firm or person to submit a complementary or other noncompetitive Bid.

(5) _____ (name of this firm), its affiliates, subsidiaries, officers, directors and employees are not currently under investigation by any governmental agency and have not in the last four years been convicted of or found liable for any act prohibited by State or Federal law in any jurisdiction, involving conspiracy or collusion with respect to bidding on any public contract, except as described in the attached appendix.

I state that _____ (name of this firm) understands and acknowledges that the above representations are material and important, and will be relied on by the Unified Sewerage Agency in awarding the contract(s) for which this Bid is submitted. I understand and this firm understand that any misstatement in this affidavit is and shall be treated as fraudulent concealment from the Unified Sewerage Agency of the true facts relating to the submission of Bids for this contract.

_____
(Name of Company/Position)

Sworn to and subscribed before me this _____ day of _____, 1996.

_____
Notary Public for Oregon
This commission expires _____

SECTION 00410

BID GUARANTEE BOND

Bond No.: _____

Amount: $_____

KNOW ALL PERSONS BY THESE PRESENTS, that _____

_____,

as BIDDER (PRINCIPAL), and _____

_____,

a corporation duly organized under the laws of the State of _____, and authorized to do business in the State of Oregon, hereinafter "SURETY," are jointly and severally held and firmly bound unto the City of Newberg, Oregon, as OWNER (OBLIGEE), in the sum of TEN PERCENT (10%) of the total amount of the bid of the Principal, in the sum of _____ DOLLARS ($_____), for the payment of which we bind ourselves, our heirs, executors, administrators, successors and assigns.

The BIDDER is herewith submitting its offer for the fulfillment of the OWNER's contract for construction of the

_____

Alternative(s) _____.

NOW THEREFORE, if the bid proposal submitted by the BIDDER is accepted and the contract awarded to the BIDDER, and if the BIDDER shall execute the proposed contract and shall furnish such performance and payment bonds as required by the Contract Documents within the time fixed by the documents, then this obligation shall be void; if the BIDDER shall fail to execute the proposed contract and furnish the bonds, Surety hereby agrees to pay to the OWNER the above sum within ten (10) days of such failure. The surety and OWNER agree that failure or neglect of the BIDDER to furnish, execute and deliver to the OWNER the required performance and payment bond and evidence of insurance, and to enter into, execute and deliver to the OWNER the agreement on the form provided within ten calendar days after receiving written notice from the OWNER that the award has been made and the agreement is ready for execution will cause damage to the OWNER; that the calculation of the damages is very difficult and therefore the amount payable to the OWNER under the bid guaranty bond, or cash or certified cashier's check shall be paid to OWNER as liquidated damages; that this is a reasonable estimate of the damages the OWNER will suffer; that this is not a penalty.

SIGNED AND SEALED this _____ day of _____, 1996.

_____ (SEAL)	_____ (SEAL)
By: _____ (SEAL)	By: _____ (SEAL)
Its _____ (SEAL)	Its _____ (SEAL)
"BIDDER"	"SURETY"

If the BIDDER is operating under an assumed business name, there must also be set forth in the first paragraph of the bond the names of all the partners or the individual owning the business, and the bond must be executed by one of them.

If the BIDDER is a corporation, the bond must be executed by one of the officers authorized to execute bonds, showing his official title and the seal of the corporation.

The bond must be executed by an attorney-in-fact for the surety company, shown on the face thereof the Oregon agent for service, and bear the seal of the surety company. Where the bond is executed by an agent, there must be included a copy of the authority of the agent to act for the surety company at the time of the execution of the bond.

To each executed original of this bond, there must be attached a complete set of Contract Documents, with all corrections, interlineations, signatures, etc., completely reproduced therein.

END OF SECTION

SECTION 00470

RESIDENT/NONRESIDENT BIDDER STATUS

Oregon law requires that the OWNER, in determining the lowest responsive bidder, must add a percent increase on the bid of a nonresident bidder equal to the percent, if any, of the preference given to that bidder in the state in which that bidder resides. Consequently, each bidder must indicate whether it is a resident or nonresident bidder. A resident bidder is a bidder that has paid unemployment taxes or income taxes in the state of Oregon during the 12 calendar months immediately preceding submission of this bid, has a business address in Oregon, and has stated in its bid whether the bidder is a "resident bidder." A "nonresident bidder" is a bidder who is not a resident bidder.

The undersigned bidder states that it is: (check one)

1. A resident bidder _____

2. A non-resident bidder _____

Indicate state in which BIDDER resides: _____

END OF SECTION

SECTION 00500

AGREEMENT

This AGREEMENT is dated as of the 24th day of July the year 1996 by and between **City of Newberg**, hereinafter called OWNER, and Oregon Electric Group hereinafter called CONTRACTOR.

OWNER and CONTRACTOR, in consideration of the mutual covenants hereinafter set forth, agree as follows:

ARTICLE 1. WORK

CONTRACTOR shall complete all Work as specified or indicated in the Contract Documents. The Project for which the Work under the Contract Documents may be the whole or only a part is generally described as follows:

Instrumentation and Control Systems Improvements

ARTICLE 2. ENGINEER

All duties and responsibilities assigned to ENGINEER in the contract Documents, with the corresponding rights and authority, will be assumed by an agent designated by the OWNER.

ARTICLE 3. CONTRACT TIMES

3.1 The Work will be substantially completed within **120 calendar days** of the Notice to Proceed, and completed and ready for final payment in accordance with paragraph 14.13. of the General Conditions within 30 calendar days of substantial completions.

ARTICLE 4. CONTRACT PRICE

OWNER shall pay CONTRACTOR for completion of the Work in accordance with the Contract Documents an amount in current funds equal to the sum of the amounts determined pursuant to paragraphs 4.1. and 4.2 below.

4.1 For the following Work, Lump Sum amount as shown:

Instrumentation and Control Systems Improvements

TOTAL One Hundred Twenty-Seven Thousand Seven Hundred Sixty & 17/100 (use words) ($ 127,760.17 (figures))

All specific cash allowances are included in the above price and have been computed in accordance with paragraph 11.8 of the General Conditions;

ARTICLE 5. PAYMENT PROCEDURES

CONTRACTOR shall submit Applications for Payment in accordance with Article 14 of the General Conditions. Applications for Payment will be processed by ENGINEER as provided in the General Conditions.

5.1 Contractor shall submit Applications for Payment in accordance with the General Conditions. Applications for Payment will be processed by Engineer as provided in the General Conditions.

5.2 Progress Payments. Owner shall make progress payments on account of the Contract Price on the basis of Contractor's Applications for Payment as recommended by Engineer, on or about the fifteenth day of each month during construction as provided below. All progress payments will be on the basis of the progress of the Work measured by the schedule of values provided for in the General Conditions.

a. Prior to substantial Completion of the Work, progress payments will be in the amount equal to 95 percent of the value of the Work completed, and 95 percent of the value of the materials and equipment not incorporated in the Work, but delivered and suitably stored, less in each case the aggregate of payments previously made.

b. Upon Substantial Completion of the Work, Owner will pay an amount sufficient to increase total payments to the Contractor to 100 percent of the Contract Price, less such amounts as Engineer shall determine in accordance with the General Conditions.

5.3 Final Payment. Upon final completion and acceptance of the Work in accordance with paragraph 14.13. of the General Conditions, OWNER shall pay the remainder of the Contract Price as recommended by ENGINEER as provided in said paragraph 14.13.

ARTICLE 6. INTEREST

Not Used.

ARTICLE 7. CONTRACTOR'S REPRESENTATIONS

In order to induce OWNER to enter into this Agreement, CONTRACTOR makes the following representations:

7.1 CONTRACTOR has thoroughly examined and carefully studied the Contract Documents (including the Addenda listed in paragraph 8.) and the other related data identified in the Bidding Documents including "technical data."

7.2 CONTRACTOR has visited the site and become familiar with and is satisfied as to the general, local and site conditions that may affect cost, progress, performance or furnishing of the Work.

7.3 CONTRACTOR is familiar with and is satisfied as to all federal, state and local Laws and Regulations that may affect cost, progress, performance and furnishing of the Work.

7.4 CONTRACTOR has carefully studied all reports of explorations and tests of subsurface conditions at or contiguous to the site and all drawings of physical conditions in or relating to existing surface or subsurface structures at or contiguous to the site (except Underground Facilities) as provided in paragraph 4.2.1. of the General Conditions.

CONTRACTOR acknowledges that OWNER and ENGINEER do not assume responsibility for the accuracy or completeness of information and data shown or indicated in the Contract Documents with respect to Underground Facilities at or contiguous to the site.

CONTRACTOR has obtained and carefully studied (or assumes responsibility for having done so) all such additional supplementary examinations, investigations, explorations, tests, studies and data concerning conditions (surface, subsurface and Underground Facilities) at or contiguous to the site or otherwise which may affect cost, progress, performance or furnishing of the Work or which relate to any aspect of the means, methods, techniques, sequences and procedures of construction to be employed by CONTRACTOR and safety precautions and programs incident thereto.

CONTRACTOR does not consider that any additional examinations, investigations, explorations. tests, studies or data are necessary for the performance and furnishing of the Work at the Contract Price, within the Contract Times and in accordance with the other terms and conditions of the Contract Documents.

7.5 CONTRACTOR is aware of the general nature of Work to be performed by OWNER and others at the site that relates to the Work as indicated in the Contract Documents.

7.6 CONTRACTOR has correlated the information known to CONTRACTOR, information and observations obtained from visits to the site, reports and drawings identified in the Contract Documents and all additional examinations, investigations, explorations, tests, studies and data with the Contract Documents.

7.7 CONTRACTOR has given ENGINEER written notice of all conflicts, errors, ambiguities or discrepancies in the Contract Documents and the written resolution thereof by ENGINEER through issued addendum or addenda is acceptable to CONTRACTOR, and the Contract Documents are generally sufficient to indicate and convey understanding of all terms and conditions for performance and furnishing of the Work. When said conflicts, etc., have not been resolved through interpretation or clarification by ENGINEER, because of insufficient time or otherwise, CONTRACTOR has included in the Bid the greater quantity or better quality of Work, or compliance with the more stringent requirement resulting in a greater cost; and said greater cost is included in the Contract Price.

ARTICLE 8. CONTRACT DOCUMENTS

The Contract Documents which comprise the entire agreement between OWNER and CONTRACTOR concerning the Work consist of the following:

8.1 This Agreement (pages 1 to 5, inclusive).

8.3 Performance, Payment, and other Bonds.

8.4 Notice to Proceed.

8.5 General Conditions (pages 1 to 42, inclusive).

8.6 Supplementary Conditions (pages 1 to 10, inclusive).

8.7 Specifications bearing the title **Instrumentation and Control Systems Improvements.**

8.8 Drawings consisting of three sheets with each sheet bearing the following general title: **Instrumentation and Control Systems Improvements**

8.9 Addenda.

8.10 Reference drawings consisting of 12 sheets with each sheet bearing the project title **Newberg Wastewater Treatment Plant.**

8.11 Not used.

8.12 The following which may be delivered or issued after the Effective Date of the Agreement and are not attached hereto:

All written amendments and other documents amending, modifying or supplementing the Contract Documents pursuant to paragraphs 3.5. and 3.6. of the General Conditions.

The documents listed in paragraphs 8.2. et seq. above are attached to this Agreement (except as expressly noted otherwise above).

There are no Contract Documents other than those listed above in this Article 8. The Contract Documents may only be amended, modified or supplemented as provided in paragraphs 3.5. and 3.6. of the General Conditions.

ARTICLE 9. MISCELLANEOUS

9.1 Terms used in this Agreement which are defined in Article 1 of the General Conditions will have the meanings indicated in the General Conditions.

9.2 No assignment by a party hereto of any rights under or interests in the Contract Documents will be binding on another party hereto without the written consent of the party sought to be bound; and, specifically but without limitation, moneys that may become due and moneys that are due may not be assigned without such consent (except to the extent that the effect of this restriction may be limited by law), and unless specifically stated to the contrary in any written consent to an assignment, no assignment will release or discharge the assignor from any duty or responsibility under the Contract Documents.

9.3 OWNER and CONTRACTOR each binds itself, its partners, successors, assigns and legal representatives to the other party hereto, its partners. successors, assigns and legal representatives in respect to all covenants, agreements and obligations contained in the Contract Documents.

9.4 Any provision or part of the Contract Documents held to be void or unenforceable under any Law or Regulation shall be deemed stricken, and all remaining provisions shall continue to be valid and binding upon OWNER and CONTRACTOR, who agree that the Contract Documents shall be reformed to replace such stricken provision or part thereof with a valid and enforceable provision that comes as close as possible to expressing the intention of the stricken provision.

9.5 Wage Rates. The provisions of ORS 279.350 relating to prevailing wage rates are made a part of this agreement as completely as if the same were fully set forth herein.

9.6 Other Provisions. The CONTRACTOR shall pay a fee to the Oregon Bureau of Labor and Industries pursuant to the provisions of ORS 279.352. The fee is equal to one-tenth of one percent (0.1 percent) of the price of this contract, but not less than $100 nor more than $5,000, regardless of the contract price. The fee shall be paid on or before the first progress payment or 60 days from the date work first began on the contract, whichever comes first. The fee is payable to the Bureau of Labor and Industries and shall be mailed or otherwise delivered to the Bureau at the following address:

Bureau of Labor and Industries
Wage and Hour Division
Prevailing Wage Unit
800 N.E. Oregon Street, #32
Portland, OR 97232

IN WITNESS WHEREOF, OWNER and CONTRACTOR have signed this Agreement in triplicate. One counterpart each has been delivered to OWNER, CONTRACTOR, and ENGINEER. All portions of the Contract Documents have been signed, initialed or identified by OWNER and CONTRACTOR or identified by ENGINEER on their behalf.

Duane R. Cole
City of Newberg

Oregon Electric Group
Contractor

By: Glenn W Patterson
Glenn W. Patterson

Title: President

Approved to Form:

Legal Counsel

NOTE: If Contractor is a corporation, attach evidence of authority to sign.

END OF SECTION

SECTION 00505

NOTICE OF AWARD

TO: _____

DATE: _____

PROJECT: _____

The _____ has considered the Bid submitted by you for the above described Work in response to its advertisement for Bids dated _____, 1996, and instructions for Bidders.

You are hereby notified that your Bid has been accepted for the lump sum amount of $ _____ .

You are required to execute the Agreement and to provide _____ with all Bonds and certificates of insurance as outlined in the Bidding Documents.

If you fail to execute said Agreement and provide _____ with the required insurance certificates and Bonds as defined in the Bidding Documents, _____ will be entitled to consider same as abandonment of all rights and default of all obligations arising out of their acceptance of your Bid and as a forfeiture of your Bid Security. _____ will be entitled to such other rights as may be granted by law.

You are required to return an acknowledged copy of this Notice of Award to _____.

Dated this ___ day of _____, 1996.

_____
OWNER

By: _____

_____
Title

ACKNOWLEDGEMENT OF NOTICE

Receipt of the above Notice of Award is hereby acknowledged by Contractor.

By: _____

_____
Title

END OF SECTION

ACORD CERTIFICATE OF INSURANCE

DATE (MM/DD/YY) 07/19/96

PRODUCER

J B L & K INSURANCE
PHONE# 222-1831
220 N W SECOND AVE
PORTLAND OR 97209

THIS CERTIFICATE IS ISSUED AS A MATTER OF INFORMATION ONLY AND CONFERS NO RIGHTS UPON THE CERTIFICATE HOLDER. THIS CERTIFICATE DOES NOT AMEND, EXTEND OR ALTER THE COVERAGE AFFORDED BY THE POLICES BELOW.

INSURED

OR ELECTRIC CONST DBA PARKROSE EC DBA ALLISON EC DBA SUNSET EC DBA G&H EC DBA SEC OF OR
4824 NE 42ND PORTLA OR 97218

COMPANIES AFFORDING COVERAGE

COMPANY A: SAIF CORPORATION

COMPANY B:

COMPANY C:

COMPANY D:

COVERAGES

THIS IS TO CERTIFY THAT THE POLICIES OF INSURANCE LISTED BELOW HAVE BEEN ISSUED TO THE INSURED NAMED ABOVE FOR THE POLICY PERIOD INDICATED, NOTWITHSTANDING ANY REQUIREMENT, TERM OR CONDITION OF ANY CONTRACT OR OTHER DOCUMENT WITH RESPECT TO WHICH THIS CERTIFICATE MAY BE ISSUED OR MAY PERTAIN. THE INSURANCE AFFORDED BY THE POLICIES DESCRIBED HEREIN IS SUBJECT TO ALL THE TERMS, EXCLUSIONS AND CONDITIONS OF SUCH POLICIES. LIMITS SHOWN MAY HAVE BEEN REDUCED BY PAID CLAIMS.

CO LTR	TYPE OF INSURANCE	POLICY NUMBER	POLICY EFFECTIVE DATE (MM/DD/YY)	POLICY EXPIRATION DATE (MM/DD/YY)	LIMITS	
	GENERAL LIABILITY				GENERAL AGGREGATE	$
	COMMERCIAL GENERAL LIABILITY				PRODUCTS - COMP/OP AGG	$
	CLAIMS MADE ☐ OCCUR				PERSONAL & ADV INJURY	$
	OWNER'S & CONTRACTOR'S PROT				EACH OCCURRENCE	$
					FIRE DAMAGE (Any one fire)	$
	AUTOMOBILE LIABILITY				MED EXP (Any one person)	$
	ANY AUTO				COMBINED SINGLE LIMIT	$
	ALL OWNED AUTOS				BODILY INJURY (Per person)	$
	SCHEDULED AUTOS				BODILY INJURY (Per accident)	$
	HIRED AUTOS				PROPERTY DAMAGE	$
	NON-OWNED AUTOS					
	GARAGE LIABILITY				AUTO ONLY - EA ACCIDENT	$
	ANY AUTO				OTHER THAN AUTO ONLY:	
					EACH ACCIDENT	$
	EXCESS LIABILITY				AGGREGATE	$
	UMBRELLA FORM				EACH OCCURRENCE	$
	OTHER THAN UMBRELLA FORM				AGGREGATE	$
A	WORKERS COMPENSATION AND EMPLOYERS' LIABILITY	812111	10/01/95	10/01/96	$	
	THE PROPRIETOR/ PARTNERS/EXECUTIVE OFFICERS ARE: ☐ INCL ☐ EXCL				X STATUTORY LIMITS	
					EACH ACCIDENT	$ 500,000
					DISEASE - POLICY LIMIT	$ 500,000
					DISEASE - EACH EMPLOYEE	$ 500,000
	OTHER					

DESCRIPTION OF OPERATIONS/LOCATIONS/VEHICLES/SPECIAL ITEMS

RE: NEWBERG WASTE WATER TREATMENT PLANT INSTRUMENTS & CONRTOL SYSTEM IMPROVEMENTS

CERTIFICATE HOLDER

CITY OF NEWBERG
414 E 1ST ST
NEWBERG OR 97132

CANCELLATION

SHOULD ANY OF THE ABOVE DESCRIBED POLICIES BE CANCELLED BEFORE THE EXPIRATION DATE THEREOF, THE ISSUING COMPANY WILL ENDEAVOR TO MAIL 30 DAYS WRITTEN NOTICE TO THE CERTIFICATE HOLDER NAMED TO THE LEFT, BUT FAILURE TO MAIL SUCH NOTICE SHALL IMPOSE NO OBLIGATION OR LIABILITY OF ANY KIND UPON THE COMPANY, ITS AGENTS OR REPRESENTATIVES.

AUTHORIZED REPRESENTATIVE

SARA WUORI Sara Wuori RD A

JBL&K INSURANCE

SINCE 1870
JEWETT, BARTON, LEAVY & KERN, INC.

Suite 800
220 N W Second Avenue
Portland, OR 97209-3951
Fax 503/274-0323
503/222-1831

Fax Cover Sheet

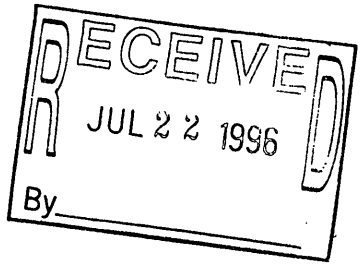
DATE: 7-19-96 **TIME:** 10:45

TO: Charles Liebert **PHONE:**
FAX: 538-5393

FROM: Sara Wuori **PHONE:** 222-1831
JBL&K **FAX:** 274-0323

RE: Certificate of Ins.

Number of pages including cover sheet: 2



CHAIRMAN OF THE BOARD/CEO, BRIAN A. RICE; PRESIDENT, DENNIS B. FERGUSON; DIRECTORS: G. PALMER BYRKIT, CHARLES W. FLOBERG, GRACE E. TEIGEN
MEMBER OF ASSUREX INTERNATIONAL

CERTIFICATE OF INSURANCE

This Certificate of Insurance is issued to the terms, conditions and coverage of

Policy No. _____ issued to _____

at _____

by _____. Date of expiration _____.

This Certificate of Insurance is not intended to affirmatively or negatively alter, extend of rescind any of the existing terms, conditions or coverage of the above-mentioned policy.

TYPE OF INSURANCE	LIMITS OF LIABILITY EACH OCCURRENCE AGGREGATE
GENERAL LIABILITY Comprehensive Form	Bodily Injury
Manufacturer's & Contractor's Liability Broadform Property Damage	Property Damage
Owner & Contractor's Protective Blanket Contractual Products/Completed Operations	Bodily Injury & Property Damage Combined
Automotive	Personal Injury
AUTOMOTIVE Comprehensive Form	Bodily Injury & Property Damage Combined
EXCESS LIABILITY Umbrella Form	Bodily Injury & Property Damage Combined
WORKERS' COMPENSATION	Statutory

DATE: _____

SIGNATURE: _____

SECTION 00610

PERFORMANCE AND PAYMENT BOND

BOND NUMBER: 11141587045

AMOUNT: $127,760.17

KNOW ALL MEN BY THESE PRESENTS, that Oregon Electric Construction, Inc. as CONTRACTOR ("Principal"), and National Surety Corporation a CORPORATION duly authorized to do a general surety business in the State of Oregon, as SURETY, are jointly and severally held and bound unto City of Newberg the OWNER (Obligee) herein, in the sum of One hundred twenty seven thousand seven hundred * Dollars ($ **), for the payment of which we bind ourselves, our heirs, executors, administrators, successors, and assigns, jointly and severally, firmly by these presents.

This bond is executed under the authority of ORS Chapter 279, of the State of Oregon, the provisions of which are incorporated into this bond and made a part hereof.

THE CONDITION OF THIS OBLIGATION IS SUCH THAT:

WHEREAS, Oregon Electric Construction, Inc. the CONTRACTOR entered into a certain Contract with City of Newberg the OWNER, for Newberg WWTP Instrumentation and Control System Improvements which Contract expressly includes and incorporates by this reference all Contract Documents.

IN WITNESS: This Performance Bond shall guarantee the improvement against defects in materials or workmanship for a period of one (1) year from the date of written final acceptance by the Unified Sewerage Agency of Washington County by its authorized representative.

NOW THEREFORE, if the CONTRACTOR shall faithfully perform all the provisions of such Contract for the duration thereof, including the 1 year correction period, and promptly pay all laborers, mechanics, subcontractors, materialmen, and all persons who shall supply such work and services, and indemnify and save harmless the OWNER, its officers, agents, and employees from all claims therefore, or from any claim for damages of every kind and description or injury to property or persons arising or alleged to have arisen by reason of the work; and shall, in the time and manner, and under the terms and conditions prescribed, will and faithfully do, perform, and furnish all matters and things as by them in the Contract undertaken, and as by law, local, state, and federal, prescribed, then this obligation shall be void; otherwise it shall remain in full force and effect.

* sixty dollars and seventeen cents
** $127,760.17

PROVIDED, HOWEVER:

In no event shall the SURETY be liable for a greater sum than the penalty of this bond.

The SURETY for the value received, hereby stipulates and agrees that no change, extension of time, alteration, or addition to the terms of the Contract, or to the work to be performed thereunder, or the Specifications accompanying the same, shall in any way affect its obligations on this bond, and it does hereby waive notice of any such change, extension of time, alternation, or addition to the terms of the Contract, or to the work, or to the Contract Documents.

Signed and sealed this 9th day of July, 1996.

(SEAL)

Oregon Electric Construction, Inc.

4824 NE 42nd Ave., Portland, OR 97218
Address

Glenn W Patterson
Contractor

(503) 288-5305
Telephone Number

National Surety Corporation
Surety

By: Stacy A. Flynn
Attorney-in-Fact
Stacy A. Flynn

Approved as to Form:

111 SW Columbia
Address of Surety's Resident Agent

Portland, OR 97201-5897

END OF SECTION

GENERAL POWER OF ATTORNEY

NATIONAL SURETY CORPORATION

KNOW ALL MEN BY THESE PRESENTS: That NATIONAL SURETY CORPORATION, a Corporation duly organized and existing under the laws of the State of Illinois, and having its Home Office in the City of Chicago, County of Cook, State of Illinois, has made, constituted and appointed, and does by these presents make, constitute and appoint

--- STACY A. FLYNN ---

PORTLAND OR

its true and lawful Attorney(s)-in-Fact, with full power and authority hereby conferred in its name, place and stead, to execute, seal, acknowledge and deliver any and all bonds, undertaking, recognizances or other written obligations in the nature thereof ----------

and to bind the Corporation thereby as fully and to the same extent as if such bonds were signed by the President, sealed with the corporate seal of the Corporation and duly attested by its Secretary, hereby ratifying and confirming all that the said Attorney(s)-in-Fact may do in the premises.

This power of attorney is granted pursuant to Article VII, Sections 44 and 45 of By-laws of NATIONAL SURETY CORPORATION now in full force and effect.

"Article VII. *Appointment and Authority of Resident Secretaries, Attorney-in-Fact and Agents to accept Legal Process and Make Appearances.*

Section 44. *Appointment.* The Chairman of the Board of Directors, the President, any Vice-President or any other person authorized by the Board of Directors, the Chairman of the Board of Directors, the President or any Vice-President may, from time to time, appoint Resident Assistant Secretaries and Attorneys-in-Fact to represent and act for and on behalf of the Corporation and Agents to accept legal process and make appearances for and on behalf of the Corporation.

Section 45. *Authority.* The authority of such Resident Assistant Secretaries, Attorneys-in-Fact and Agents shall be as prescribed in the instrument evidencing their appointment. Any such appointment and all authority granted thereby may be revoked at any time by the Board of Directors or by any person empowered to make such appointment."

This power of attorney is signed and sealed under and by the authority of the following Resolution adopted by the Board of Directors of NATIONAL SURETY CORPORATION at a meeting duly called and held on the 29th day of June, 1984, and said Resolution has not been amended or repealed:

"RESOLVED, that the signature of any Vice-President, Assistant Secretary, and Resident Assistant Secretary of this Corporation, and the seal of this Corporation may be affixed or printed on any power of attorney, on any revocation of any power of attorney, or on any certificate relating thereto, by facsimile, and any power of attorney, any revocation of any power of attorney, or certificate bearing such facsimile signature or facsimile seal shall be valid and binding upon the Corporation."

IN WITNESS WHEREOF, NATIONAL SURETY CORPORATION has caused these presents to be signed by its Vice-President, and its corporate seal to be hereunto affixed this 6th day of February, 19 95.

NATIONAL SURETY CORPORATION INCORPORATED SEPT 3, 1970 ILLINOIS

NATIONAL SURETY CORPORATION

By _____ Vice-President

STATE OF CALIFORNIA
COUNTY OF MARIN } ss.

On this 6th day of February, 19 95, before me personally came M. A. Mallonee, to me known, who, being by me duly sworn, did depose and say: that he is Vice-President of NATIONAL SURETY CORPORATION, the Corporation described in and which executed the above instrument; that he knows the seal of said Corporation; that the seal affixed to the said instrument is such corporate seal; that it was so affixed by order of the Board of Directors of said Corporation and that he signed his name thereto by like order.

IN WITNESS WHEREOF, I have hereunto set my hand and affixed my official seal, the day and year herein first above written.

OFFICIAL NOTARY SEAL
A. KRIEGER
Notary Public — California
MARIN COUNTY
My Comm. Exp. MAR 20,1995

_____ Notary Public

CERTIFICATE

STATE OF CALIFORNIA
COUNTY OF MARIN } ss.

I, the undersigned, Resident Assistant Secretary of NATIONAL SURETY CORPORATION, an ILLINOIS Corporation, DO HEREBY CERTIFY that the foregoing and attached POWER OF ATTORNEY remains in full force and has not been revoked; and furthermore that Article VII, Sections 44 and 45 of the By-laws of the Corporation, and the Resolution of the Board of Directors; set forth in the Power of Attorney, are now in force.

Signed and sealed at the County of Marin. Dated the 9th day of July, 19 96.

NATIONAL SURETY CORPORATION INCORPORATED SEPT 3 1970 ILLINOIS

_____ Resident Assistant Secretary

360711 NS 8 93

SECTION 00610

PERFORMANCE AND PAYMENT BOND

BOND NUMBER: _____

AMOUNT: _____

KNOW ALL MEN BY THESE PRESENTS, that _____

_____ as CONTRACTOR ("Principal"), and _____

a CORPORATION duly authorized to do a general surety business in the State of Oregon, as SURETY, are jointly and severally held and bound unto_____

_____the OWNER (Obligee) herein, in the sum

of _____ Dollars ($_____), for the

payment of which we bind ourselves, our heirs, executors, administrators, successors, and assigns, jointly and severally, firmly by these presents.

This bond is executed under the authority of ORS Chapter 279, of the State of Oregon, the provisions of which are incorporated into this bond and made a part hereof.

THE CONDITION OF THIS OBLIGATION IS SUCH THAT:

WHEREAS, _____ the CONTRACTOR entered into a

certain Contract with _____ the

OWNER, for _____

_____ which Contract expressly includes and incorporates by this reference all Contract Documents.

IN WITNESS: This Performance Bond shall guarantee the improvement against defects in materials or workmanship for a period of one (1) year from the date of written final acceptance by the Unified Sewerage Agency of Washington County by its authorized representative.

NOW THEREFORE, if the CONTRACTOR shall faithfully perform all the provisions of such Contract for the duration thereof, including the 1 year correction period, and promptly pay all laborers, mechanics, subcontractors, materialmen, and all persons who shall supply such work and services, and indemnify and save harmless the OWNER, its officers, agents, and employees from all claims therefore, or from any claim for damages of every kind and description or injury to property or persons arising or alleged to have arisen by reason of the work; and shall, in the time and manner, and under the terms and conditions prescribed, will and faithfully do, perform, and furnish all matters and things as by them in the Contract undertaken, and as by law, local, state, and federal, prescribed, then this obligation shall be void; otherwise it shall remain in full force and effect.

PROVIDED, HOWEVER:

In no event shall the SURETY be liable for a greater sum than the penalty of this bond.

The SURETY for the value received, hereby stipulates and agrees that no change, extension of time, alteration, or addition to the terms of the Contract, or to the work to be performed thereunder, or the Specifications accompanying the same, shall in any way affect its obligations on this bond, and it does hereby waive notice of any such change, extension of time, alternation, or addition to the terms of the Contract, or to the work, or to the Contract Documents.

Signed and sealed this _____ day of _____, 1996.

(SEAL)

_____ _____

Address Contractor

_____ _____

Telephone Number Surety

By: _____

Attorney-in-Fact

Approved as to Form:

_____

Address of Surety's Resident Agent

_____

END OF SECTION

SECTION 00700

GENERAL CONDITIONS

(SEE ATTACHED EJCDC DOCUMENT NO. 1910-8, 1990 EDITION, 42 Pages)

This document has important legal consequences: consultation with an attorney is encouraged with respect to its completion or modification.

STANDARD
GENERAL CONDITIONS
OF THE
CONSTRUCTION CONTRACT

Prepared by

Engineers Joint Contract Documents Committee

and

Issued and Published Jointly By

PROFESSIONAL ENGINEERS IN PRIVATE PRACTICE
A practice division of the
NATIONAL SOCIETY OF PROFESSIONAL ENGINEERS

AMERICAN CONSULTING ENGINEERS COUNCIL

AMERICAN SOCIETY OF CIVIL ENGINEERS

CONSTRUCTION SPECIFICATIONS INSTITUTE

This document has been approved and endorsed by

The Associated General Contractors of America

These General Conditions have been prepared for use with the Owner-Contractor Agreements (No. 1910-8-A-1 or 1910-8-A-2) (1990 Editions). Their provisions are interrelated and a change in one may necessitate a change in the others. Comments concerning their usage are contained in the Commentary on Agreements for Engineering Services and Contract Documents (No. 1910-9) (1986 Edition). For guidance in the preparation of Supplementary Conditions, see Guide to the Preparation of Supplementary Conditions (No. 1910-17) (1990 Edition). When bidding is involved, the Standard Form of Instructions to Bidders (No. 1910-12) (1990 Edition) may be used.

EJCDC No. 1910-8 (1990 Edition)
Reprinted 5-91

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1420 King Street, Alexandria, VA 22314

American Consulting Engineers Council
1015 15th Street, N.W., Washington, DC 20005

American Society of Civil Engineers
345 East 47th Street, New York, NY 10017

Construction Specifications Institute
601 Madison St., Alexandria, VA 22314

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GENERAL CONDITIONS

ARTICLE 1—DEFINITIONS

Wherever used in these General Conditions or in the other Contract Documents the following terms have the meanings indicated which are applicable to both the singular and plural thereof:

1.1. *Addenda*—Written or graphic instruments issued prior to the opening of Bids which clarify, correct or change the Bidding Requirements or the Contract Documents.

1.2. *Agreement*—The written contract between OWNER and CONTRACTOR covering the Work to be performed; other Contract Documents are attached to the Agreement and made a part thereof as provided therein.

1.3. *Application for Payment*—The form accepted by ENGINEER which is to be used by CONTRACTOR in requesting progress or final payments and which is to be accompanied by such supporting documentation as is required by the Contract Documents.

1.4. *Asbestos*—Any material that contains more than one percent asbestos and is friable or is releasing asbestos fibers into the air above current action levels established by the United States Occupational Safety and Health Administration.

1.5. *Bid*—The offer or proposal of the bidder submitted on the prescribed form setting forth the prices for the Work to be performed.

1.6. *Bidding Documents*—The advertisement or invitation to Bid, instructions to bidders, the Bid form, and the proposed Contract Documents (including all Addenda issued prior to receipt of Bids).

1.7. *Bidding Requirements*—The advertisement or invitation to Bid, instructions to bidders, and the Bid form.

1.8. *Bonds*—Performance and Payment bonds and other instruments of security.

1.9. *Change Order*—A document recommended by ENGINEER, which is signed by CONTRACTOR and OWNER and authorizes an addition, deletion or revision in the Work, or an adjustment in the Contract Price or the Contract Times, issued on or after the Effective Date of the Agreement.

1.10. *Contract Documents*—The Agreement, Addenda (which pertain to the Contract Documents), CONTRACTOR's Bid (including documentation accompanying the Bid and any post Bid documentation submitted prior to the Notice of Award) when attached as an exhibit to the Agreement, the Notice to Proceed, the Bonds, these General Conditions, the Supplementary Conditions, the Specifications and the Drawings as the same are more specifically identified in the Agreement, together with all Written Amendments, Change Orders, Work Change Directives, Field Orders and ENGINEER's written interpretations and clarifications issued pursuant to paragraphs 3.5, 3.6.1, and 3.6.3 on or after the Effective Date of the Agreement. Shop Drawing submittals approved pursuant to paragraphs 6.26 and 6.27 and the reports and drawings referred to in paragraphs 4.2.1.1 and 4.2.2.2 are not Contract Documents.

1.11. *Contract Price*—The moneys payable by OWNER to CONTRACTOR for completion of the Work in accordance with the Contract Documents as stated in the Agreement (subject to the provisions of paragraph 11.9.1 in the case of Unit Price Work).

1.12. *Contract Times*—The numbers of days or the dates stated in the Agreement: (i) to achieve Substantial Completion, and (ii) to complete the Work so that it is ready for final payment as evidenced by ENGINEER's written recommendation of final payment in accordance with paragraph 14.13.

1.13. *CONTRACTOR*—The person, firm or corporation with whom OWNER has entered into the Agreement.

1.14. *defective*—An adjective which when modifying the word Work refers to Work that is unsatisfactory, faulty or deficient, in that it does not conform to the Contract Documents, or does not meet the requirements of any inspection, reference standard, test or approval referred to in the Contract Documents, or has been damaged prior to ENGINEER's recommendation of final payment (unless responsibility for the protection thereof has been assumed by OWNER at Substantial Completion in accordance with paragraph 14.8 or 14.10).

1.15. *Drawings*—The drawings which show the scope, extent and character of the Work to be furnished and performed by CONTRACTOR and which have been prepared or approved by ENGINEER and are referred to in the Contract Documents. Shop drawings are not Drawings as so defined.

1.16. *Effective Date of the Agreement*—The date indicated in the Agreement on which it becomes effective, but if no such date is indicated it means the date on which the Agreement is signed and delivered by the last of the two parties to sign and deliver.

1.17. *ENGINEER*—The person, firm or corporation named as such in the Agreement.

1.18. *ENGINEER's Consultant*—A person, firm or corporation having a contract with ENGINEER to furnish services as ENGINEER's independent professional associate or consultant with respect to the Project and who is identified as such in the Supplementary Conditions.

1.19. *Field Order*—A written order issued by ENGINEER which orders minor changes in the Work in accordance with paragraph 9.5 but which does not involve a change in the Contract Price or the Contract Times.

1.20. *General Requirements*—Sections of Division 1 of the Specifications.

1.21. *Hazardous Waste*—The term Hazardous Waste shall have the meaning provided in Section 1004 of the Solid Waste Disposal Act (42 USC Section 6903) as amended from time to time.

1.22. *Laws and Regulations; Laws or Regulations*—Any and all applicable laws, rules, regulations, ordinances, codes and orders of any and all governmental bodies, agencies, authorities and courts having jurisdiction.

1.23. *Liens*—Liens, charges, security interests or encumbrances upon real property or personal property.

1.24. *Milestone*—A principal event specified in the Contract Documents relating to an intermediate completion date or time prior to Substantial Completion of all the Work.

1.25. *Notice of Award*—The written notice by OWNER to the apparent successful bidder stating that upon compliance by the apparent successful bidder with the conditions precedent enumerated therein, within the time specified, OWNER will sign and deliver the Agreement.

1.26. *Notice to Proceed*—A written notice given by OWNER to CONTRACTOR (with a copy to ENGINEER) fixing the date on which the Contract Times will commence to run and on which CONTRACTOR shall start to perform CONTRACTOR's obligations under the Contract Documents.

1.27. *OWNER*—The public body or authority, corporation, association, firm or person with whom CONTRACTOR has entered into the Agreement and for whom the Work is to be provided.

1.28. *Partial Utilization*—Use by OWNER of a substantially completed part of the Work for the purpose for which it is intended (or a related purpose) prior to Substantial Completion of all the Work.

1.29. *PCBs*—Polychlorinated biphenyls.

1.30. *Petroleum*—Petroleum, including crude oil or any fraction thereof which is liquid at standard conditions of temperature and pressure (60 degrees Fahrenheit and 14.7 pounds per square inch absolute), such as oil, petroleum, fuel oil, oil sludge, oil refuse, gasoline, kerosene, and oil mixed with other non-Hazardous Wastes and crude oils.

1.31. *Project*—The total construction of which the Work to be provided under the Contract Documents may be the whole, or a part as indicated elsewhere in the Contract Documents.

1.32. *Radioactive Material*—Source, special nuclear, or byproduct material as defined by the Atomic Energy Act of 1954 (42 USC Section 2011 et seq.) as amended from time to time.

1.33. *Resident Project Representative*— The authorized representative of ENGINEER who may be assigned to the site or any part thereof.

1.34. *Samples*—Physical examples of materials, equipment, or workmanship that are representative of some portion of the Work and which establish the standards by which such portion of the Work will be judged.

1.35. *Shop Drawings*—All drawings, diagrams, illustrations, schedules and other data or information which are specifically prepared or assembled by or for CONTRACTOR and submitted by CONTRACTOR to illustrate some portion of the Work.

1.36. *Specifications*—Those portions of the Contract Documents consisting of written technical descriptions of materials, equipment, construction systems, standards and workmanship as applied to the Work and certain administrative details applicable thereto.

1.37. *Subcontractor*—An individual, firm or corporation having a direct contract with CONTRACTOR or with any other Subcontractor for the performance of a part of the Work at the site.

1.38. *Substantial Completion*—The Work (or a specified part thereof) has progressed to the point where, in the opinion of ENGINEER as evidenced by ENGINEER's definitive certificate of Substantial Completion, it is sufficiently complete, in accordance with the Contract Documents, so that the Work (or specified part) can be utilized for the purposes for which it is intended; or if no such certificate is issued, when the Work is complete and ready for final payment as evidenced by ENGINEER's written recommendation of final payment in accordance with paragraph 14.13. The terms "substantially complete" and "substantially completed" as applied to all or part of the Work refer to Substantial Completion thereof.

1.39. *Supplementary Conditions*—The part of the Contract Documents which amends or supplements these General Conditions.

1.40. *Supplier*—A manufacturer, fabricator, supplier, distributor, materialman or vendor having a direct contract with CONTRACTOR or with any Subcontractor to furnish materials or equipment to be incorporated in the Work by CONTRACTOR or any Subcontractor.

1.41. *Underground Facilities*—All pipelines, conduits, ducts, cables, wires, manholes, vaults, tanks, tunnels or other such facilities or attachments, and any encasements containing such facilities which have been installed underground to furnish any of the following services or materials: electricity, gases, steam, liquid petroleum products, telephone or other communications, cable television, sewage and drainage removal, traffic or other control systems or water.

1.42. *Unit Price Work*—Work to be paid for on the basis of unit prices.

1.43. *Work*—The entire completed construction or the various separately identifiable parts thereof required to be furnished under the Contract Documents. Work includes and is the result of performing or furnishing labor and furnishing and incorporating materials and equipment into the construction, and performing or furnishing services and furnishing documents, all as required by the Contract Documents.

1.44. *Work Change Directive*—A written directive to CONTRACTOR, issued on or after the Effective Date of the Agreement and signed by OWNER and recommended by ENGINEER, ordering an addition, deletion or revision in the Work, or responding to differing or unforeseen physical conditions under which the Work is to be performed as provided in paragraph 4.2 or 4.3 or to emergencies under paragraph 6.23. A Work Change Directive will not change the Contract Price or the Contract Times, but is evidence that the parties expect that the change directed or documented by a Work Change Directive will be incorporated in a subsequently issued Change Order following negotiations by the parties as to its effect, if any, on the Contract Price or Contract Times as provided in paragraph 10.2.

1.45. *Written Amendment*—A written amendment of the Contract Documents, signed by OWNER and CONTRACTOR on or after the Effective Date of the Agreement and normally dealing with the nonengineering or nontechnical rather than strictly construction-related aspects of the Contract Documents.

ARTICLE 2—PRELIMINARY MATTERS

Delivery of Bonds:

2.1. When CONTRACTOR delivers the executed Agreements to OWNER, CONTRACTOR shall also deliver to OWNER such Bonds as CONTRACTOR may be required to furnish in accordance with paragraph 5.1.

Copies of Documents:

2.2. OWNER shall furnish to CONTRACTOR up to ten copies (unless otherwise specified in the Supplementary Conditions) of the Contract Documents as are reasonably necessary for the execution of the Work. Additional copies will be furnished, upon request, at the cost of reproduction.

Commencement of Contract Times; Notice to Proceed:

2.3. The Contract Times will commence to run on the thirtieth day after the Effective Date of the Agreement, or, if a Notice to Proceed is given, on the day indicated in the Notice to Proceed. A Notice to Proceed may be given at any time within thirty days after the Effective Date of the Agreement. In no event will the Contract Times commence to run later than the sixtieth day after the day of Bid opening or the thirtieth day after the Effective Date of the Agreement, whichever date is earlier.

Starting the Work:

2.4. CONTRACTOR shall start to perform the Work on the date when the Contract Times commence to run, but no Work shall be done at the site prior to the date on which the Contract Times commence to run.

Before Starting Construction:

2.5. Before undertaking each part of the Work, CONTRACTOR shall carefully study and compare the Contract Documents and check and verify pertinent figures shown thereon and all applicable field measurements. CONTRACTOR shall promptly report in writing to ENGINEER any conflict, error, ambiguity or discrepancy which CONTRACTOR may discover and shall obtain a written interpretation or clarification from ENGINEER before proceeding with any Work affected thereby; however, CONTRACTOR shall not be liable to OWNER or ENGINEER for failure to report any conflict, error, ambiguity or discrepancy in the Contract Documents, unless CONTRACTOR knew or reasonably should have known thereof.

2.6. Within ten days after the Effective Date of the Agreement (unless otherwise specified in the General Requirements), CONTRACTOR shall submit to ENGINEER for review:

2.6.1. a preliminary progress schedule indicating the times (numbers of days or dates) for starting and completing the various stages of the Work, including any Milestones specified in the Contract Documents;

2.6.2. a preliminary schedule of Shop Drawing and Sample submittals which will list each required submittal and the times for submitting, reviewing and processing such submittal;

2.6.3. a preliminary schedule of values for all of the Work which will include quantities and prices of items aggregating the Contract Price and will subdivide the Work into component parts in sufficient detail to serve as the basis for progress payments during construction. Such prices will include an appropriate amount of overhead and profit applicable to each item of Work.

2.7. Before any Work at the site is started, CONTRACTOR and OWNER shall each deliver to the other, with copies to each additional insured identified in the Supplementary Conditions, certificates of insurance (and other evidence of insurance which either of them or any additional insured may reasonably request) which CONTRACTOR and OWNER respectively are required to purchase and maintain in accordance with paragraphs 5.4, 5.6 and 5.7.

Preconstruction Conference:

2.8. Within twenty days after the Contract Times start to run, but before any Work at the site is started, a conference

4.2.2. *Limited Reliance by CONTRACTOR Authorized; Technical Data:* CONTRACTOR may rely upon the general accuracy of the "technical data" contained in such reports and drawings, but such reports and drawings are not Contract Documents. Such "technical data" is identified in the Supplementary Conditions. Except for such reliance on such "technical data," CONTRACTOR may not rely upon or make any claim against OWNER, ENGINEER or any of ENGINEER's Consultants with respect to:

4.2.2.1. the completeness of such reports and drawings for CONTRACTOR's purposes, including, but not limited to, any aspects of the means, methods, techniques, sequences and procedures of construction to be employed by CONTRACTOR and safety precautions and programs incident thereto, or

4.2.2.2. other data, interpretations, opinions and information contained in such reports or shown or indicated in such drawings, or

4.2.2.3. any CONTRACTOR interpretation of or conclusion drawn from any "technical data" or any such data, interpretations, opinions or information.

4.2.3. *Notice of Differing Subsurface or Physical Conditions:* If CONTRACTOR believes that any subsurface or physical condition at or contiguous to the site that is uncovered or revealed either:

4.2.3.1. is of such a nature as to establish that any "technical data" on which CONTRACTOR is entitled to rely as provided in paragraphs 4.2.1 and 4.2.2 is materially inaccurate, or

4.2.3.2. is of such a nature as to require a change in the Contract Documents, or

4.2.3.3. differs materially from that shown or indicated in the Contract Documents, or

4.2.3.4. is of an unusual nature, and differs materially from conditions ordinarily encountered and generally recognized as inherent in work of the character provided for in the Contract Documents; then

CONTRACTOR shall, promptly after becoming aware thereof and before further disturbing conditions affected thereby or performing any Work in connection therewith (except in an emergency as permitted by paragraph 6.23), notify OWNER and ENGINEER in writing about such condition. CONTRACTOR shall not further disturb such conditions or perform any Work in connection therewith (except as aforesaid) until receipt of written order to do so.

4.2.4. *ENGINEER's Review:* ENGINEER will promptly review the pertinent conditions, determine the necessity of OWNER's obtaining additional exploration or tests with respect thereto and advise OWNER in writing (with a copy to CONTRACTOR) of ENGINEER's findings and conclusions.

4.2.5. *Possible Contract Documents Change:* If ENGINEER concludes that a change in the Contract Documents is required as a result of a condition that meets one or more of the categories in paragraph 4.2.3., a Work Change Directive or a Change Order will be issued as provided in Article 10 to reflect and document the consequences of such change.

4.2.6. *Possible Price and Times Adjustments:* An equitable adjustment in the Contract Price or in the Contract Times, or both, will be allowed to the extent that the existence of such uncovered or revealed condition causes an increase or decrease in CONTRACTOR's cost of, or time required for performance of, the Work; subject, however, to the following:

4.2.6.1. such condition must meet any one or more of the categories described in paragraphs 4.2.3.1 through 4.2.3.4, inclusive;

4.2.6.2. a change in the Contract Documents pursuant to paragraph 4.2.5 will not be an automatic authorization of nor a condition precedent to entitlement to any such adjustment;

4.2.6.3. with respect to Work that is paid for on a Unit Price Basis, any adjustment in Contract Price will be subject to the provisions of paragraphs 9.10 and 11.9; and

4.2.6.4. CONTRACTOR shall not be entitled to any adjustment in the Contract Price or Times if:

4.2.6.4.1. CONTRACTOR knew of the existence of such conditions at the time CONTRACTOR made a final commitment to OWNER in respect of Contract Price and Contract Times by the submission of a bid or becoming bound under a negotiated contract; or

4.2.6.4.2. the existence of such condition could reasonably have been discovered or revealed as a result of any examination, investigation, exploration, test or study of the site and contiguous areas required by the Bidding Requirements or Contract Documents to be conducted by or for CONTRACTOR prior to CONTRACTOR's making such final commitment; or

4.2.6.4.3. CONTRACTOR failed to give the written notice within the time and as required by paragraph 4.2.3.

If OWNER and CONTRACTOR are unable to agree on entitlement to or as to the amount or length of any such equitable adjustment in the Contract Price or Contract Times, a claim may be made therefor as provided in Articles 11 and 12. However, OWNER, ENGINEER and ENGINEER's Consultants shall not be liable to CONTRACTOR for any claims, costs, losses or damages sustained by CONTRACTOR on or in connection with any other project or anticipated project.

4.3. *Physical Conditions—Underground Facilities:*

4.3.1. *Shown or Indicated:* The information and data shown or indicated in the Contract Documents with respect to existing Underground Facilities at or contiguous to the site is based on

performance of the Work or any duty or authority to undertake responsibility inconsistent with the provisions of paragraph 9.13 or any other provision of the Contract Documents.

3.4. Whenever in the Contract Documents the terms "as ordered," "as directed," "as required," "as allowed," "as approved" or terms of like effect or import are used, or the adjectives "reasonable," "suitable," "acceptable," "proper" or "satisfactory" or adjectives of like effect or import are used to describe a requirement, direction, review or judgment of ENGINEER as to the Work, it is intended that such requirement, direction, review or judgment will be solely to evaluate, in general, the completed Work for compliance with the requirements of and information in the Contract Documents and conformance with the design concept of the completed Project as a functioning whole as shown or indicated in the Contract Documents (unless there is a specific statement indicating otherwise). The use of any such term or adjective shall not be effective to assign to ENGINEER any duty or authority to supervise or direct the furnishing or performance of the Work or any duty or authority to undertake responsibility contrary to the provisions of paragraph 9.13 or any other provision of the Contract Documents.

Amending and Supplementing Contract Documents:

3.5. The Contract Documents may be amended to provide for additions, deletions and revisions in the Work or to modify the terms and conditions thereof in one or more of the following ways:

3.5.1. a formal Written Amendment,

3.5.2. a Change Order (pursuant to paragraph 10.4), or

3.5.3. a Work Change Directive (pursuant to paragraph 10.1).

3.6. In addition, the requirements of the Contract Documents may be supplemented, and minor variations and deviations in the Work may be authorized, in one or more of the following ways:

3.6.1. a Field Order (pursuant to paragraph 9.5),

3.6.2. ENGINEER's approval of a Shop Drawing or Sample (pursuant to paragraphs 6.26 and 6.27), or

3.6.3. ENGINEER's written interpretation or clarification (pursuant to paragraph 9.4).

Reuse of Documents:

3.7. CONTRACTOR, and any Subcontractor or Supplier or other person or organization performing or furnishing any of the Work under a direct or indirect contract with OWNER (i) shall not have or acquire any title to or ownership rights in any of the Drawings, Specifications or other documents (or copies of any thereof) prepared by or bearing the seal of ENGINEER or ENGINEER's Consultant, and (ii) shall not reuse any of such Drawings, Specifications, other documents or copies on extensions of the Project or any other project without written consent of OWNER and ENGINEER and specific written verification or adaption by ENGINEER.

ARTICLE 4—AVAILABILITY OF LANDS; SUBSURFACE AND PHYSICAL CONDITIONS; REFERENCE POINTS

Availability of Lands:

4.1. OWNER shall furnish, as indicated in the Contract Documents, the lands upon which the Work is to be performed, rights-of-way and easements for access thereto, and such other lands which are designated for the use of CONTRACTOR. Upon reasonable written request, OWNER shall furnish CONTRACTOR with a correct statement of record legal title and legal description of the lands upon which the Work is to be performed and OWNER's interest therein as necessary for giving notice of or filing a mechanic's lien against such lands in accordance with applicable Laws and Regulations. OWNER shall identify any encumbrances or restrictions not of general application but specifically related to use of lands so furnished with which CONTRACTOR will have to comply in performing the Work. Easements for permanent structures or permanent changes in existing facilities will be obtained and paid for by OWNER, unless otherwise provided in the Contract Documents. If CONTRACTOR and OWNER are unable to agree on entitlement to or the amount or extent of any adjustments in the Contract Price or the Contract Times as a result of any delay in OWNER's furnishing these lands, rights-of-way or easements, CONTRACTOR may make a claim therefor as provided in Articles 11 and 12. CONTRACTOR shall provide for all additional lands and access thereto that may be required for temporary construction facilities or storage of materials and equipment.

4.2. *Subsurface and Physical Conditions:*

4.2.1. *Reports and Drawings:* Reference is made to the Supplementary Conditions for identification of:

4.2.1.1. *Subsurface Conditions:* Those reports of explorations and tests of subsurface conditions at or contiguous to the site that have been utilized by ENGINEER in preparing the Contract Documents; and

4.2.1.2. *Physical Conditions:* Those drawings of physical conditions in or relating to existing surface or subsurface structures at or contiguous to the site (except Underground Facilities) that have been utilized by ENGINEER in preparing the Contract Documents.

4.2.2. *Limited Reliance by CONTRACTOR Authorized; Technical Data:* CONTRACTOR may rely upon the general accuracy of the "technical data" contained in such reports and drawings, but such reports and drawings are not Contract Documents. Such "technical data" is identified in the Supplementary Conditions. Except for such reliance on such "technical data," CONTRACTOR may not rely upon or make any claim against OWNER, ENGINEER or any of ENGINEER's Consultants with respect to:

4.2.2.1. the completeness of such reports and drawings for CONTRACTOR's purposes, including, but not limited to, any aspects of the means, methods, techniques, sequences and procedures of construction to be employed by CONTRACTOR and safety precautions and programs incident thereto, or

4.2.2.2. other data, interpretations, opinions and information contained in such reports or shown or indicated in such drawings, or

4.2.2.3. any CONTRACTOR interpretation of or conclusion drawn from any "technical data" or any such data, interpretations, opinions or information.

4.2.3. *Notice of Differing Subsurface or Physical Conditions:* If CONTRACTOR believes that any subsurface or physical condition at or contiguous to the site that is uncovered or revealed either:

4.2.3.1. is of such a nature as to establish that any "technical data" on which CONTRACTOR is entitled to rely as provided in paragraphs 4.2.1 and 4.2.2 is materially inaccurate, or

4.2.3.2. is of such a nature as to require a change in the Contract Documents, or

4.2.3.3. differs materially from that shown or indicated in the Contract Documents, or

4.2.3.4. is of an unusual nature, and differs materially from conditions ordinarily encountered and generally recognized as inherent in work of the character provided for in the Contract Documents; then

CONTRACTOR shall, promptly after becoming aware thereof and before further disturbing conditions affected thereby or performing any Work in connection therewith (except in an emergency as permitted by paragraph 6.23), notify OWNER and ENGINEER in writing about such condition. CONTRACTOR shall not further disturb such conditions or perform any Work in connection therewith (except as aforesaid) until receipt of written order to do so.

4.2.4. *ENGINEER's Review:* ENGINEER will promptly review the pertinent conditions, determine the necessity of OWNER's obtaining additional exploration or tests with respect thereto and advise OWNER in writing (with a copy to CONTRACTOR) of ENGINEER's findings and conclusions.

4.2.5. *Possible Contract Documents Change:* If ENGINEER concludes that a change in the Contract Documents is required as a result of a condition that meets one or more of the categories in paragraph 4.2.3., a Work Change Directive or a Change Order will be issued as provided in Article 10 to reflect and document the consequences of such change.

4.2.6. *Possible Price and Times Adjustments:* An equitable adjustment in the Contract Price or in the Contract Times, or both, will be allowed to the extent that the existence of such uncovered or revealed condition causes an increase or decrease in CONTRACTOR's cost of, or time required for performance of, the Work; subject, however, to the following:

4.2.6.1. such condition must meet any one or more of the categories described in paragraphs 4.2.3.1 through 4.2.3.4, inclusive;

4.2.6.2. a change in the Contract Documents pursuant to paragraph 4.2.5 will not be an automatic authorization of nor a condition precedent to entitlement to any such adjustment;

4.2.6.3. with respect to Work that is paid for on a Unit Price Basis, any adjustment in Contract Price will be subject to the provisions of paragraphs 9.10 and 11.9; and

4.2.6.4. CONTRACTOR shall not be entitled to any adjustment in the Contract Price or Times if:

4.2.6.4.1. CONTRACTOR knew of the existence of such conditions at the time CONTRACTOR made a final commitment to OWNER in respect of Contract Price and Contract Times by the submission of a bid or becoming bound under a negotiated contract; or

4.2.6.4.2. the existence of such condition could reasonably have been discovered or revealed as a result of any examination, investigation, exploration, test or study of the site and contiguous areas required by the Bidding Requirements or Contract Documents to be conducted by or for CONTRACTOR prior to CONTRACTOR's making such final commitment; or

4.2.6.4.3. CONTRACTOR failed to give the written notice within the time and as required by paragraph 4.2.3.

If OWNER and CONTRACTOR are unable to agree on entitlement to or as to the amount or length of any such equitable adjustment in the Contract Price or Contract Times, a claim may be made therefor as provided in Articles 11 and 12. However, OWNER, ENGINEER and ENGINEER's Consultants shall not be liable to CONTRACTOR for any claims, costs, losses or damages sustained by CONTRACTOR on or in connection with any other project or anticipated project.

4.3. ***Physical Conditions—Underground Facilities:***

4.3.1. *Shown or Indicated:* The information and data shown or indicated in the Contract Documents with respect to existing Underground Facilities at or contiguous to the site is based on

information and data furnished to OWNER or ENGINEER by the owners of such Underground Facilities or by others. Unless it is otherwise expressly provided in the Supplementary Conditions:

4.3.1.1. OWNER and ENGINEER shall not be responsible for the accuracy or completeness of any such information or data; and

4.3.1.2. The cost of all of the following will be included in the Contract Price and CONTRACTOR shall have full responsibility for: (i) reviewing and checking all such information and data, (ii) locating all Underground Facilities shown or indicated in the Contract Documents, (iii) coordination of the Work with the owners of such Underground Facilities during construction, and (iv) the safety and protection of all such Underground Facilities as provided in paragraph 6.20 and repairing any damage thereto resulting from the Work.

4.3.2. *Not Shown or Indicated:* If an Underground Facility is uncovered or revealed at or contiguous to the site which was not shown or indicated in the Contract Documents, CONTRACTOR shall, promptly after becoming aware thereof and before further disturbing conditions affected thereby or performing any Work in connection therewith (except in an emergency as required by paragraph 6.23), identify the owner of such Underground Facility and give written notice to that owner and to OWNER and ENGINEER. ENGINEER will promptly review the Underground Facility and determine the extent, if any, to which a change is required in the Contract Documents to reflect and document the consequences of the existence of the Underground Facility. If ENGINEER concludes that a change in the Contract Documents is required, a Work Change Directive or a Change Order will be issued as provided in Article 10 to reflect and document such consequences. During such time, CONTRACTOR shall be responsible for the safety and protection of such Underground Facility as provided in paragraph 6.20. CONTRACTOR shall be allowed an increase in the Contract Price or an extension of the Contract Times, or both, to the extent that they are attributable to the existence of any Underground Facility that was not shown or indicated in the Contract Documents and that CONTRACTOR did not know of and could not reasonably have been expected to be aware of or to have anticipated. If OWNER and CONTRACTOR are unable to agree on entitlement to or the amount or length of any such adjustment in Contract Price or Contract Times, CONTRACTOR may make a claim therefor as provided in Articles 11 and 12. However, OWNER, ENGINEER and ENGINEER's Consultants shall not be liable to CONTRACTOR for any claims, costs, losses or damages incurred or sustained by CONTRACTOR on or in connection with any other project or anticipated project.

Reference Points:

4.4. OWNER shall provide engineering surveys to establish reference points for construction which in ENGINEER's judgment are necessary to enable CONTRACTOR to proceed with the Work. CONTRACTOR shall be responsible for laying out the Work, shall protect and preserve the established reference points and shall make no changes or relocations without the prior written approval of OWNER. CONTRACTOR shall report to ENGINEER whenever any reference point is lost or destroyed or requires relocation because of necessary changes in grades or locations, and shall be responsible for the accurate replacement or relocation of such reference points by professionally qualified personnel.

4.5. Asbestos, PCBs, Petroleum, Hazardous Waste or Radioactive Material:

4.5.1. OWNER shall be responsible for any Asbestos, PCBs, Petroleum, Hazardous Waste or Radioactive Material uncovered or revealed at the site which was not shown or indicated in Drawings or Specifications or identified in the Contract Documents to be within the scope of the Work and which may present a substantial danger to persons or property exposed thereto in connection with the Work at the site. OWNER shall not be responsible for any such materials brought to the site by CONTRACTOR, Subcontractor, Suppliers or anyone else for whom CONTRACTOR is responsible.

4.5.2. CONTRACTOR shall immediately: (i) stop all Work in connection with such hazardous condition and in any area affected thereby (except in an emergency as required by paragraph 6.23), and (ii) notify OWNER and ENGINEER (and thereafter confirm such notice in writing). OWNER shall promptly consult with ENGINEER concerning the necessity for OWNER to retain a qualified expert to evaluate such hazardous condition or take corrective action, if any. CONTRACTOR shall not be required to resume Work in connection with such hazardous condition or in any such affected area until after OWNER has obtained any required permits related thereto and delivered to CONTRACTOR special written notice: (i) specifying that such condition and any affected area is or has been rendered safe for the resumption of Work, or (ii) specifying any special conditions under which such Work may be resumed safely. If OWNER and CONTRACTOR cannot agree as to entitlement to or the amount or extent of an adjustment, if any, in Contract Price or Contract Times as a result of such Work stoppage or such special conditions under which Work is agreed by CONTRACTOR to be resumed, either party may make a claim therefor as provided in Articles 11 and 12.

4.5.3. If after receipt of such special written notice CONTRACTOR does not agree to resume such Work based on a reasonable belief it is unsafe, or does not agree to resume such Work under such special conditions, then OWNER may order such portion of the Work that is in connection with such hazardous condition or in such affected area to be deleted from the Work. If OWNER and CONTRACTOR cannot agree as to entitlement to or the amount or extent of an adjustment, if any, in Contract Price or Contract Times as a result of deleting such portion of the Work, then either party may make a claim therefor as provided in Articles 11 and 12. OWNER may have such deleted portion of the Work performed by OWNER's own forces or others in accordance with Article 7.

4.5.4. To the fullest extent permitted by Laws and Regulations, OWNER shall indemnify and hold harmless CONTRACTOR, Subcontractors, ENGINEER, ENGINEER's

Consultants and the officers, directors, employees, agents, other consultants and subcontractors of each and any of them from and against all claims, costs, losses and damages arising out of or resulting from such hazardous condition, provided that: (i) any such claim, cost, loss or damage is attributable to bodily injury, sickness, disease or death, or to injury to or destruction of tangible property (other than the Work itself), including the loss of use resulting therefrom, and (ii) nothing in this subparagraph 4.5.4 shall obligate OWNER to indemnify any person or entity from and against the consequences of that person's or entity's own negligence.

4.5.5. The provisions of paragraphs 4.2 and 4.3 are not intended to apply to Asbestos, PCBs, Petroleum, Hazardous Waste or Radioactive Material uncovered or revealed at the site.

ARTICLE 5—BONDS AND INSURANCE

Performance, Payment and Other Bonds:

5.1. CONTRACTOR shall furnish Performance and Payment Bonds, each in an amount at least equal to the Contract Price as security for the faithful performance and payment of all CONTRACTOR's obligations under the Contract Documents. These Bonds shall remain in effect at least until one year after the date when final payment becomes due, except as provided otherwise by Laws or Regulations or by the Contract Documents. CONTRACTOR shall also furnish such other Bonds as are required by the Supplementary Conditions. All Bonds shall be in the form prescribed by the Contract Documents except as provided otherwise by Laws or Regulations, and shall be executed by such sureties as are named in the current list of "Companies Holding Certificates of Authority as Acceptable Sureties on Federal Bonds and as Acceptable Reinsuring Companies" as published in Circular 570 (amended) by the Audit Staff, Bureau of Government Financial Operations, U.S. Treasury Department. All Bonds signed by an agent must be accompanied by a certified copy of such agent's authority to act.

5.2. If the surety on any Bond furnished by CONTRACTOR is declared a bankrupt or becomes insolvent or its right to do business is terminated in any state where any part of the Project is located or it ceases to meet the requirements of paragraph 5.1, CONTRACTOR shall within ten days thereafter substitute another Bond and surety, both of which must be acceptable to OWNER.

5.3. ***Licensed Sureties and Insurers; Certificates of Insurance:***

5.3.1. All Bonds and insurance required by the Contract Documents to be purchased and maintained by OWNER or CONTRACTOR shall be obtained from surety or insurance companies that are duly licensed or authorized in the jurisdiction in which the Project is located to issue Bonds or insurance policies for the limits and coverages so required. Such surety and insurance companies shall also meet such additional requirements and qualifications as may be provided in the Supplementary Conditions.

5.3.2. CONTRACTOR shall deliver to OWNER, with copies to each additional insured identified in the Supplementary Conditions, certificates of insurance (and other evidence of insurance requested by OWNER or any other additional insured) which CONTRACTOR is required to purchase and maintain in accordance with paragraph 5.4. OWNER shall deliver to CONTRACTOR, with copies to each additional insured identified in the Supplementary Conditions, certificates of insurance (and other evidence of insurance requested by CONTRACTOR or any other additional insured) which OWNER is required to purchase and maintain in accordance with paragraphs 5.6 and 5.7 hereof.

CONTRACTOR's Liability Insurance:

5.4. CONTRACTOR shall purchase and maintain such liability and other insurance as is appropriate for the Work being performed and furnished and as will provide protection from claims set forth below which may arise out of or result from CONTRACTOR's performance and furnishing of the Work and CONTRACTOR's other obligations under the Contract Documents, whether it is to be performed or furnished by CONTRACTOR, any Subcontractor or Supplier, or by anyone directly or indirectly employed by any of them to perform or furnish any of the Work, or by anyone for whose acts any of them may be liable:

5.4.1. claims under workers' compensation, disability benefits and other similar employee benefit acts;

5.4.2. claims for damages because of bodily injury, occupational sickness or disease, or death of CONTRACTOR's employees;

5.4.3. claims for damages because of bodily injury, sickness or disease, or death of any person other than CONTRACTOR's employees;

5.4.4. claims for damages insured by customary personal injury liability coverage which are sustained: (i) by any person as a result of an offense directly or indirectly related to the employment of such person by CONTRACTOR, or (ii) by any other person for any other reason;

5.4.5. claims for damages, other than to the Work itself, because of injury to or destruction of tangible property wherever located, including loss of use resulting therefrom; and

5.4.6. claims for damages because of bodily injury or death of any person or property damage arising out of the ownership, maintenance or use of any motor vehicle.

The policies of insurance so required by this paragraph 5.4 to be purchased and maintained shall:

5.4.7. with respect to insurance required by paragraphs 5.4.3 through 5.4.6 inclusive, include as additional insureds (subject to any customary exclusion in respect of professional liability) OWNER, ENGINEER, ENGINEER's Consultants and any other persons or entities identified in the Supplementary Conditions, all of whom shall be listed as additional insureds, and include coverage for the respective officers and employees of all such additional insureds;

5.4.8. include the specific coverages and be written for not less than the limits of liability provided in the Supplementary Conditions or required by Laws or Regulations, whichever is greater;

5.4.9. include completed operations insurance;

5.4.10. include contractual liability insurance covering CONTRACTOR's indemnity obligations under paragraphs 6.12, 6.16 and 6.31 through 6.33;

5.4.11. contain a provision or endorsement that the coverage afforded will not be cancelled, materially changed or renewal refused until at least thirty days prior written notice has been given to OWNER and CONTRACTOR and to each other additional insured identified in the Supplementary Conditions to whom a certificate of insurance has been issued (and the certificates of insurance furnished by the CONTRACTOR pursuant to paragraph 5.3.2 will so provide);

5.4.12. remain in effect at least until final payment and at all times thereafter when CONTRACTOR may be correcting, removing or replacing *defective* Work in accordance with paragraph 13.12; and

5.4.13. with respect to completed operations insurance, and any insurance coverage written on a claims-made basis, remain in effect for at least two years after final payment (and CONTRACTOR shall furnish OWNER and each other additional insured identified in the Supplementary Conditions to whom a certificate of insurance has been issued evidence satisfactory to OWNER and any such additional insured of continuation of such insurance at final payment and one year thereafter).

OWNER's Liability Insurance:

5.5. In addition to the insurance required to be provided by CONTRACTOR under paragraph 5.4, OWNER, at OWNER's option, may purchase and maintain at OWNER's expense OWNER's own liability insurance as will protect OWNER against claims which may arise from operations under the Contract Documents.

Property Insurance:

5.6. Unless otherwise provided in the Supplementary Conditions, OWNER shall purchase and maintain property insurance upon the Work at the site in the amount of the full replacement cost thereof (subject to such deductible amounts as may be provided in the Supplementary Conditions or required by Laws and Regulations). This insurance shall:

5.6.1. include the interests of OWNER, CONTRACTOR, Subcontractors, ENGINEER, ENGINEER's Consultants and any other persons or entities identified in the Supplementary Conditions, each of whom is deemed to have an insurable interest and shall be listed as an insured or additional insured;

5.6.2. be written on a Builder's Risk "all-risk" or open peril or special causes of loss policy form that shall at least include insurance for physical loss or damage to the Work, temporary buildings, falsework and Work in transit and shall insure against at least the following perils fire, lightning, extended coverage, theft, vandalism and malicious mischief, earthquake, collapse, debris removal, demolition occasioned by enforcement of Laws and Regulations, water damage, and such other perils as may be specifically required by the Supplementary Conditions;

5.6.3. include expenses incurred in the repair or replacement of any insured property (including but not limited to fees and charges of engineers and architects);

5.6.4. cover materials and equipment stored at the site or at another location that was agreed to in writing by OWNER prior to being incorporated in the Work, provided that such materials and equipment have been included in an Application for Payment recommended by ENGINEER; and

5.6.5. be maintained in effect until final payment is made unless otherwise agreed to in writing by OWNER, CONTRACTOR and ENGINEER with thirty days written notice to each other additional insured to whom a certificate of insurance has been issued.

5.7. OWNER shall purchase and maintain such boiler and machinery insurance or additional property insurance as may be required by the Supplementary Conditions or Laws and Regulations which will include the interests of OWNER, CONTRACTOR, Subcontractors, ENGINEER, ENGINEER's Consultants and any other persons or entities identified in the Supplementary Conditions, each of whom is deemed to have an insurable interest and shall be listed as an insured or additional insured.

5.8. All the policies of insurance (and the certificates or other evidence thereof) required to be purchased and maintained by OWNER in accordance with paragraphs 5.6 and 5.7 will contain a provision or endorsement that the coverage afforded will not be cancelled or materially changed or renewal refused until at least thirty days' prior written notice has been given to OWNER and CONTRACTOR and to each other additional insured to whom a certificate of insurance has been issued and will contain waiver provisions in accordance with paragraph 5.11.

5.9. OWNER shall not be responsible for purchasing and maintaining any property insurance to protect the interests of CONTRACTOR, Subcontractors or others in the Work to the extent of any deductible amounts that are identified in the Supplementary Conditions. The risk of loss within such identified deductible amount, will be borne by CONTRACTOR, Subcontractor or others suffering any such loss and if any of them wishes property insurance coverage within the limits of such amounts, each may purchase and maintain it at the purchaser's own expense.

5.10. If CONTRACTOR requests in writing that other special insurance be included in the property insurance policies provided under paragraphs 5.6 or 5.7, OWNER shall, if possible, include such insurance, and the cost thereof will be charged to CONTRACTOR by appropriate Change Order or Written Amendment. Prior to commencement of the Work at the site, OWNER shall in writing advise CONTRACTOR whether or not such other insurance has been procured by OWNER.

5.11. *Waiver of Rights:*

5.11.1. OWNER and CONTRACTOR intend that all policies purchased in accordance with paragraphs 5.6 and 5.7 will protect OWNER, CONTRACTOR, Subcontractors, ENGINEER, ENGINEER's Consultants and all other persons or entities identified in the Supplementary Conditions to be listed as insureds or additional insureds in such policies and will provide primary coverage for all losses and damages caused by the perils covered thereby. All such policies shall contain provisions to the effect that in the event of payment of any loss or damage the insurers will have no rights of recovery against any of the insureds or additional insureds thereunder. OWNER and CONTRACTOR waive all rights against each other and their respective officers, directors, employees and agents for all losses and damages caused by, arising out of or resulting from any of the perils covered by such policies and any other property insurance applicable to the Work; and, in addition, waive all such rights against Subcontractors, ENGINEER, ENGINEER's Consultants and all other persons or entities identified in the Supplementary Conditions to be listed as insureds or additional insureds under such policies for losses and damages so caused. None of the above waivers shall extend to the rights that any party making such waiver may have to the proceeds of insurance held by OWNER as trustee or otherwise payable under any policy so issued.

5.11.2. In addition, OWNER waives all rights against CONTRACTOR, Subcontractors, ENGINEER, ENGINEER's Consultants and the officers, directors, employees and agents of any of them, for:

5.11.2.1. loss due to business interruption, loss of use or other consequential loss extending beyond direct physical loss or damage to OWNER's property or the Work caused by, arising out of or resulting from fire or other peril, whether or not insured by OWNER; and

5.11.2.2. loss or damage to the completed Project or part thereof caused by, arising out of or resulting from fire or other insured peril covered by any property insurance maintained on the completed Project or part thereof by OWNER during partial utilization pursuant to paragraph 14.10, after substantial completion pursuant to paragraph 14.8 or after final payment pursuant to paragraph 14.13.

Any insurance policy maintained by OWNER covering any loss, damage or consequential loss referred to in this paragraph 5.11.2 shall contain provisions to the effect that in the event of payment of any such loss, damage or consequential loss the insurers will have no rights of recovery against any of CONTRACTOR, Subcontractors, ENGINEER, ENGINEER's Consultants and the officers, directors, employees and agents of any of them.

Receipt and Application of Insurance Proceeds

5.12. Any insured loss under the policies of insurance required by paragraphs 5.6 and 5.7 will be adjusted with OWNER and made payable to OWNER as fiduciary for the insureds, as their interests may appear, subject to the requirements of any applicable mortgage clause and of paragraph 5.13. OWNER shall deposit in a separate account any money so received, and shall distribute it in accordance with such agreement as the parties in interest may reach. If no other special agreement is reached the damaged Work shall be repaired or replaced, the moneys so received applied on account thereof and the Work and the cost thereof covered by an appropriate Change Order or Written Amendment.

5.13. OWNER as fiduciary shall have power to adjust and settle any loss with the insurers unless one of the parties in interest shall object in writing within fifteen days after the occurrence of loss to OWNER's exercise of this power. If such objection be made, OWNER as fiduciary shall make settlement with the insurers in accordance with such agreement as the parties in interest may reach. If no such agreement among the parties in interest is reached, OWNER as fiduciary shall adjust and settle the loss with the insurers and, if required in writing by any party in interest, OWNER as fiduciary shall give bond for the proper performance of such duties.

Acceptance of Bonds and Insurance; Option to Replace:

5.14. If either party (OWNER or CONTRACTOR) has any objection to the coverage afforded by or other provisions of the Bonds or insurance required to be purchased and maintained by the other party in accordance with Article 5 on the basis of non-conformance with the Contract Documents, the objecting party shall so notify the other party in writing within ten days after receipt of the certificates (or other evidence requested) required by paragraph 2.7. OWNER and CONTRACTOR shall each provide to the other such additional information in respect of insurance provided as the other may reasonably request. If either party does not purchase or maintain all of the Bonds and insurance required of such party by the Contract Documents, such party shall notify the other party in writing of such failure to purchase prior to the start of the Work, or of such failure to maintain prior to any change in the required coverage. Without prejudice to any other right or remedy, the other party may elect to obtain equivalent Bonds or insurance to protect such other party's interests at the expense of the party who was

required to provide such coverage, and a Change Order shall be issued to adjust the Contract Price accordingly.

Partial Utilization—Property Insurance:

5.15. If OWNER finds it necessary to occupy or use a portion or portions of the Work prior to Substantial Completion of all the Work, such use or occupancy may be accomplished in accordance with paragraph 14.10; provided that no such use or occupancy shall commence before the insurers providing the property insurance have acknowledged notice thereof and in writing effected any changes in coverage necessitated thereby. The insurers providing the property insurance shall consent by endorsement on the policy or policies, but the property insurance shall not be cancelled or permitted to lapse on account of any such partial use or occupancy.

ARTICLE 6—CONTRACTOR'S RESPONSIBILITIES

Supervision and Superintendence:

6.1. CONTRACTOR shall supervise, inspect and direct the Work competently and efficiently, devoting such attention thereto and applying such skills and expertise as may be necessary to perform the Work in accordance with the Contract Documents. CONTRACTOR shall be solely responsible for the means, methods, techniques, sequences and procedures of construction, but CONTRACTOR shall not be responsible for the negligence of others in the design or specification of a specific means, method, technique, sequence or procedure of construction which is shown or indicated in and expressly required by the Contract Documents. CONTRACTOR shall be responsible to see that the completed Work complies accurately with the Contract Documents.

6.2. CONTRACTOR shall keep on the Work at all times during its progress a competent resident superintendent, who shall not be replaced without written notice to OWNER and ENGINEER except under extraordinary circumstances. The superintendent will be CONTRACTOR's representative at the site and shall have authority to act on behalf of CONTRACTOR. All communications to the superintendent shall be as binding as if given to CONTRACTOR.

Labor, Materials and Equipment:

6.3. CONTRACTOR shall provide competent, suitably qualified personnel to survey, lay out and construct the Work as required by the Contract Documents. CONTRACTOR shall at all times maintain good discipline and order at the site. Except as otherwise required for the safety or protection of persons or the Work or property at the site or adjacent thereto, and except as otherwise indicated in the Contract Documents, all Work at the site shall be performed during regular working hours and CONTRACTOR will not permit overtime work or the performance of Work on Saturday, Sunday or any legal holiday without OWNER's written consent given after prior written notice to ENGINEER.

6.4. Unless otherwise specified in the General Requirements, CONTRACTOR shall furnish and assume full responsibility for all materials, equipment, labor, transportation, construction equipment and machinery, tools, appliances, fuel, power, light, heat, telephone, water, sanitary facilities, temporary facilities and all other facilities and incidentals necessary for the furnishing, performance, testing, start-up and completion of the Work.

6.5. All materials and equipment shall be of good quality and new, except as otherwise provided in the Contract Documents. All warranties and guarantees specifically called for by the Specifications shall expressly run to the benefit of OWNER. If required by ENGINEER, CONTRACTOR shall furnish satisfactory evidence (including reports of required tests) as to the kind and quality of materials and equipment. All materials and equipment shall be applied, installed, connected, erected, used, cleaned and conditioned in accordance with instructions of the applicable Supplier, except as otherwise provided in the Contract Documents.

Progress Schedule:

6.6. CONTRACTOR shall adhere to the progress schedule established in accordance with paragraph 2.9 as it may be adjusted from time to time as provided below:

6.6.1. CONTRACTOR shall submit to ENGINEER for acceptance (to the extent indicated in paragraph 2.9) proposed adjustments in the progress schedule that will not change the Contract Times (or Milestones). Such adjustments will conform generally to the progress schedule then in effect and additionally will comply with any provisions of the General Requirements applicable thereto.

6.6.2. Proposed adjustments in the progress schedule that will change the Contract Times (or Milestones) shall be submitted in accordance with the requirements of paragraph 12.1. Such adjustments may only be made by a Change Order or Written Amendment in accordance with Article 12.

6.7. *Substitutes and "Or-Equal" Items:*

6.7.1. Whenever an item of material or equipment is specified or described in the Contract Documents by using the name of a proprietary item or the name of a particular Supplier, the specification or description is intended to establish the type, function and quality required. Unless the specification or description contains or is followed by words reading that no like, equivalent or "or-equal" item or no substitution is permitted, other items of material or equipment or material or equipment of other Suppliers may be accepted by ENGINEER under the following circumstances:

6.7.1.1. *"Or-Equal":* If in ENGINEER's sole discretion an item of material or equipment proposed by CONTRACTOR is functionally equal to that named and sufficiently similar so that no change in related Work will be required, it may be considered by ENGINEER as an "or-equal" item, in which case review and approval of the proposed item may, in ENGINEER's sole discretion, be accomplished without compliance with some or all of the requirements for acceptance of proposed substitute items.

6.7.1.2. *Substitute Items:* If in ENGINEER's sole discretion an item of material or equipment proposed by CONTRACTOR does not qualify as an "or-equal" item under subparagraph 6.7.1.1, it will be considered a proposed substitute item. CONTRACTOR shall submit sufficient information as provided below to allow ENGINEER to determine that the item of material or equipment proposed is essentially equivalent to that named and an acceptable substitute therefor. The procedure for review by the ENGINEER will include the following as supplemented in the General Requirements and as ENGINEER may decide is appropriate under the circumstances. Requests for review of proposed substitute items of material or equipment will not be accepted by ENGINEER from anyone other than CONTRACTOR. If CONTRACTOR wishes to furnish or use a substitute item of material or equipment, CONTRACTOR shall first make written application to ENGINEER for acceptance thereof, certifying that the proposed substitute will perform adequately the functions and achieve the results called for by the general design, be similar in substance to that specified and be suited to the same use as that specified. The application will state the extent, if any, to which the evaluation and acceptance of the proposed substitute will prejudice CONTRACTOR's achievement of Substantial Completion on time, whether or not acceptance of the substitute for use in the Work will require a change in any of the Contract Documents (or in the provisions of any other direct contract with OWNER for work on the Project) to adapt the design to the proposed substitute and whether or not incorporation or use of the substitute in connection with the Work is subject to payment of any license fee or royalty. All variations of the proposed substitute from that specified will be identified in the application and available maintenance, repair and replacement service will be indicated. The application will also contain an itemized estimate of all costs or credits that will result directly or indirectly from acceptance of such substitute, including costs of redesign and claims of other contractors affected by the resulting change, all of which will be considered by ENGINEER in evaluating the proposed substitute. ENGINEER may require CONTRACTOR to furnish additional data about the proposed substitute.

6.7.1.3. *CONTRACTOR's Expense:* All data to be provided by CONTRACTOR in support of any proposed "or-equal" or substitute item will be at CONTRACTOR's expense.

6.7.2. *Substitute Construction Methods or Procedures:* If a specific means, method, technique, sequence or procedure of construction is shown or indicated in and expressly required by the Contract Documents, CONTRACTOR may furnish or utilize a substitute means, method, technique, sequence or procedure of construction acceptable to ENGINEER. CONTRACTOR shall submit sufficient information to allow ENGINEER, in ENGINEER's sole discretion, to determine that the substitute proposed is equivalent to that expressly called for by the Contract Documents. The procedure for review by ENGINEER will be similar to that provided in subparagraph 6.7.1.2.

6.7.3. *Engineer's Evaluation:* ENGINEER will be allowed a reasonable time within which to evaluate each proposal or submittal made pursuant to paragraphs 6.7.1.2 and 6.7.2. ENGINEER will be the sole judge of acceptability. No "or-equal" or substitute will be ordered, installed or utilized without ENGINEER's prior written acceptance which will be evidenced by either a Change Order or an approved Shop Drawing. OWNER may require CONTRACTOR to furnish at CONTRACTOR's expense a special performance guarantee or other surety with respect to any "or-equal" or substitute. ENGINEER will record time required by ENGINEER and ENGINEER's Consultants in evaluating substitutes proposed or submitted by CONTRACTOR pursuant to paragraphs 6.7.1.2 and 6.7.2 and in making changes in the Contract Documents (or in the provisions of any other direct contract with OWNER for work on the Project) occasioned thereby. Whether or not ENGINEER accepts a substitute item so proposed or submitted by CONTRACTOR, CONTRACTOR shall reimburse OWNER for the charges of ENGINEER and ENGINEER's Consultants for evaluating each such proposed substitute item.

Concerning Subcontractors, Suppliers and Others:

6.8.1. CONTRACTOR shall not employ any Subcontractor, Supplier or other person or organization (including those acceptable to OWNER and ENGINEER as indicated in paragraph 6.8.2), whether initially or as a substitute, against whom OWNER or ENGINEER may have reasonable objection. CONTRACTOR shall not be required to employ any Subcontractor, Supplier or other person or organization to furnish or perform any of the Work against whom CONTRACTOR has reasonable objection.

6.8.2. If the Supplementary Conditions require the identity of certain Subcontractors, Suppliers or other persons or organizations (including those who are to furnish the principal items of materials or equipment) to be submitted to OWNER in advance of the specified date prior to the Effective Date of the Agreement for acceptance by OWNER and ENGINEER, and if CONTRACTOR has submitted a list thereof in accordance with the Supplementary Conditions, OWNER's or ENGINEER's acceptance (either in writing or by failing to make written objection thereto by the date indicated for acceptance or objection in the bidding documents or the Contract Documents) of any such Subcontractor, Supplier or other person or organization so identified may be revoked on the basis of reasonable objection after due investigation, in which case CONTRACTOR shall submit an acceptable substitute, the Contract Price will be adjusted by the difference in the cost occasioned by such

substitution and an appropriate Change Order will be issued or Written Amendment signed. No acceptance by OWNER or ENGINEER of any such Subcontractor, Supplier or other person or organization shall constitute a waiver of any right of OWNER or ENGINEER to reject *defective* Work.

6.9.1. CONTRACTOR shall be fully responsible to OWNER and ENGINEER for all acts and omissions of the Subcontractors, Suppliers and other persons and organizations performing or furnishing any of the Work under a direct or indirect contract with CONTRACTOR just as CONTRACTOR is responsible for CONTRACTOR's own acts and omissions. Nothing in the Contract Documents shall create for the benefit of any such Subcontractor, Supplier or other person or organization any contractual relationship between OWNER or ENGINEER and any such Subcontractor, Supplier or other person or organization, nor shall it create any obligation on the part of OWNER or ENGINEER to pay or to see to the payment of any moneys due any such Subcontractor, Supplier or other person or organization except as may otherwise be required by Laws and Regulations.

6.9.2. CONTRACTOR shall be solely responsible for scheduling and coordinating the Work of Subcontractors, Suppliers and other persons and organizations performing or furnishing any of the Work under a direct or indirect contract with CONTRACTOR. CONTRACTOR shall require all Subcontractors, Suppliers and such other persons and organizations performing or furnishing any of the Work to communicate with the ENGINEER through CONTRACTOR.

6.10. The divisions and sections of the Specifications and the identifications of any Drawings shall not control CONTRACTOR in dividing the Work among Subcontractors or Suppliers or delineating the Work to be performed by any specific trade.

6.11. All Work performed for CONTRACTOR by a Subcontractor or Supplier will be pursuant to an appropriate agreement between CONTRACTOR and the Subcontractor or Supplier which specifically binds the Subcontractor or Supplier to the applicable terms and conditions of the Contract Documents for the benefit of OWNER and ENGINEER. Whenever any such agreement is with a Subcontractor or Supplier who is listed as an additional insured on the property insurance provided in paragraph 5.6 or 5.7, the agreement between the CONTRACTOR and the Subcontractor or Supplier will contain provisions whereby the Subcontractor or Supplier waives all rights against OWNER, CONTRACTOR, ENGINEER, ENGINEER's Consultants and all other additional insureds for all losses and damages caused by, arising out of or resulting from any of the perils covered by such policies and any other property insurance applicable to the Work. If the insurers on any such policies require separate waiver forms to be signed by any Subcontractor or Supplier, CONTRACTOR will obtain the same.

Patent Fees and Royalties:

6.12. CONTRACTOR shall pay all license fees and royalties and assume all costs incident to the use in the performance of the Work or the incorporation in the Work of any invention, design, process, product or device which is the subject of patent rights or copyrights held by others. If a particular invention, design, process, product or device is specified in the Contract Documents for use in the performance of the Work and if to the actual knowledge of OWNER or ENGINEER its use is subject to patent rights or copyrights calling for the payment of any license fee or royalty to others, the existence of such rights shall be disclosed by OWNER in the Contract Documents. To the fullest extent permitted by Laws and Regulations, CONTRACTOR shall indemnify and hold harmless OWNER, ENGINEER, ENGINEER's Consultants and the officers, directors, employees, agents and other consultants of each and any of them from and against all claims, costs, losses and damages arising out of or resulting from any infringement of patent rights or copyrights incident to the use in the performance of the Work or resulting from the incorporation in the Work of any invention, design, process, product or device not specified in the Contract Documents.

Permits:

6.13. Unless otherwise provided in the Supplementary Conditions, CONTRACTOR shall obtain and pay for all construction permits and licenses. OWNER shall assist CONTRACTOR, when necessary, in obtaining such permits and licenses. CONTRACTOR shall pay all governmental charges and inspection fees necessary for the prosecution of the Work, which are applicable at the time of opening of Bids, or, if there are no Bids, on the Effective Date of the Agreement. CONTRACTOR shall pay all charges of utility owners for connections to the Work, and OWNER shall pay all charges of such utility owners for capital costs related thereto such as plant investment fees.

Laws and Regulations:

6.14.1. CONTRACTOR shall give all notices and comply with all Laws and Regulations applicable to furnishing and performance of the Work. Except where otherwise expressly required by applicable Laws and Regulations, neither OWNER nor ENGINEER shall be responsible for monitoring CONTRACTOR's compliance with any Laws or Regulations.

6.14.2. If CONTRACTOR performs any Work knowing or having reason to know that it is contrary to Laws or Regulations, CONTRACTOR shall bear all claims, costs, losses and damages caused by, arising out of or resulting therefrom; however, it shall not be CONTRACTOR's primary responsibility to make certain that the Specifications and Drawings are in accordance with Laws and Regulations, but this shall not relieve CONTRACTOR of CONTRACTOR's obligations under paragraph 3.3.2.

Taxes:

6.15. CONTRACTOR shall pay all sales, consumer, use and other similar taxes required to be paid by CONTRACTOR in accordance with the Laws and Regulations of the place of

the Project which are applicable during the performance of the Work.

Use of Premises:

6.16. CONTRACTOR shall confine construction equipment, the storage of materials and equipment and the operations of workers to the site and land and areas identified in and permitted by the Contract Documents and other land and areas permitted by Laws and Regulations, rights-of-way, permits and easements, and shall not unreasonably encumber the premises with construction equipment or other materials or equipment. CONTRACTOR shall assume full responsibility for any damage to any such land or area, or to the owner or occupant thereof or of any adjacent land or areas, resulting from the performance of the Work. Should any claim be made by any such owner or occupant because of the performance of the Work, CONTRACTOR shall promptly settle with such other party by negotiation or otherwise resolve the claim by arbitration or other dispute resolution proceeding or at law. CONTRACTOR shall, to the fullest extent permitted by Laws and Regulations, indemnify and hold harmless OWNER, ENGINEER, ENGINEER's Consultant and anyone directly or indirectly employed by any of them from and against all claims, costs, losses and damages arising out of or resulting from any claim or action, legal or equitable, brought by any such owner or occupant against OWNER, ENGINEER or any other party indemnified hereunder to the extent caused by or based upon CONTRACTOR's performance of the Work.

6.17. During the progress of the Work, CONTRACTOR shall keep the premises free from accumulations of waste materials, rubbish and other debris resulting from the Work. At the completion of the Work CONTRACTOR shall remove all waste materials, rubbish and debris from and about the premises as well as all tools, appliances, construction equipment and machinery and surplus materials. CONTRACTOR shall leave the site clean and ready for occupancy by OWNER at Substantial Completion of the Work. CONTRACTOR shall restore to original condition all property not designated for alteration by the Contract Documents.

6.18. CONTRACTOR shall not load nor permit any part of any structure to be loaded in any manner that will endanger the structure, nor shall CONTRACTOR subject any part of the Work or adjacent property to stresses or pressures that will endanger it.

Record Documents:

6.19. CONTRACTOR shall maintain in a safe place at the site one record copy of all Drawings, Specifications, Addenda, Written Amendments, Change Orders, Work Change Directives, Field Orders and written interpretations and clarifications (issued pursuant to paragraph 9.4) in good order and annotated to show all changes made during construction. These record documents together with all approved Samples and a counterpart of all approved Shop Drawings will be available to ENGINEER for reference. Upon completion of the Work, these record documents, Samples and Shop Drawings will be delivered to ENGINEER for OWNER.

Safety and Protection:

6.20. CONTRACTOR shall be responsible for initiating, maintaining and supervising all safety precautions and programs in connection with the Work. CONTRACTOR shall take all necessary precautions for the safety of, and shall provide the necessary protection to prevent damage, injury or loss to:

6.20.1. all persons on the Work site or who may be affected by the Work;

6.20.2. all the Work and materials and equipment to be incorporated therein, whether in storage on or off the site; and

6.20.3. other property at the site or adjacent thereto, including trees, shrubs, lawns, walks, pavements, roadways, structures, utilities and Underground Facilities not designated for removal, relocation or replacement in the course of construction.

CONTRACTOR shall comply with all applicable Laws and Regulations of any public body having jurisdiction for safety of persons or property or to protect them from damage, injury or loss; and shall erect and maintain all necessary safeguards for such safety and protection. CONTRACTOR shall notify owners of adjacent property and of Underground Facilities and utility owners when prosecution of the Work may affect them, and shall cooperate with them in the protection, removal, relocation and replacement of their property. All damage, injury or loss to any property referred to in paragraph 6.20.2 or 6.20.3 caused, directly or indirectly, in whole or in part, by CONTRACTOR, any Subcontractor, Supplier or any other person or organization directly or indirectly employed by any of them to perform or furnish any of the Work or anyone for whose acts any of them may be liable, shall be remedied by CONTRACTOR (except damage or loss attributable to the fault of Drawings or Specifications or to the acts or omissions of OWNER or ENGINEER or ENGINEER's Consultant or anyone employed by any of them or anyone for whose acts any of them may be liable, and not attributable, directly or indirectly, in whole or in part, to the fault or negligence of CONTRACTOR or any Subcontractor, Supplier or other person or organization directly or indirectly employed by any of them). CONTRACTOR's duties and responsibilities for safety and for protection of the Work shall continue until such time as all the Work is completed and ENGINEER has issued a notice to OWNER and CONTRACTOR in accordance with paragraph 14.13 that the Work is acceptable (except as otherwise expressly provided in connection with Substantial Completion).

Safety Representative:

6.21. CONTRACTOR shall designate a qualified and experienced safety representative at the site whose duties and

responsibilities shall be the prevention of accidents and the maintaining and supervising of safety precautions and programs.

Hazard Communication Programs:

6.22. CONTRACTOR shall be responsible for coordinating any exchange of material safety data sheets or other hazard communication information required to be made available to or exchanged between or among employers at the site in accordance with Laws or Regulations.

Emergencies:

6.23. In emergencies affecting the safety or protection of persons or the Work or property at the site or adjacent thereto, CONTRACTOR, without special instruction or authorization from OWNER or ENGINEER, is obligated to act to prevent threatened damage, injury or loss. CONTRACTOR shall give ENGINEER prompt written notice if CONTRACTOR believes that any significant changes in the Work or variations from the Contract Documents have been caused thereby. If ENGINEER determines that a change in the Contract Documents is required because of the action taken by CONTRACTOR in response to such an emergency, a Work Change Directive or Change Order will be issued to document the consequences of such action.

6.24. *Shop Drawings and Samples:*

6.24.1. CONTRACTOR shall submit Shop Drawings to ENGINEER for review and approval in accordance with the accepted schedule of Shop Drawings and Sample submittals (see paragraph 2.9). All submittals will be identified as ENGINEER may require and in the number of copies specified in the General Requirements. The data shown on the Shop Drawings will be complete with respect to quantities, dimensions, specified performance and design criteria, materials and similar data to show ENGINEER the materials and equipment CONTRACTOR proposes to provide and to enable ENGINEER to review the information for the limited purposes required by paragraph 6.26.

6.24.2. CONTRACTOR shall also submit Samples to ENGINEER for review and approval in accordance with said accepted schedule of Shop Drawings and Sample submittals. Each Sample will be identified clearly as to material, Supplier, pertinent data such as catalog numbers and the use for which intended and otherwise as ENGINEER may require to enable ENGINEER to review the submittal for the limited purposes required by paragraph 6.26. The numbers of each Sample to be submitted will be as specified in the Specifications.

6.25. *Submittal Procedures:*

6.25.1. Before submitting each Shop Drawing or Sample, CONTRACTOR shall have determined and verified:

6.25.1.1. all field measurements, quantities, dimensions, specified performance criteria, installation requirements, materials, catalog numbers and similar information with respect thereto,

6.25.1.2. all materials with respect to intended use, fabrication, shipping, handling, storage, assembly and installation pertaining to the performance of the Work, and

6.25.1.2. all information relative to CONTRACTOR's sole responsibilities in respect of means, methods, techniques, sequences and procedures of construction and safety precautions and programs incident thereto.

CONTRACTOR shall also have reviewed and coordinated each Shop Drawing or Sample with other Shop Drawings and Samples and with the requirements of the Work and the Contract Documents.

6.25.2. Each submittal will bear a stamp or specific written indication that CONTRACTOR has satisfied CONTRACTOR's obligations under the Contact Documents with respect to CONTRACTOR'S review and approval of that submittal.

6.25.3. At the time of each submission, CONTRACTOR shall give ENGINEER specific written notice of such variations, if any, that the Shop Drawing or Sample submitted may have from the requirements of the Contract Documents, such notice to be in a written communication separate from the submittal; and, in addition, shall cause a specific notation to be made on each Shop Drawing and Sample submitted to ENGINEER for review and approval of each such variation.

6.26. ENGINEER will review and approve Shop Drawings and Samples in accordance with the schedule of Shop Drawings and Sample submittals accepted by ENGINEER as required by paragraph 2.9. ENGINEER's review and approval will be only to determine if the items covered by the submittals will, after installation or incorporation in the Work, conform to the information given in the Contract Documents and be compatible with the design concept of the completed Project as a functioning whole as indicated by the Contract Documents. ENGINEER's review and approval will not extend to means, methods, techniques, sequences or procedures of construction (except where a particular means, method, technique, sequence or procedure of construction is specifically and expressly called for by the Contract Documents) or to safety precautions or programs incident thereto. The review and approval of a separate item as such will not indicate approval of the assembly in which the item functions. CONTRACTOR shall make corrections required by ENGINEER, and shall return the required number of corrected copies of Shop Drawings and submit as required new Samples for review and approval. CONTRACTOR shall direct specific attention in writing to revisions other than the corrections called for by ENGINEER on previous submittals.

6.27. ENGINEER's review and approval of Shop Drawings or Samples shall not relieve CONTRACTOR from responsibility for any variation from the requirements of the Contract

Documents unless CONTRACTOR has in writing called ENGINEER's attention to each such variation at the time of submission as required by paragraph 6.25.3 and ENGINEER has given written approval of each such variation by specific written notation thereof incorporated in or accompanying the Shop Drawing or Sample approval; nor will any approval by ENGINEER relieve CONTRACTOR from responsibility for complying with the requirements of paragraph 6.25.1.

6.28. Where a Shop Drawing or Sample is required by the Contract Documents or the schedule of Shop Drawings and Sample submissions accepted by ENGINEER as required by paragraph 2.9, any related Work performed prior to ENGINEER's review and approval of the pertinent submittal will be at the sole expense and responsibility of CONTRACTOR.

Continuing the Work:

6.29. CONTRACTOR shall carry on the Work and adhere to the progress schedule during all disputes or disagreements with OWNER. No Work shall be delayed or postponed pending resolution of any disputes or disagreements, except as permitted by paragraph 15.5 or as OWNER and CONTRACTOR may otherwise agree in writing.

6.30. *CONTRACTOR's General Warranty and Guarantee:*

6.30.1. CONTRACTOR warrants and guarantees to OWNER, ENGINEER and ENGINEER's Consultants that all Work will be in accordance with the Contract Documents and will not be *defective*. CONTRACTOR's warranty and guarantee hereunder excludes defects or damage caused by:

6.30.1.1. abuse, modification or improper maintenance or operation by persons other than CONTRACTOR, Subcontractors or Suppliers; or

6.30.1.2. normal wear and tear under normal usage.

6.30.2. CONTRACTOR's obligation to perform and complete the Work in accordance with the Contract Documents shall be absolute. None of the following will constitute an acceptance of Work that is not in accordance with the Contract Documents or a release of CONTRACTOR's obligation to perform the Work in accordance with the Contract Documents:

6.30.2.1. observations by ENGINEER;

6.30.2.3. recommendation of any progress or final payment by ENGINEER;

6.30.2.3. the issuance of a certificate of Substantial Completion or any payment by OWNER to CONTRACTOR under the Contract Documents;

6.30.2.4. use or occupancy of the Work or any part thereof by OWNER;

6.30.2.5. any acceptance by OWNER or any failure to do so;

6.30.2.6. any review and approval of a Shop Drawing or Sample submittal or the issuance of a notice of acceptability by ENGINEER pursuant to paragraph 14.13;

6.30.2.7. any inspection, test or approval by others; or

6.30.2.8. any correction of *defective* Work by OWNER.

Indemnification:

6.31. To the fullest extent permitted by Laws and Regulations, CONTRACTOR shall indemnify and hold harmless OWNER, ENGINEER, ENGINEER's Consultants and the officers, directors, employees, agents and other consultants of each and any of them from and against all claims, costs, losses and damages (including but not limited to all fees and charges of engineers, architects, attorneys and other professionals and all court or arbitration or other dispute resolution costs) caused by, arising out of or resulting from the performance of the Work, provided that any such claim, cost, loss or damage: (i) is attributable to bodily injury, sickness, disease or death, or to injury to or destruction of tangible property (other than the Work itself), including the loss of use resulting therefrom, and (ii) is caused in whole or in part by any negligent act or omission of CONTRACTOR, any Subcontractor, any Supplier, any person or organization directly or indirectly employed by any of them to perform or furnish any of the Work or anyone for whose acts any of them may be liable, regardless of whether or not caused in part by any negligence or omission of a person or entity indemnified hereunder or whether liability is imposed upon such indemnified party by Laws and Regulations regardless of the negligence of any such person or entity.

6.32. In any and all claims against OWNER or ENGINEER or any of their respective consultants, agents, officers, directors or employees by any employee (or the survivor or personal representative of such employee) of CONTRACTOR, any Subcontractor, any Supplier, any person or organization directly or indirectly employed by any of them to perform or furnish any of the Work, or anyone for whose acts any of them may be liable, the indemnification obligation under paragraph 6.31 shall not be limited in any way by any limitation on the amount or type of damages, compensation or benefits payable by or for CONTRACTOR or any such Subcontractor, Supplier or other person or organization under workers' compensation acts, disability benefit acts or other employee benefit acts.

6.33. The indemnification obligations of CONTRACTOR under paragraph 6.31 shall not extend to the liability of ENGINEER and ENGINEER's Consultants, officers, directors, employees or agents caused by the professional negligence, errors or omissions of any of them.

Survival of Obligations:

6.34. All representations, indemnifications, warranties and guarantees made in, required by or given in accordance with

the Contract Documents, as well as all continuing obligations indicated in the Contract Documents, will survive final payment, completion and acceptance of the Work and termination or completion of the Agreement.

ARTICLE 7—OTHER WORK

Related Work at Site:

7.1. OWNER may perform other work related to the Project at the site by OWNER's own forces, or let other direct contracts therefor which shall contain General Conditions similar to these, or have other work performed by utility owners. If the fact that such other work is to be performed was not noted in the Contract Documents, then: (i) written notice thereof will be given to CONTRACTOR prior to starting any such other work, and (ii) CONTRACTOR may make a claim therefor as provided in Articles 11 and 12 if CONTRACTOR believes that such performance will involve additional expense to CONTRACTOR or requires additional time and the parties are unable to agree as to the amount or extent thereof.

7.2. CONTRACTOR shall afford each other contractor who is a party to such a direct contract and each utility owner (and OWNER, if OWNER is performing the additional work with OWNER's employees) proper and safe access to the site and a reasonable opportunity for the introduction and storage of materials and equipment and the execution of such other work and shall properly connect and coordinate the Work with theirs. Unless otherwise provided in the Contract Documents, CONTRACTOR shall do all cutting, fitting and patching of the Work that may be required to make its several parts come together properly and integrate with such other work. CONTRACTOR shall not endanger any work of others by cutting, excavating or otherwise altering their work and will only cut or alter their work with the written consent of ENGINEER and the others whose work will be affected. The duties and responsibilities of CONTRACTOR under this paragraph are for the benefit of such utility owners and other contractors to the extent that there are comparable provisions for the benefit of CONTRACTOR in said direct contracts between OWNER and such utility owners and other contractors.

7.3. If the proper execution or results of any part of CONTRACTOR's Work depends upon work performed by others under this Article 7, CONTRACTOR shall inspect such other work and promptly report to ENGINEER in writing any delays, defects or deficiencies in such other work that render it unavailable or unsuitable for the proper execution and results of CONTRACTOR's Work. CONTRACTOR's failure so to report will constitute an acceptance of such other work as fit and proper for integration with CONTRACTOR's Work except for latent or nonapparent defects and deficiencies in such other work.

Coordination:

7.4. If OWNER contracts with others for the performance of other work on the Project at the site, the following will be set forth in Supplementary Conditions:

7.4.1. the person, firm or corporation who will have authority and responsibility for coordination of the activities among the various prime contractors will be identified;

7.4.2. the specific matters to be covered by such authority and responsibility will be itemized; and

7.4.3. the extent of such authority and responsibilities will be provided.

Unless otherwise provided in the Supplementary Conditions, OWNER shall have sole authority and responsibility in respect of such coordination.

ARTICLE 8—OWNER'S RESPONSIBILITIES

8.1. Except as otherwise provided in these General Conditions, OWNER shall issue all communications to CONTRACTOR through ENGINEER.

8.2. In case of termination of the employment of ENGINEER, OWNER shall appoint an engineer against whom CONTRACTOR makes no reasonable objection, whose status under the Contract Documents shall be that of the former ENGINEER.

8.3. OWNER shall furnish the data required of OWNER under the Contract Documents promptly and shall make payments to CONTRACTOR promptly when they are due as provided in paragraphs 14.4 and 14.13.

8.4. OWNER's duties in respect of providing lands and easements and providing engineering surveys to establish reference points are set forth in paragraphs 4.1 and 4.4. Paragraph 4.2 refers to OWNER's identifying and making available to CONTRACTOR copies of reports of explorations and tests of subsurface conditions at the site and drawings of physical conditions in existing structures at or contiguous to the site that have been utilized by ENGINEER in preparing the Contract Documents.

8.5. OWNER's responsibilities in respect of purchasing and maintaining liability and property insurance are set forth in paragraphs 5.5 through 5.10.

8.6. OWNER is obligated to execute Change Orders as indicated in paragraph 10.4.

8.7. OWNER's responsibility in respect of certain inspections, tests and approvals is set forth in paragraph 13.4.

8.8. In connection with OWNER's right to stop Work or suspend Work, see paragraphs 13.10 and 15.1. Paragraph 15.2 deals with OWNER's right to terminate services of CONTRACTOR under certain circumstances.

8.9. The OWNER shall not supervise, direct or have control or authority over, nor be responsible for, CONTRACTOR's means, methods, techniques, sequences or procedures of construction or the safety precautions and programs incident thereto, or for any failure of CONTRACTOR to comply with Laws and Regulations applicable to the furnishing or performance of the Work. OWNER will not be responsible for CONTRACTOR's failure to perform or furnish the Work in accordance with the Contract Documents.

8.10. OWNER'S responsibility in respect of undisclosed Asbestos, PCBs, Petroleum, Hazardous Waste or Radioactive Materials uncovered or revealed at the site is set forth in paragraph 4.5.

8.11. If and to the extent OWNER has agreed to furnish CONTRACTOR reasonable evidence that financial arrangements have been made to satisfy OWNER's obligations under the Contract Documents, OWNER's responsibility in respect thereof will be as set forth in the Supplementary Conditions.

ARTICLE 9—ENGINEER'S STATUS DURING CONSTRUCTION

OWNER's Representative:

9.1. ENGINEER will be OWNER's representative during the construction period. The duties and responsibilities and the limitations of authority of ENGINEER as OWNER's representative during construction are set forth in the Contract Documents and shall not be extended without written consent of OWNER and ENGINEER.

Visits to Site:

9.2. ENGINEER will make visits to the site at intervals appropriate to the various stages of construction as ENGINEER deems necessary in order to observe as an experienced and qualified design professional the progress that has been made and the quality of the various aspects of CONTRACTOR's executed Work. Based on information obtained during such visits and observations, ENGINEER will endeavor for the benefit of OWNER to determine, in general, if the Work is proceeding in accordance with the Contract Documents. ENGINEER will not be required to make exhaustive or continuous on-site inspections to check the quality or quantity of the Work. ENGINEER's efforts will be directed toward providing for OWNER a greater degree of confidence that the completed Work will conform generally to the Contract Documents. On the basis of such visits and on-site observations, ENGINEER will keep OWNER informed of the progress of the Work and will endeavor to guard OWNER against *defective* Work. ENGINEER's visits and on-site observations are subject to all the limitations on ENGINEER's authority and responsibility set forth in paragraph 9.13, and particularly, but without limitation, during or as a result of ENGINEER's on-site visits or observations of CONTRACTOR's Work ENGINEER will not supervise, direct, control or have authority over or be responsible for CONTRACTOR's means, methods, techniques, sequences or procedures of construction, or the safety precautions and programs incident thereto, or for any failure of CONTRACTOR to comply with Laws and Regulations applicable to the furnishing or performance of the Work.

Project Representative:

9.3. If OWNER and ENGINEER agree, ENGINEER will furnish a Resident Project Representative to assist ENGINEER in providing more continuous observation of the Work. The responsibilities and authority and limitations thereon of any such Resident Project Representative and assistants will be as provided in paragraph 9.13 and in the Supplementary Conditions. If OWNER designates another representative or agent to represent OWNER at the site who is not ENGINEER's Consultant, agent or employee, the responsibilities and authority and limitations thereon of such other person will be as provided in the Supplementary Conditions.

Clarifications and Interpretations:

9.4. ENGINEER will issue with reasonable promptness such written clarifications or interpretations of the requirements of the Contract Documents (in the form of Drawings or otherwise) as ENGINEER may determine necessary, which shall be consistent with the intent of and reasonably inferable from Contract Documents. Such written clarifications and interpretations will be binding on OWNER and CONTRACTOR. If OWNER or CONTRACTOR believes that a written clarification or interpretation justifies an adjustment in the Contract Price or the Contract Times and the parties are unable to agree to the amount or extent thereof, if any, OWNER or CONTRACTOR may make a written claim therefor as provided in Article 11 or Article 12.

Authorized Variations in Work:

9.5. ENGINEER may authorize minor variations in the Work from the requirements of the Contract Documents which do not involve an adjustment in the Contract Price or the Contract Times and are compatible with the design concept of the completed Project as a functioning whole as indicated by the Contract Documents. These may be accomplished by a Field Order and will be binding on OWNER and also on CONTRACTOR who shall perform the Work involved promptly. If OWNER or CONTRACTOR believes that a Field Order justifies an adjustment in the Contract Price or the Contract Times and the parties are unable to agree as to the amount or extent thereof, OWNER or CONTRACTOR may make a written claim therefor as provided in Article 11 or 12.

Rejecting Defective Work:

9.6. ENGINEER will have authority to disapprove or reject Work which ENGINEER believes to be *defective*, or

that ENGINEER believes will not produce a completed Project that conforms to the Contract Documents or that will prejudice the integrity of the design concept of the completed Project as a functioning whole as indicated by the Contract Documents. ENGINEER will also have authority to require special inspection or testing of the Work as provided in paragraph 13.9, whether or not the Work is fabricated, installed or completed.

Shop Drawings, Change Orders and Payments:

9.7. In connection with ENGINEER's authority as to Shop Drawings and Samples, see paragraphs 6.24 through 6.28 inclusive.

9.8. In connection with ENGINEER's authority as to Change Orders, see Articles 10, 11, and 12.

9.9. In connection with ENGINEER's authority as to Applications for Payment, see Article 14.

Determinations for Unit Prices:

9.10. ENGINEER will determine the actual quantities and classifications of Unit Price Work performed by CONTRACTOR. ENGINEER will review with CONTRACTOR the ENGINEER's preliminary determinations on such matters before rendering a written decision thereon (by recommendation of an Application for Payment or otherwise). ENGINEER's written decision thereon will be final and binding upon OWNER and CONTRACTOR, unless, within ten days after the date of any such decision, either OWNER or CONTRACTOR delivers to the other and to ENGINEER written notice of intention to appeal from ENGINEER's decision and: (i) an appeal from ENGINEER's decision is taken within the time limits and in accordance with the procedures set forth in Exhibit GC-A, "Dispute Resolution Agreement," entered into between OWNER and CONTRACTOR pursuant to Article 16, or (ii) if no such Dispute Resolution Agreement has been entered into, a formal proceeding is instituted by the appealing party in a forum of competent jurisdiction to exercise such rights or remedies as the appealing party may have with respect to ENGINEER's decision, unless otherwise agreed in writing by OWNER and CONTRACTOR. Such appeal will not be subject to the procedures of paragraph 9.11.

Decisions on Disputes:

9.11. ENGINEER will be the initial interpreter of the requirements of the Contract Documents and judge of the acceptability of the Work thereunder. Claims, disputes and other matters relating to the acceptability of the Work or the interpretation of the requirements of the Contract Documents pertaining to the performance and furnishing of the Work and Claims under Articles 11 and 12 in respect of changes in the Contract Price or Contract Times will be referred initially to ENGINEER in writing with a request for a formal decision in accordance with this paragraph. Written notice of each such claim, dispute or other matter will be delivered by the claimant to ENGINEER and the other party to the Agreement promptly (but in no event later than thirty days) after the start of the occurrence or event giving rise thereto, and written supporting data will be submitted to ENGINEER and the other party within sixty days after the start of such occurrence or event unless ENGINEER allows an additional period of time for the submission of additional or more accurate data in support of such claim, dispute or other matter. The opposing party shall submit any response to ENGINEER and the claimant within thirty days after receipt of the claimant's last submittal (unless ENGINEER allows additional time). ENGINEER will render a formal decision in writing within thirty days after receipt of the opposing party's submittal, if any, in accordance with this paragraph. ENGINEER's written decision on such claim, dispute or other matter will be final and binding upon OWNER and CONTRACTOR unless: (i) an appeal from ENGINEER's decision is taken within the time limits and in accordance with the procedures set forth in EXHIBIT GC-A, "Dispute Resolution Agreement," entered into between OWNER and CONTRACTOR pursuant to Article 16, or (ii) if no such Dispute Resolution Agreement has been entered into, a written notice of intention to appeal from ENGINEER's written decision is delivered by OWNER or CONTRACTOR to the other and to ENGINEER within thirty days after the date of such decision and a formal proceeding is instituted by the appealing party in a forum of competent jurisdiction to exercise such rights or remedies as the appealing party may have with respect to such claim, dispute or other matter in accordance with applicable Laws and Regulations within sixty days of the date of such decision, unless otherwise agreed in writing by OWNER and CONTRACTOR.

9.12. When functioning as interpreter and judge under paragraphs 9.10 and 9.11, ENGINEER will not show partiality to OWNER or CONTRACTOR and will not be liable in connection with any interpretation or decision rendered in good faith in such capacity. The rendering of a decision by ENGINEER pursuant to paragraphs 9.10 or 9.11 with respect to any such claim, dispute or other matter (except any which have been waived by the making or acceptance of final payment as provided in paragraph 14.16) will be a condition precedent to any exercise by OWNER or CONTRACTOR of such rights or remedies as either may otherwise have under the Contract Documents or by Laws or Regulations in respect of any such claim, dispute or other matter pursuant to Article 16.

9.13. *Limitations on ENGINEER's Authority and Responsibilities:*

9.13.1. Neither ENGINEER's authority or responsibility under this Article 9 or under any other provision of the Contract Documents nor any decision made by ENGINEER in good faith either to exercise or not exercise such authority or responsibility or the undertaking, exercise or performance of any authority or responsibility by ENGINEER shall create, impose or give rise to any duty owed by ENGINEER to CONTRACTOR, any Subcontractor, any Supplier, any other person or organization, or to any surety for or employee or agent of any of them.

9.13.2. ENGINEER will not supervise, direct, control or have authority over or be responsible for CONTRACTOR's means, methods, techniques, sequences or procedures of construction, or the safety precautions and programs incident thereto, or for any failure of CONTRACTOR to comply with Laws and Regulations applicable to the furnishing or performance of the Work. ENGINEER will not be responsible for CONTRACTOR's failure to perform or furnish the Work in accordance with the Contract Documents.

9.13.3. ENGINEER will not be responsible for the acts or omissions of CONTRACTOR or of any Subcontractor, any Supplier, or of any other person or organization performing or furnishing any of the Work.

9.13.4. ENGINEER's review of the final Application for Payment and accompanying documentation and all maintenance and operating instructions, schedules, guarantees, bonds and certificates of inspection, tests and approvals and Other documentation required to be delivered by paragraph 14.12 will only be to determine generally that their content complies with the requirements of, and in the case of certificates of inspections, tests and approvals that the results certified indicate compliance with, the Contract Documents.

9.13.5. The limitations upon authority and responsibility set forth in this paragraph 9.13 shall also apply to ENGINEER's Consultants, Resident Project Representative and assistants.

ARTICLE 10—CHANGES IN THE WORK

10.1. Without invalidating the Agreement and without notice to any surety, OWNER may, at any time or from time to time, order additions, deletions or revisions in the Work. Such additions, deletions or revisions will be authorized by a Written Amendment, a Change Order, or a Work Change Directive. Upon receipt of any such document, CONTRACTOR shall promptly proceed with the Work involved which will be performed under the applicable conditions of the Contract Documents (except as otherwise specifically provided).

10.2. If OWNER and CONTRACTOR are unable to agree as to the extent, if any, of an adjustment in the Contract Price or an adjustment of the Contract Times that should be allowed as a result of a Work Change Directive, a claim may be made therefor as provided in Article 11 or Article 12.

10.3. CONTRACTOR shall not be entitled to an increase in the Contract Price or an extension of the Contract Times with respect to any Work performed that is not required by the Contract Documents as amended, modified and supplemented as provided in paragraphs 3.5 and 3.6 except in the case of an emergency as provided in paragraph 6.23 or in the case of uncovering Work as provided in paragraph 13.9.

10.4. OWNER and CONTRACTOR shall execute appropriate Change Orders recommended by ENGINEER (or Written Amendments) covering:

10.4.1. changes in the Work which are (i) ordered by OWNER pursuant to paragraph 10.1, (ii) required because of acceptance of *defective* Work under paragraph 13.13 or correcting *defective* Work under paragraph 13.14, or (iii) agreed to by the parties;

10.4.2. changes in the Contract Price or Contract Times which are agreed to by the parties; and

10.4.3. changes in the Contract Price or Contract Times which embody the substance of any written decision rendered by ENGINEER pursuant to paragraph 9.11;

provided that, in lieu of executing any such Change Order, an appeal may be taken from any such decision in accordance with the provisions of the Contract Documents and applicable Laws and Regulations, but during any such appeal, CONTRACTOR shall carry on the Work and adhere to the progress schedule as provided in paragraph 6.29.

10.5. If notice of any change affecting the general scope of the Work or the provisions of the Contract Documents (including, but not limited to, Contract Price or Contract Times) is required by the provisions of any Bond to be given to a surety, the giving of any such notice will be CONTRACTOR's responsibility, and the amount of each applicable Bond will be adjusted accordingly.

ARTICLE 11—CHANGE OF CONTRACT PRICE

11.1. The Contract Price constitutes the total compensation (subject to authorized adjustments) payable to CONTRACTOR for performing the Work. All duties, responsibilities and obligations assigned to or undertaken by CONTRACTOR shall be at CONTRACTOR's expense without change in the Contract Price.

11.2. The Contract Price may only be changed by a Change Order or by a Written Amendment. Any claim for an adjustment in the Contract Price shall be based on written notice delivered by the party making the claim to the other party and to ENGINEER promptly (but in no event later than thirty days) after the start of the occurrence or event giving rise to the claim and stating the general nature of the claim. Notice of the amount of the claim with supporting data shall be delivered within sixty days after the start of such occurrence or event (unless ENGINEER allows additional time for claimant to submit additional or more accurate data in support of the claim) and shall be accompanied by claimant's written statement that the adjustment claimed covers all known amounts to which the claimant is entitled as a result of said occurrence or event. All claims for adjustment in the Contract Price shall be determined by ENGINEER in accordance with paragraph 9.11 if OWNER and CONTRACTOR cannot otherwise agree on the amount involved. No claim for an adjustment in the Contract Price will

be valid if not submitted in accordance with this paragraph 11.2.

11.3. The value of any Work covered by a Change Order or of any claim for an adjustment in the Contract Price will be determined as follows:

11.3.1. where the Work involved is covered by unit prices contained in the Contract Documents, by application of such unit prices to the quantities of the items involved (subject to the provisions of paragraphs 11.9.1 through 11.9.3, inclusive);

11.3.2. where the Work involved is not covered by unit prices contained in the Contract Documents, by a mutually agreed lump sum (which may include an allowance for overhead and profit not necessarily in accordance with paragraph 11.6.2);

11.3.3. where the Work involved is not covered by unit prices contained in the Contract Documents and agreement to a lump sum is not reached under paragraph 11.3.2, on the basis of the Cost of the Work (determined as provided in paragraphs 11.4 and 11.5) plus a CONTRACTOR's fee for overhead and profit (determined as provided in paragraph 11.6).

Cost of the Work:

11.4. The term Cost of the Work means the sum of all costs necessarily incurred and paid by CONTRACTOR in the proper performance of the Work. Except as otherwise may be agreed to in writing by OWNER, such costs shall be in amounts no higher than those prevailing in the locality of the Project, shall include only the following items and shall not include any of the costs itemized in paragraph 11.5:

11.4.1. Payroll costs for employees in the direct employ of CONTRACTOR in the performance of the Work under schedules of job classifications agreed upon by OWNER and CONTRACTOR. Such employees shall include without limitation superintendents, foremen and other personnel employed full- time at the site. Payroll costs for employees not employed full time on the Work shall be apportioned on the basis of their time spent on the Work. Payroll costs shall include, but not be limited to, salaries and wages plus the cost of fringe benefits which shall include social security contributions, unemployment, excise and payroll taxes, workers' compensation, health and retirement benefits, bonuses, sick leave, vacation and holiday pay applicable thereto. The expenses of performing Work after regular working hours, on Saturday, Sunday or legal holidays, shall be included in the above to the extent authorized by OWNER.

11.4.2. Cost of all materials and equipment furnished and incorporated in the Work, including costs of transportation and storage thereof, and Suppliers' field services required in connection therewith. All cash discounts shall accrue to CONTRACTOR unless OWNER deposits funds with CONTRACTOR with which to make payments, in which case the cash discounts shall accrue to OWNER. All trade discounts, rebates and refunds and returns from sale of surplus materials and equipment shall accrue to OWNER, and CONTRACTOR shall make provisions so that they may be obtained.

11.4.3. Payments made by CONTRACTOR to the Subcontractors for Work performed or furnished by Subcontractors. If required by OWNER, CONTRACTOR shall obtain competitive bids from subcontractors acceptable to OWNER and CONTRACTOR and shall deliver such bids to OWNER who will then determine, with the advice of ENGINEER, which bids, if any, will be accepted. If any subcontract provides that the Subcontractor is to be paid on the basis of Cost of the Work Plus a fee, the Subcontractor's Cost of the Work and fee shall be determined in the same manner as CONTRACTOR's Cost of the Work and fee as provided in paragraphs 11.4, 11.5, 11.6 and 11.7. All subcontracts shall be subject to the other provisions of the Contract Documents insofar as applicable.

11.4.4. Costs of special consultants (including but not limited to engineers, architects, testing laboratories, surveyors, attorneys and accountants) employed for services specifically related to the Work.

11.4.5. Supplemental costs including the following:

11.4.5.1. The proportion of necessary transportation, travel and subsistence expenses of CONTRACTOR's employees incurred in discharge of duties connected with the Work.

11.4.5.2. Cost, including transportation and maintenance, of all materials, supplies, equipment, machinery, appliances, office and temporary facilities at the site and hand tools not owned by the workers, which are consumed in the performance of the Work, and cost less market value of such items used but not consumed which remain the property of CONTRACTOR.

11.4.5.3. Rentals of all construction equipment and machinery and the parts thereof whether rented from CONTRACTOR or others in accordance with rental agreements approved by OWNER with the advice of ENGINEER, and the costs of transportation, loading, unloading, installation, dismantling and removal thereof—all in accordance with the terms of said rental agreements. The rental of any such equipment, machinery or parts shall cease when the use thereof is no longer necessary for the Work.

11.4.5.4. Sales, consumer, use or similar taxes related to the Work, and for which CONTRACTOR is liable, imposed by Laws and Regulations.

11.4.5.5. Deposits lost for causes other than negligence of CONTRACTOR, any Subcontractor or anyone directly or indirectly employed by any of them or for whose acts any of them may be liable, and royalty payments and fees for permits and licenses.

11.4.5.6. Losses and damages (and related expenses) caused by damage to the Work, not compensated by insurance or otherwise, sustained by CONTRACTOR in connection with the performance and furnishing of the Work (except losses and damages within the deductible amounts of property insurance established by OWNER in accordance with paragraph 5.9), provided they have resulted from causes other than the negligence of CONTRACTOR, any Subcontractor, or anyone directly or indirectly employed by any of them or for whose acts any of them may be liable. Such losses shall include settlements made with the written consent and approval of OWNER. No such losses, damages and expenses shall be included in the Cost of the Work for the purpose of determining CONTRACTOR's fee. If, however, any such loss or damage requires reconstruction and CONTRACTOR is placed in charge thereof, CONTRACTOR shall be paid for services a fee proportionate to that stated in paragraph 11.6.2.

11.4.5.7. The cost of utilities, fuel and sanitary facilities at the site.

11.4.5.8. Minor expenses such as telegrams, long distance telephone calls, telephone service at the site, expressage and similar petty cash items in connection with the Work.

11.4.5.9. Cost of premiums for additional Bonds and insurance required because of changes in the Work.

11.5. The term Cost of the Work shall not include any of the following:

11.5.1. Payroll costs and other compensation of CONTRACTOR's officers, executives, principals (of partnership and sole proprietorships), general managers, engineers, architects, estimators, attorneys, auditors, accountants, purchasing and contracting agents, expediters, timekeepers, clerks and other personnel employed by CONTRACTOR whether at the site or in CONTRACTOR's principal or a branch office for general administration of the Work and not specifically included in the agreed upon schedule of job classifications referred to in paragraph 11.4.1 or specifically covered by paragraph 11.4.4—all of which are to be considered administrative costs covered by the CONTRACTOR's fee.

11.5.2. Expenses of CONTRACTOR's principal and branch offices other than CONTRACTOR's office at the site.

11.5.3. Any part of CONTRACTOR's capital expenses, including interest on CONTRACTOR's capital employed for the Work and charges against CONTRACTOR for delinquent payments.

11.5.4. Cost of premiums for all Bonds and for all insurance whether or not CONTRACTOR is required by the Contract Documents to purchase and maintain the same (except for the cost of premiums covered by subparagraph 11.4.5.9 above).

11.5.5. Costs due to the negligence of CONTRACTOR, any Subcontractor, or anyone directly or indirectly employed by any of them or for whose acts any of them may be liable, including but not limited to, the correction of *defective* Work, disposal of materials or equipment wrongly supplied and making good any damage to property.

Other overhead or general expense costs of any kind and the costs of any item not specifically and expressly included in paragraph 11.4.

11.6. The CONTRACTOR's fee allowed to CONTRACTOR for overhead and profit shall be determined as follows:

11.6.1. a mutually acceptable fixed fee; or

11.6.2. if a fixed fee is not agreed upon, then a fee based on the following percentages of the various portions of the Cost of the Work:

11.6.2.1. for costs incurred under paragraphs 11.4.1 and 11.4.2, the CONTRACTOR's fee shall be fifteen percent;

11.6.2.2. for costs incurred under paragraph 11.4.3, the CONTRACTOR's fee shall be five percent;

11.6.2.3. where one or more tiers of subcontracts are on the basis of Cost of the Work plus a fee and no fixed fee is agreed upon, the intent of paragraphs 11.4.1, 11.4.2, 11.4.3 and 11.6.2 is that the Subcontractor who actually performs or furnishes the Work, at whatever tier, will be paid a fee of fifteen percent of the costs incurred by such Subcontractor under paragraphs 11.4.1 and 11.4.2 and that any higher tier Subcontractor and CONTRACTOR will each be paid a fee of five percent of the amount paid to the next lower tier Subcontractor;

11.6.2.4. no fee shall be payable on the basis of costs itemized under paragraphs 11.4.4, 11.4.5 and 11.5;

11.6.2.5. the amount of credit to be allowed by CONTRACTOR to OWNER for any change which results in a net decrease in cost will be the amount of the actual net decrease in cost plus a deduction in CONTRACTOR's fee by an amount equal to five percent of such net decrease; and

11.6.2.5. when both additions and credits are involved in any one change, the adjustment in CONTRACTOR's fee shall be computed on the basis of the net change in accordance with paragraphs 11.6.2.1 through 11.6.2.5, inclusive.

11.7. Whenever the cost of any Work is to be determined pursuant to paragraphs 11.4 and 11.5, CONTRACTOR will establish and maintain records thereof in accordance with generally accepted accounting practices and submit in form acceptable to ENGINEER an itemized cost breakdown together with supporting data.

Cash Allowances:

11.8. It is understood that CONTRACTOR has included in the Contract Price all allowances so named in the Contract Documents and shall cause the Work so covered to be furnished and performed for such sums as may be acceptable to OWNER and ENGINEER. CONTRACTOR agrees that:

11.8.1. the allowances include the cost to CONTRACTOR (less any applicable trade discounts) of materials and equipment required by the allowances to be delivered at the site, and all applicable taxes; and

11.8.2. CONTRACTOR's costs for unloading and handling on the site, labor, installation costs, overhead, profit and other expenses contemplated for the allowances have been included in the Contract Price and not in the allowances and no demand for additional payment on account of any of the foregoing will be valid.

Prior to final payment, an appropriate Change Order will be issued as recommended by ENGINEER to reflect actual amounts due CONTRACTOR on account of Work covered by allowances, and the Contract Price shall be correspondingly adjusted.

11.9. *Unit Price Work:*

11.9.1. Where the Contract Documents provide that all or part of the Work is to be Unit Price Work, initially the Contract Price will be deemed to include for all Unit Price Work an amount equal to the sum of the established unit price for each separately identified item of Unit Price Work times the estimated quantity of each item as indicated in the Agreement. The estimated quantities of items of Unit Price Work are not guaranteed and are solely for the purpose of comparison of Bids and determining an initial Contract Price. Determinations of the actual quantities and classifications of Unit Price Work performed by CONTRACTOR will be made by ENGINEER in accordance with paragraph 9.10.

11.9.2. Each unit price will be deemed to include an amount considered by CONTRACTOR to be adequate to cover CONTRACTOR's overhead and profit for each separately identified item.

11.9.3. OWNER or CONTRACTOR may make a claim for an adjustment in the Contract Price in accordance with Article 11 if:

11.9.3.1. the quantity of any item of Unit Price Work performed by CONTRACTOR differs materially and significantly from the estimated quantity of such item indicated in the Agreement; and

11.9.3.2. there is no corresponding adjustment with respect to any other item of Work; and

11.9.3.3. if CONTRACTOR believes that CONTRACTOR is entitled to an increase in Contract Price as a result of having incurred additional expense or OWNER believes that OWNER is entitled to a decrease in Contract Price and the parties are unable to agree as to the amount of any such increase or decrease.

ARTICLE 12—CHANGE OF CONTRACT TIMES

12.1. The Contract Times (or Milestones) may only be changed by a Change Order or a Written Amendment. Any claim for an adjustment of the Contract Times (or Milestones) shall be based on written notice delivered by the party making the claim to the other party and to ENGINEER promptly (but in no event later than thirty days) after the occurrence of the event giving rise to the claim and stating the general nature of the claim. Notice of the extent of the claim with supporting data shall be delivered within sixty days after such occurrence (unless ENGINEER allows an additional period of time to ascertain more accurate data in support of the claim) and shall be accompanied by the claimant's written statement that the adjustment claimed is the entire adjustment to which the claimant has reason to believe it is entitled as a result of the occurrence of said event. All claims for adjustment in the Contract Times (or Milestones) shall be determined by ENGINEER in accordance with paragraph 9.11 if OWNER and CONTRACTOR cannot otherwise agree. No claim for an adjustment in the Contract Times (or Milestones) will be valid if not submitted in accordance with the requirements of this paragraph 12.1.

12.2. All time limits stated in the Contract Documents are of the essence of the Agreement.

12.3. Where CONTRACTOR is prevented from completing any part of the Work within the Contract Times (or Milestones) due to delay beyond the control of CONTRACTOR, the Contract Times (or Milestones) will be extended in an amount equal to the time lost due to such delay if a claim is made therefor as provided in paragraph 12.1. Delays beyond the control of CONTRACTOR shall include, but not be limited to, acts or neglect by OWNER, acts or neglect of utility owners or other contractors performing other work as contemplated by Article 7, fires, floods, epidemics, abnormal weather conditions or acts of God. Delays attributable to and within the control of a Subcontractor or Supplier shall be deemed to be delays within the control of CONTRACTOR.

12.4. Where CONTRACTOR is prevented from completing any part of the Work within the Contract Times (or Milestones) due to delay beyond the control of both OWNER and CONTRACTOR, an extension of the Contract Times (or Milestones) in an amount equal to the time lost due to such delay shall be CONTRACTOR's sole and exclusive remedy for such delay. In no event shall OWNER be liable to CONTRACTOR, any Subcontractor, any Supplier, any other person or organization, or to any surety for or employee or agent of any of them, for damages arising out of or resulting from (i) delays caused by or within the control of CONTRACTOR, or (ii)

delays beyond the control of both parties including but not limited to fires, floods, epidemics, abnormal weather conditions, acts of God or acts or neglect by utility owners or other contractors performing other work as contemplated by Article 7.

ARTICLE 13—TESTS AND INSPECTIONS; CORRECTION, REMOVAL OR ACCEPTANCE OF *DEFECTIVE* WORK

13.1. *Notice of Defects:* Prompt notice of all *defective* Work of which OWNER or ENGINEER have actual knowledge will be given to CONTRACTOR. All *defective* Work may be rejected, corrected or accepted as provided in this Article 13.

Access to Work:

13.2. OWNER, ENGINEER, ENGINEER's Consultants, other representatives and personnel of OWNER, independent testing laboratories and governmental agencies with jurisdictional interests will have access to the Work at reasonable times for their observation, inspecting and testing. CONTRACTOR shall provide them proper and safe conditions for such access and advise them of CONTRACTOR's site safety procedures and programs so that they may comply therewith as applicable.

Tests and Inspections:

13.3. CONTRACTOR shall give ENGINEER timely notice of readiness of the Work for all required inspections, tests or approvals, and shall cooperate with inspection and testing personnel to facilitate required inspections or tests.

13.4. OWNER shall employ and pay for the services of an independent testing laboratory to perform all inspections, tests, or approvals required by the Contract Documents except:

13.4.1. for inspections, tests or approvals covered by paragraph 13.5 below;

13.4.2. that costs incurred in connection with tests or inspections conducted pursuant to paragraph 13.9 below shall be paid as provided in said paragraph 13.9; and

13.4.3. as otherwise specifically provided in the Contract Documents.

13.5. If Laws or Regulations of any public body having jurisdiction require any Work (or part thereof) specifically to be inspected, tested or approved by an employee or other representative of such public body, CONTRACTOR shall assume full responsibility for arranging and obtaining such inspections, tests or approvals, pay all costs in connection therewith, and furnish ENGINEER the required certificates of inspection, or approval. CONTRACTOR shall also be responsible for arranging and obtaining and shall pay all costs in connection with any inspections, tests or approvals required for OWNER's and ENGINEER's acceptance of materials or equipment to be incorporated in the Work, or of materials, mix designs, or equipment submitted for approval prior to CONTRACTOR's purchase thereof for incorporation in the Work.

13.6. If any Work (or the work of others) that is to be inspected, tested or approved is covered by CONTRACTOR without written concurrence of ENGINEER, it must, if requested by ENGINEER, be uncovered for observation.

13.7. Uncovering Work as provided in paragraph 13.6 shall be at CONTRACTOR's expense unless CONTRACTOR has given ENGINEER timely notice of CONTRACTOR's intention to cover the same and ENGINEER has not acted with reasonable promptness in response to such notice.

Uncovering Work:

13.8. If any Work is covered contrary to the written request of ENGINEER, it must, if requested by ENGINEER, be uncovered for ENGINEER's observation and replaced at CONTRACTOR's expense.

13.9. If ENGINEER considers it necessary or advisable that covered Work be observed by ENGINEER or inspected or tested by others, CONTRACTOR, at ENGINEER's request, shall uncover, expose or otherwise make available for observation, inspection or testing as ENGINEER may require, that portion of the Work in question, furnishing all necessary labor, material and equipment. If it is found that such Work is *defective*, CONTRACTOR shall pay all claims, costs, losses and damages caused by, arising out of or resulting from such uncovering, exposure, observation, inspection and testing and of satisfactory replacement or reconstruction (including but not limited to all costs of repair or replacement of work of others); and OWNER shall be entitled to an appropriate decrease in the Contract Price, and, if the parties are unable to agree as to the amount thereof, may make a claim therefor as provided in Article 11. If, however, such Work is not found to be *defective*, CONTRACTOR shall be allowed an increase in the Contract Price or an extension of the Contract Times (or Milestones), or both, directly attributable to such uncovering, exposure, observation, inspection, testing, replacement and reconstruction; and, if the parties are unable to agree as to the amount or extent thereof, CONTRACTOR may make a claim therefor as provided in Articles 11 and 12.

OWNER May Stop the Work:

13.10. If the Work is *defective*, or CONTRACTOR fails to supply sufficient skilled workers or suitable materials or equipment, or fails to furnish or perform the Work in such a way that the completed Work will conform to the Contract Documents, OWNER may order CONTRACTOR to stop the Work, or any portion thereof, until the cause for such order has been eliminated; however, this right of OWNER to stop the Work

shall not give rise to any duty on the part of OWNER to exercise this right for the benefit of CONTRACTOR or any surety or other party.

Correction or Removal of Defective Work:

13.11. If required by ENGINEER, CONTRACTOR shall promptly, as directed, either correct all *defective* Work, whether or not fabricated, installed or completed, or, if the Work has been rejected by ENGINEER, remove it from the site and replace it with Work that is not *defective*. CONTRACTOR shall pay all claims, costs, losses and damages caused by or resulting from such correction or removal (including but not limited to all costs of repair or replacement of work of others).

13.12. *Correction Period:*

13.12.1. If within one year after the date of Substantial Completion or such longer period of time as may be prescribed by Laws or Regulations or by the terms of any applicable special guarantee required by the Contract Documents or by any specific provision of the Contract Documents, any Work is found to be *defective*, CONTRACTOR shall promptly, without cost to OWNER and in accordance with OWNER's written instructions: (i) correct such *defective* Work, or, if it has been rejected by OWNER, remove it from the site and replace it with Work that is not *defective*, and (ii) satisfactorily correct or remove and replace any damage to other Work or the work of others resulting therefrom. If CONTRACTOR does not promptly comply with the terms of such instructions, or in an emergency where delay would cause serious risk of loss or damage, OWNER may have the *defective* Work corrected or the rejected Work removed and replaced, and all claims, costs, losses and damages caused by or resulting from such removal and replacement (including but not limited to all costs of repair or replacement of work of others) will be paid by CONTRACTOR.

13.12.2. In special circumstances where a particular item of equipment is placed in continuous service before Substantial Completion of all the Work, the correction period for that item may start to run from an earlier date if so provided in the Specifications or by Written Amendment.

13.12.3. Where *defective* Work (and damage to other Work resulting therefrom) has been corrected, removed or replaced under this paragraph 13.12, the correction period hereunder with respect to such Work will be extended for an additional period of one year after such correction or removal and replacement has been satisfactorily completed.

Acceptance of Defective Work:

13.13. If, instead of requiring correction or removal and replacement of *defective* Work, OWNER (and, prior to ENGINEER's recommendation of final payment, also ENGINEER) prefers to accept it, OWNER may do so. CONTRACTOR shall pay all claims, costs, losses and damages attributable to OWNER's evaluation of and determination to accept such *defective* Work (such costs to be approved by ENGINEER as to reasonableness). If any such acceptance occurs prior to ENGINEER's recommendation of final payment, a Change Order will be issued incorporating the necessary revisions in the Contract Documents with respect to the Work; and OWNER shall be entitled to an appropriate decrease in the Contract Price, and, if the parties are unable to agree as to the amount thereof, OWNER may make a claim therefor as provided in Article 11. If the acceptance occurs after such recommendation, an appropriate amount will be paid by CONTRACTOR to OWNER.

OWNER May Correct Defective Work:

13.14. If CONTRACTOR fails within a reasonable time after written notice from ENGINEER to correct *defective* Work or to remove and replace rejected Work as required by ENGINEER in accordance with paragraph 13.11, or if CONTRACTOR fails to perform the Work in accordance with the Contract Documents, or if CONTRACTOR fails to comply with any other provision of the Contract Documents, OWNER may, after seven days' written notice to CONTRACTOR, correct and remedy any such deficiency. In exercising the rights and remedies under this paragraph OWNER shall proceed expeditiously. In connection with such corrective and remedial action, OWNER may exclude CONTRACTOR from all or part of the site, take possession of all or part of the Work, and suspend CONTRACTOR's services related thereto, take possession of CONTRACTOR's tools, appliances, construction equipment and machinery at the site and incorporate in the Work all materials and equipment stored at the site or for which OWNER has paid CONTRACTOR but which are stored elsewhere. CONTRACTOR shall allow OWNER, OWNER's representatives, agents and employees, OWNER's other contractors and ENGINEER and ENGINEER's Consultants access to the site to enable OWNER to exercise the rights and remedies under this paragraph. All claims, costs, losses and damages incurred or sustained by OWNER in exercising such rights and remedies will be charged against CONTRACTOR and a Change Order will be issued incorporating the necessary revisions in the Contract Documents with respect to the Work; and OWNER shall be entitled to an appropriate decrease in the Contract Price, and, if the parties are unable to agree as to the amount thereof, OWNER may make a claim therefor as provided in Article 11. Such claims, costs, losses and damages will include but not be limited to all costs of repair or replacement of work of others destroyed or damaged by correction, removal or replacement of CONTRACTOR's *defective* Work. CONTRACTOR shall not be allowed an extension of the Contract Times (or Milestones) because of any delay in the performance of the Work attributable to the exercise by OWNER of OWNER's rights and remedies hereunder.

ARTICLE 14—PAYMENTS TO CONTRACTOR AND COMPLETION

Schedule of Values:

14.1. The schedule of values established as provided in paragraph 2.9 will serve as the basis for progress payments and

will be incorporated into a form of Application for Payment acceptable to ENGINEER. Progress payments on account of Unit Price Work will be based on the number of units completed.

Application for Progress Payment:

14.2. At least twenty days before the date established for each progress payment (but not more often than once a month), CONTRACTOR shall submit to ENGINEER for review an Application for Payment filled out and signed by CONTRACTOR covering the Work completed as of the date of the Application and accompanied by such supporting documentation as is required by the Contract Documents. If payment is requested on the basis of materials and equipment not incorporated in the Work but delivered and suitably stored at the site or at another location agreed to in writing, the Application for Payment shall also be accompanied by a bill of sale, invoice or other documentation warranting that OWNER has received the materials and equipment free and clear of all Liens and evidence that the materials and equipment are covered by appropriate property insurance and other arrangements to protect OWNER's interest therein, all of which will be satisfactory to OWNER. The amount of retainage with respect to progress payments will be as stipulated in the Agreement.

CONTRACTOR's Warranty of Title:

14.3. CONTRACTOR warrants and guarantees that title to all Work, materials and equipment covered by any Application for Payment, whether incorporated in the Project or not, will pass to OWNER no later than the time of payment free and clear of all Liens.

Review of Applications for Progress Payment:

14.4. ENGINEER will, within ten days after receipt of each Application for Payment, either indicate in writing a recommendation of payment and present the Application to OWNER, or return the Application to CONTRACTOR indicating in writing ENGINEER's reasons for refusing to recommend payment. In the latter case, CONTRACTOR may make the necessary corrections and resubmit the Application. Ten days after presentation of the Application for Payment to OWNER with ENGINEER's recommendation, the amount recommended will (subject to the provisions of the last sentence of paragraph 14.7) become due and when due will be paid by OWNER to CONTRACTOR.

14.5. ENGINEER's recommendation of any payment requested in an Application for Payment will constitute a representation by ENGINEER to OWNER, based on ENGINEER's on-site observations of the executed Work as an experienced and qualified design professional and on ENGINEER's review of the Application for Payment and the accompanying data and schedules, that to the best of ENGINEER's knowledge, information and belief:

14.5.1. the Work has progressed to the point indicated,

14.5.2. the quality of the Work is generally in accordance with the Contract Documents (subject to an evaluation of the Work as a functioning whole prior to or upon Substantial Completion, to the results of any subsequent tests called for in the Contract Documents, to a final determination of quantities and classifications for Unit Price Work under paragraph 9.10, and to any other qualifications stated in the recommendation), and

14.5.3. the conditions precedent to CONTRACTOR's being entitled to such payment appear to have been fulfilled in so far as it is ENGINEER's responsibility to observe the Work.

However, by recommending any such payment ENGINEER will not thereby be deemed to have represented that: (i) exhaustive or continuous on-site inspections have been made to check the quality or the quantity of the Work beyond the responsibilities specifically assigned to ENGINEER in the Contract Documents or (ii) that there may not be other matters or issues between the parties that might entitle CONTRACTOR to be paid additionally by OWNER or entitle OWNER to withhold payment to CONTRACTOR.

14.6. ENGINEER's recommendation of any payment, including final payment, shall not mean that ENGINEER is responsible for CONTRACTOR's means, methods, techniques, sequences or procedures of construction, or the safety precautions and programs incident thereto, or for any failure of CONTRACTOR to comply with Laws and Regulations applicable to the furnishing or performance of Work, or for any failure of CONTRACTOR to perform or furnish Work in accordance with the Contract Documents.

14.7. ENGINEER may refuse to recommend the whole or any part of any payment if, in ENGINEER's opinion, it would be incorrect to make the representations to OWNER referred to in paragraph 14.5. ENGINEER may also refuse to recommend any such payment, or, because of subsequently discovered evidence or the results of subsequent inspections or tests, nullify any such payment previously recommended, to such extent as may be necessary in ENGINEER's opinion to protect OWNER from loss because:

14.7.1. the Work is *defective*, or completed Work has been damaged requiring correction or replacement,

14.7.2. the Contract Price has been reduced by Written Amendment or Change Order,

14.7.3. OWNER has been required to correct *defective* Work or complete Work in accordance with paragraph 13.14, or

14.7.4. ENGINEER has actual knowledge of the occurrence of any of the events enumerated in paragraphs 15.2.1 through 15.2.4 inclusive.

OWNER may refuse to make payment of the full amount recommended by ENGINEER because:

14.7.5. claims have been made against OWNER on account of CONTRACTORs performance or furnishing of the Work.

14.7.6. Liens have been filed in connection with the Work, except where CONTRACTOR has delivered a specific Bond satisfactory to OWNER to secure the satisfaction and discharge of such Liens,

14.7.7. there are other items entitling OWNER to a set-off against the amount recommended, or

14.7.8. OWNER has actual knowledge of the occurrence of any of the events enumerated in paragraphs 14.7.1 through 14.7.3 or paragraphs 15.2.1 through 15.2.4 inclusive;

but OWNER must give CONTRACTOR immediate written notice (with a copy to ENGINEER) stating the reasons for such action and promptly pay CONTRACTOR the amount so withheld, or any adjustment thereto agreed to by OWNER and CONTRACTOR, when CONTRACTOR corrects to OWNER's satisfaction the reasons for such action.

Substantial Completion:

14.8. When CONTRACTOR considers the entire Work ready for its intended use CONTRACTOR shall notify OWNER and ENGINEER in writing that the entire Work is substantially complete (except for items specifically listed by CONTRACTOR as incomplete) and request that ENGINEER issue a certificate of Substantial Completion. Within a reasonable time thereafter, OWNER, CONTRACTOR and ENGINEER shall make an inspection of the Work to determine the status of completion. If ENGINEER does not consider the Work substantially complete, ENGINEER will notify CONTRACTOR in writing giving the reasons therefor. If ENGINEER considers the Work substantially complete, ENGINEER will prepare and deliver to OWNER a tentative certificate of Substantial Completion which shall fix the date of Substantial Completion. There shall be attached to the certificate a tentative list of items to be completed or corrected before final payment. OWNER shall have seven days after receipt of the tentative certificate during which to make written objection to ENGINEER as to any provisions of the certificate or attached list. If, after considering such objections, ENGINEER concludes that the Work is not substantially complete, ENGINEER will within fourteen days after submission of the tentative certificate to OWNER notify CONTRACTOR in writing, stating the reasons therefor. If, after consideration of OWNER's objections, ENGINEER considers the Work substantially complete, ENGINEER will within said fourteen days execute and deliver to OWNER and CONTRACTOR a definitive certificate of Substantial Completion (with a revised tentative list of items to be completed or corrected) reflecting such changes from the tentative certificate as ENGINEER believes justified after consideration of any objections from OWNER. At the time of delivery of the tentative certificate of Substantial Completion ENGINEER will deliver to OWNER and CONTRACTOR a written recommendation as to division of responsibilities pending final payment between OWNER and CONTRACTOR with respect to security, operation, safety, maintenance, heat, utilities, insurance and warranties and guarantees. Unless OWNER and CONTRACTOR agree otherwise in writing and so inform ENGINEER in writing prior to ENGINEER's issuing the definitive certificate of Substantial Completion, ENGINEER's aforesaid recommendation will be binding on OWNER and CONTRACTOR until final payment.

14.9. OWNER shall have the right to exclude CONTRACTOR from the Work after the date of Substantial Completion, but OWNER shall allow CONTRACTOR reasonable access to complete or correct items on the tentative list.

Partial Utilization:

14.10. Use by OWNER at OWNER's option of any substantially completed part of the Work which: (i) has specifically been identified in the Contract Documents, or (ii) OWNER, ENGINEER and CONTRACTOR agree constitutes a separately functioning and usable part of the Work that can be used by OWNER for its intended purpose without significant interference with CONTRACTOR's performance of the remainder of the Work, may be accomplished prior to Substantial Completion of all the Work subject to the following:

14.10.1. OWNER at any time may request CONTRACTOR in writing to permit OWNER to use any such part of the Work which OWNER believes to be ready for its intended use and substantially complete. If CONTRACTOR agrees that such part of the Work is substantially complete, CONTRACTOR will certify to OWNER and ENGINEER that such part of the Work is substantially complete and request ENGINEER to issue a certificate of Substantial Completion for that part of the Work. CONTRACTOR at any time may notify OWNER and ENGINEER in writing that CONTRACTOR considers any such part of the Work ready for its intended use and substantially complete and request ENGINEER to issue a certificate of Substantial Completion for that part of the Work. Within a reasonable time after either such request, OWNER, CONTRACTOR and ENGINEER shall make an inspection of that part of the Work to determine its status of completion. If ENGINEER does not consider that part of the Work to be substantially complete, ENGINEER will notify OWNER and CONTRACTOR in writing giving the reasons therefor. If ENGINEER considers that part of the Work to be substantially complete, the provisions of paragraphs 14.8 and 14.9 will apply with respect to certification of Substantial Completion of that part of the Work and the division of responsibility in respect thereof and access thereto.

14.10.2. No occupancy or separate operation of part of the Work will be accomplished prior to compliance with the requirements of paragraph 5.15 in respect of property insurance.

Final Inspection:

14.11. Upon written notice from CONTRACTOR that the entire Work or an agreed portion thereof is complete, ENGINEER will make a final inspection with OWNER and CONTRACTOR and will notify CONTRACTOR in writing of all

particulars in which this inspection reveals that the Work is incomplete or *defective*. CONTRACTOR shall immediately take such measures as are necessary to complete such Work or remedy such deficiencies.

Final Application for Payment:

14.12. After CONTRACTOR has completed all such corrections to the satisfaction of ENGINEER and delivered in accordance with the Contract Documents all maintenance and operating instructions, schedules, guarantees, Bonds, certificates or other evidence of insurance required by paragraph 5.4, certificates of inspection, marked-up record documents (as provided in paragraph 6.19) and other documents, CONTRACTOR may make application for final payment following the procedure for progress payments. The final Application for Payment shall be accompanied (except as previously delivered) by: (i) all documentation called for in the Contract Documents, including but not limited to the evidence of insurance required by subparagraph 5.4.13, (ii) consent of the surety, if any, to final payment, and (iii) complete and legally effective releases or waivers (satisfactory to OWNER) of all Liens arising out of or filed in connection with the Work. In lieu of such releases or waivers of Liens and as approved by OWNER, CONTRACTOR may furnish receipts or releases in full and an affidavit of CONTRACTOR that: (i) the releases and receipts include all labor, services, material and equipment for which a Lien could be filed, and (ii) all payrolls, material and equipment bills and other indebtedness connected with the Work for which OWNER or OWNER's property might in any way be responsible have been paid or otherwise satisfied. If any Subcontractor or Supplier fails to furnish such a release or receipt in full, CONTRACTOR may furnish a Bond or other collateral satisfactory to OWNER to indemnify OWNER against any Lien.

Final Payment and Acceptance:

14.13. If, on the basis of ENGINEER's observation of the Work during construction and final inspection, and ENGINEER's review of the final Application for Payment and accompanying documentation as required by the Contract Documents, ENGINEER is satisfied that the Work has been completed and CONTRACTOR's other obligations under the Contract Documents have been fulfilled, ENGINEER will, within ten days after receipt of the final Application for Payment, indicate in writing ENGINEER's recommendation of payment and present the Application to OWNER for payment. At the same time ENGINEER will also give written notice to OWNER and CONTRACTOR that the Work is acceptable subject to the provisions of paragraph 14.15. Otherwise, ENGINEER will return the Application to CONTRACTOR, indicating in writing the reasons for refusing to recommend final payment, in which case CONTRACTOR shall make the necessary corrections and resubmit the Application. Thirty days after the presentation to OWNER of the Application and accompanying documentation, in appropriate form and substance and with ENGINEER's recommendation and notice of acceptability, the amount recommended by ENGINEER will become due and will be paid by OWNER to CONTRACTOR.

14.14. If, through no fault of CONTRACTOR, final completion of the Work is significantly delayed and if ENGINEER so confirms, OWNER shall, upon receipt of CONTRACTOR's final Application for Payment and recommendation of ENGINEER, and without terminating the Agreement, make payment of the balance due for that portion of the Work fully completed and accepted. If the remaining balance to be held by OWNER for Work not fully completed or corrected is less than the retainage stipulated in the Agreement, and if Bonds have been furnished as required in paragraph 5.1, the written consent of the surety to the payment of the balance due for that portion of the Work fully completed and accepted shall be submitted by CONTRACTOR to ENGINEER with the Application for such payment. Such payment shall be made under the terms and conditions governing final payment, except that it shall not constitute a waiver of claims.

Waiver of Claims:

14.15. The making and acceptance of final payment will constitute:

14.15.1. a waiver of all claims by OWNER against CONTRACTOR, except claims arising from unsettled Liens, from *defective* Work appearing after final inspection pursuant to paragraph 14.11, from failure to comply with the Contract Documents or the terms of any special guarantees specified therein, or from CONTRACTOR's continuing obligations under the Contract Documents; and

14.15.2. a waiver of all claims by CONTRACTOR against OWNER other than those previously made in writing and still unsettled.

ARTICLE 15—SUSPENSION OF WORK AND TERMINATION

OWNER May Suspend Work:

15.1. At any time and without cause, OWNER may suspend the Work or any portion thereof for a period of not more than ninety days by notice in writing to CONTRACTOR and ENGINEER which will fix the date on which Work will be resumed. CONTRACTOR shall resume the Work on the date so fixed. CONTRACTOR shall be allowed an adjustment in the Contract Price or an extension of the Contract Times, or both, directly attributable to any such suspension if CONTRACTOR makes an approved claim therefor as provided in Articles 11 and 12.

OWNER May Terminate:

15.2. Upon the occurrence of any one or more of the following events:

15.2.1. if CONTRACTOR persistently fails to perform the Work in accordance with the Contract Documents (including, but not limited to, failure to supply sufficient skilled workers or suitable materials or equipment or failure to adhere to the progress schedule established under paragraph 2.9 as adjusted from time to time pursuant to paragraph 6.6);

15.2.2. if CONTRACTOR disregards Laws or Regulations of any public body having jurisdiction;

15.2.2. if CONTRACTOR disregards the authority of ENGINEER; or

15.2.4. if CONTRACTOR otherwise violates in any substantial way any provisions of the Contract Documents;

OWNER may, after giving CONTRACTOR (and the surety, if any,) seven days' written notice and to the extent permitted by Laws and Regulations, terminate the services of CONTRACTOR, exclude CONTRACTOR from the site and take possession of the Work and of all CONTRACTOR's tools, appliances, construction equipment and machinery at the site and use the same to the full extent they could be used by CONTRACTOR (without liability to CONTRACTOR for trespass or conversion), incorporate in the Work all materials and equipment stored at the site or for which OWNER has paid CONTRACTOR but which are stored elsewhere, and finish the Work as OWNER may deem expedient. In such case CONTRACTOR shall not be entitled to receive any further payment until the Work is finished. If the unpaid balance of the Contract Price exceeds all claims, costs, losses and damages sustained by OWNER arising out of or resulting from completing the Work such excess will be paid to CONTRACTOR. If such claims, costs, losses and damages exceed such unpaid balance, CONTRACTOR shall pay the difference to OWNER. Such claims, costs, losses and damages incurred by OWNER will be reviewed by ENGINEER as to their reasonableness and when so approved by ENGINEER incorporated in a Change Order, provided that when exercising any rights or remedies under this paragraph OWNER shall not be required to obtain the lowest price for the Work performed.

15.3. Where CONTRACTOR's services have been so terminated by OWNER, the termination will not affect any rights or remedies of OWNER against CONTRACTOR then existing or which may thereafter accrue. Any retention or payment of moneys due CONTRACTOR by OWNER will not release CONTRACTOR from liability.

15.4. Upon seven days' written notice to CONTRACTOR and ENGINEER, OWNER may, without cause and without prejudice to any other right or remedy of OWNER, elect to terminate the Agreement. In such case, CONTRACTOR shall be paid (without duplication of any items):

15.4.1. for completed and acceptable Work executed in accordance with the Contract Documents prior to the effective date of termination, including fair and reasonable sums for overhead and profit on such Work;

15.4.2. for expenses sustained prior to the effective date of termination in performing services and furnishing labor, materials or equipment as required by the Contract Documents in connection with uncompleted Work, plus fair and reasonable sums for overhead and profit on such expenses;

15.4.3. for all claims, costs, losses and damages incurred in settlement of terminated contracts with Subcontractors, Suppliers and others; and

15.4.4. for reasonable expenses directly attributable to termination.

CONTRACTOR shall not be paid on account of loss of anticipated profits or revenue or other economic loss arising out of or resulting from such termination.

CONTRACTOR May Stop Work or Terminate:

15.5. If, through no act or fault of CONTRACTOR, the Work is suspended for a period of more than ninety days by OWNER or under an order of court or other public authority, or ENGINEER fails to act on any Application for Payment within thirty days after it is submitted or OWNER fails for thirty days to pay CONTRACTOR any sum finally determined to be due, then CONTRACTOR may, upon seven days' written notice to OWNER and ENGINEER, and provided OWNER or ENGINEER do not remedy such suspension or failure within that time, terminate the Agreement and recover from OWNER payment on the same terms as provided in paragraph 15.4. In lieu of terminating the Agreement and without prejudice to any other right or remedy, if ENGINEER has failed to act on an Application for Payment within thirty days after it is submitted, or OWNER has failed for thirty days to pay CONTRACTOR any sum finally determined to be due, CONTRACTOR may upon seven day's written notice to OWNER and ENGINEER stop the Work until payment of all such amounts due CONTRACTOR, including interest thereon. The provisions of this paragraph 15.5 are not intended to preclude CONTRACTOR from making claim under Articles 11 and 12 for an increase in Contract Price or Contract Times or otherwise for expenses or damage directly attributable to CONTRACTOR's stopping Work as permitted by this paragraph.

ARTICLE 16—DISPUTE RESOLUTION

If and to the extent that OWNER and CONTRACTOR have agreed on the method and procedure for resolving disputes between them that may arise under this Agreement, such dispute resolution method and procedure, if any, shall be as set forth in Exhibit GC-A, "Dispute Resolution Agreement," to be attached hereto and made a part hereof. If no such agreement on the method and procedure for resolving such disputes has been reached, and subject to the provisions of paragraphs 9.10, 9.11, and 9.12, OWNER and CONTRACTOR may exercise

such rights or remedies as either may otherwise have under the Contract Documents or by Laws or Regulations in respect of any dispute.

ARTICLE 17—MISCELLANEOUS

Giving Notice:

17.1. Whenever any provision of the Contract Documents requires the giving of written notice, it will be deemed to have been validly given if delivered in person to the individual or to a member of the firm or to an officer of the corporation for whom it is intended, or if delivered at or sent by registered or certified mail, postage prepaid, to the last business address known to the giver of the notice.

Computation of Times:

17.2.1. When any period of time is referred to in the Contract Documents by days, it will be computed to exclude the first and include the last day of such period. If the last day of any such period falls on a Saturday or Sunday or on a day made a legal holiday by the law of the applicable jurisdiction, such day will be omitted from the computation.

17.2.2. A calendar day of twenty-four hours measured from midnight to the next midnight will constitute a day.

Notice of Claim:

17.3. Should OWNER or CONTRACTOR suffer injury or damage to person or property because of any error, omission or act of the other party or of any of the other party's employees or agents or others for whose acts the other party is legally liable, claim will be made in writing to the other party within a reasonable time of the first observance of such injury or damage. The provisions of this paragraph 17.3 shall not be construed as a substitute for or a waiver of the provisions of any applicable statute of limitations or repose.

Cumulative Remedies:

17.4. The duties and obligations imposed by these General Conditions and the rights and remedies available hereunder to the parties hereto, and, in particular but without limitation, the warranties, guarantees and obligations imposed upon CONTRACTOR by paragraphs 6.12, 6.16, 6.30, 6.31, 6.32, 13.1, 13.12, 13.14, 14.3 and 15.2 and all of the rights and remedies available to OWNER and ENGINEER thereunder, are in addition to, and are not to be construed in any way as a limitation of, any rights and remedies available to any or all of them which are otherwise imposed or available by Laws or Regulations, by special warranty or guarantee or by other provisions of the Contract Documents, and the provisions of this paragraph will be as effective as if repeated specifically in the Contract Documents in connection with each particular duty, obligation, right and remedy to which they apply.

Professional Fees and Court Costs Included:

17.5. Whenever reference is made to "claims, costs, losses and damages," it shall include in each case, but not be limited to, all fees and charges of engineers, architects, attorneys and other professionals and all court or arbitration or other dispute resolution costs.

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SECTION 00805

SUPPLEMENTARY CONDITIONS

SUPPLEMENTARY CONDITIONS

These Supplementary Conditions amend and supplement Section 00700 -General Conditions, and other provisions of the Contract Documents as indicated below. All provisions of the General Conditions that are amended or supplemented remain in full force and effect as so amended or supplemented. All provisions of the General Conditions which are not so amended or supplemented remain in full force and effect.

DEFINED TERMS

The terms used in these Supplementary Conditions which are defined in the General Conditions have the meaning assigned to them in the General Conditions.

AMENDMENTS AND SUPPLEMENTS

The following are instructions that amend or supplement specific paragraphs in the General Conditions and other Contract Documents:

ARTICLE 1 - DEFINITIONS

Delete the first paragraph of Article 1 "Whenever used in these....and plural thereof:" in its entirety and insert the following in its place:

> "Whenever used in these General Conditions or in other Contract Documents, the terms listed below have the meanings indicated which are applicable to both the singular and plural thereof. Said terms are generally capitalized or written in italics, but not always. When used in a context consistent with the definition of a listed-defined term, the term shall have a meaning as defined below whether capitalized or italicized or otherwise."

S.C.-1.18.

Add a new paragraph at the end of paragraph GC-1.18 which is to read as follows:

> "The Project has been designed by HDR Engineering, Inc., 4500 S.W. Kruse Way, Suite 300, Lake Oswego, OR 97035, who will assume duties and responsibilities specifically assigned by the Owner."

S.C.-1.46.

Day - A "calendar day" unless otherwise defined within these Contract Documents.

S.C.-1.47.

Furnish or Install or Provide or Supply - The word "Furnish" or the word "Install" or the word "Provide" or the word "Supply," or any combination or similar directive or usage thereof, shall mean FURNISHING AND INCORPORATING IN THE WORK including all necessary labor, materials, equipment, and everything necessary to perform the Work indicated, unless specifically limited in the context.

SC-2.4.

Amend paragraph GC-2.4. by striking out the second word of the sentence "shall" and substituting "may".

SC-2.5.

Amend the first sentence of paragraph GC-2.5. by striking out the words "and all applicable field measurements," and substituting "against all applicable field measurements and conditions."

SC-2.6.

Add a new paragraph immediately after paragraph GC 2.6.3., which is to read as follows:

2.6.3.1 Where a Contract is awarded on a lump sum basis, the Contractor shall file with the Engineer a balanced price segregation of his lump sum bid into items similar to the various subdivisions of the general and detailed specifications, the sum of which shall equal the lump sum bid. The cost of various materials shall be furnished upon request of the Engineer, and such data will then be used as a basis for making monthly estimates. Breakdown cost itemized by trade and Specification section and distribute cost to individual applicable units and structures. Where structures, units, equipment, or other components are identified by a specific series or, identification number, utilize said designation throughout cost breakdown. Provide detailed breakdown for individual yard piping or conduit runs and identify approximate quantities involved to satisfaction of the Engineer. Provide separate breakdown for change order items, or items requested. Provide an additional breakdown sheet, equivalent to AIA document G703, showing the tabulation format for stored materials. Submit this sheet each month with Contractor's request breakdown. The detail and format of cost breakdown and stored materials tabulation sheet shall be fully approved by Engineer."

SC-2.8.

Amend the first sentence of paragraph GC-2.8. by striking out the words "Within twenty days..., a conference", and substituting "After Notice of Award, but before any Work at the site is started (except with approval of OWNER), a conference."

SC-2.9.

Add a new paragraph at the end of paragraph GC-2.9. which is to read as follows:

2.9.1. For Progress Schedule, see Specification Section 01060. For Schedule of Shop Drawings, see Section 01340.

SC-3.2

Add two new paragraphs at the end of paragraph SC-3.2 which are to read as follows:

3.2.1. The Specifications may vary in form, format and style. Some specification sections are written in varying degrees of streamlined or declarative style and some sections may be relatively narrative by comparison. Omissions of such words and phrases as "the Contractor shall," "in conformity with," "as shown," or "as specified" are intentional in streamlined sections. Omitted words and phrases shall be supplied by inference. Similar types of provisions may appear in various parts of a section or articles within a part depending on the format of the section. The Contractor shall not

take advantage of any variation of form, format or style in making claims for extra Work."

3.2.2. The cross referencing of specification sections under the subparagraph heading "Related Sections include but are not necessarily limited to:" and elsewhere within each specification section is provided as an aid and convenience to the Contractor. The Contractor shall not rely on the cross referencing provided and shall be responsible to coordinate the entire work under the Contract Documents and provide a complete Project whether or not the cross referencing is provided in each section or whether or not the cross referencing is complete."

SC-5.1.

Amend paragraph GC-5.1. by adding the following sentence at the end of the paragraph.

The performance bond shall include, in part, provisions to indemnify and hold harmless OWNER, ENGINEER, ENGINEER's Consultants and their respective officers, directors, agents, and employees as provided in paragraph GC-6.31.

SC-5.4.

The limits of liability for the insurance required by paragraph 5.4 of the General Conditions shall provide the following coverages for not less than the following amounts or greater where required by Laws and Regulations:

5.4.1. and 5.4.2. Workers' Compensation, etc., under paragraphs 5.4.1. and 5.4.2 of the General Conditions.

(1) State: Statutory.

(2) Applicable Federal (e.g., Longshoreman's): Statutory.

(3) Employer's Liability: $500,000

5.4.3., 5.4.4., and 5.4.5. CONTRACTOR's Liability Insurance under paragraphs 5.4.3. through 5.4.5. of the General Conditions, which shall also include completed operations and product liability coverages and eliminate the exclusion with respect to property under the care, custody and control of CONTRACTOR:

(1) General Aggregate (Except Products-- Completed Operations): $500,000

(2) Products--Completed Operations Aggregate: $500,000

(3) Personal and Advertising Injury (Per Person/ Organization): $500,000

(4) Each Occurrence (Bodily Injury and Property Damage): $500,000

(5) Property Damage liability insurance will provide Explosion, Collapse and Underground coverages where applicable.

(6) Excess Liability

General Aggregate	$500,000
Each Occurrence	$500,000

5.4.6. Automobile Liability.

(1) Bodily Injury:

$500,000	Each Person
$500,000	Each Accident Property Damage:
$500,000	Each Accident

5.4.7. The entities listed below are "additional insureds as their interest may appear "including their respective offices, directors, agents and employees.

HDR Engineering, Inc.

SC-5.4.10.

The Contractor's liability insurance shall include the Contractual Liability coverage required by paragraph 5.4.10 of the General Conditions.

SC-5.4.11.

Amend paragraph 5.4.11. by striking out the words: "to whom a certificate of insurance has been issued".

SC-5.4.13.

Amend paragraph 5.4.13 by striking out the words: "to whom a certificate of insurance has been issued".

SC-5.4.14.

Add a new paragraph after paragraph GC-5.4.13. which is to read as follows:

5.4.14. With respect to all insurance required by this paragraph 5.4., CONTRACTOR agrees to waive all rights of subrogation against OWNER, ENGINEER, and each additional insured identified in the Supplemental Conditions.

SC-5.5

Delete paragraph 5.5.

SC-5.6.1.

At the end of Paragraph 5.6.1., add the following sentence:

The insured and the additional insured shall be listed in the insurance coverage by specific name and not by genre.

SC-5.6.2.

At the end of Paragraph 5.6.2., add the following sentence:

Additional perils are as follows: explosion, and underground exposures.

SC-5.6.5.

Amend paragraph GC-5.6.5. by striking out the words: "to whom a certificate of insurance has been issued".

SC-5.8.

Amend paragraph GC-5.8. by striking out the words: "to whom a certificate of insurance has been issued".

SC-5.15.

Add two paragraphs immediately after Paragraph GC-5.15 which are to read as follows:

5.15.1. All insurance required by the Contract Documents, or by laws or regulations shall remain in full force and effect on all phases of the Work, whether or not the Work is occupied or utilized by OWNER, until all Work included in the agreement has been completed and final payment has been made.

5.15.2. Nothing contained in the insurance requirements shall be construed as limited the extent of CONTRACTOR's responsibility for payment of damages resulting from his operations under the Contract. CONTRACTOR agrees that he alone shall be completely responsible for procuring and maintaining full insurance coverage as provided herein or as may be otherwise required by the Contract Documents. Any approval by OWNER or ENGINEER shall not operate to the contrary.

SC-6.3.

Amend paragraph GC-6.3. by deleting the third sentence in its entirety, and by substituting the following:

In the absence of any Federal, state or local laws, regulations or covenants, the CONTRACTOR may conduct its performance of the Work at the CONTRACTOR's sole discretion, except that the cost of any overtime pay or other expense incurred by the OWNER for OWNER's Representative and construction observation services, occasioned by the conduct of Work on Saturday, Sunday, any legal holiday, or as overtime on any regular work day, shall be reimbursed to the OWNER by the CONTRACTOR.

SC-6.4.

Add a paragraph immediately after paragraph GC-6.4. which is to read as follows:

6.4.1. Where the Work requires equipment be furnished, due to the lack of standardization of equipment as produced by the various manufacturers, it may become necessary to make minor modifications in the structures, buildings, piping, mechanical work, electrical work, accessories, controls, or other work, to accommodate the particular equipment offered. CONTRACTOR's bid price for any equipment offered shall include the cost of making any necessary changes subject to the approval of ENGINEER.

SC-6.5.

Add the following sentence at the end of the first sentence of paragraph GC-6.5:

All items of standard equipment shall be the latest model at the time of delivery.

SC-6.7.

Add a new paragraph after paragraph GC-6.7. which is to read as follows:

6.7.4. See Section 01640.

SC-6.19.

Add the following language at the end of the first sentence of paragraph GC-6.19:

CONTRACTOR shall include accurate locations for buried and imbedded items.

At the end of paragraph GC-6.19, add the following language:

CONTRACTOR to make one reproducible copy of said record drawings and deliver to ENGINEER for OWNER.

SC-6.24.

Add the word "required" to the first sentence of paragraph GC-6.24.1., immediately after the words "CONTRACTOR shall submit."

At the end of paragraph GC-6.24.1., add the following paragraphs:

6.24.1.1. Shop Drawings submitted as herein provided by CONTRACTOR and reviewed by ENGINEER for conformance with the design concept shall be executed in conformity with the Contract Documents unless otherwise required by OWNER.

6.24.1.2. When Shop Drawings are submitted for the purpose of showing the installation in greater detail, their review shall not excuse CONTRACTOR from requirements shown on the drawings and Specifications.

6.24.1.3. For-Information-Only-For-Future-Use submittals upon which the ENGINEER is not expected to conduct review or take responsive action may be so identified in the Contract Drawings.

Add the word "required" to the first sentence of paragraph GC-6.24.2., immediately after the words "shall also submit."

At the end of paragraph GC-6.24.2., add the following paragraphs:

6.24.3. If a Shop Drawing or Sample, as submitted, indicates a variation from the Contract Requirements as set forth in the Contract Documents and ENGINEER finds same to be in the interest of OWNER and to be so minor as not to involve a change in the Contract Price or time for performance, ENGINEER may approve the Shop Drawings or Samples; provided however, such departure is slight in nature and does not affect the design concept of the Work.

CONTRACTOR shall submit all Shop Drawings and Samples sufficiently in advance of construction requirements to allow ample time for checking, correcting, resubmitting and rechecking and to avoid any delay in progress of the Work.

Add a new paragraph immediately after paragraph GC-6.24.3. which is to read as follows:

6.24.4. See Section 01340.

SC-6.25.

At the end of paragraph 6.25.3., delete "Variation." and add: "Variation; otherwise CONTRACTOR will not be relieved of the responsibility of executing the Work in accordance with the Contract Documents, even though such Shop Drawings or Samples have been otherwise reviewed." Add the following paragraph at the end of paragraph GC-6.25.3:

6.25.4. Shop Drawings and Sample submittals not conforming to requirements of this paragraph 6.25 and Section 01340 will be returned to CONTRACTOR without action for resubmittal and the resulting delay shall be entirely the responsibility of CONTRACTOR.

Add the following paragraph at the end of paragraph GC-6.25.4:

6.25.5. See Section 01340.

SC-6.26.

Add the word "required" to the first sentence of paragraph GC-6.26. immediately after the words "ENGINEER will review and approve".

SC-6.27.

Add the word "required" to the first sentence of paragraph GC-6.27. immediately after the words "ENGINEER's review and approval of".

Add the following paragraph at the end of paragraph GC-6.27: 6.27.1. ENGINEER's check and review of Shop Drawings and Samples, Specifications and descriptive literature submitted by CONTRACTOR will be only for general conformance with design concept, except as otherwise provided, and shall not be construed as:

6.27.1.1. permitting any departure from the Contract Requirements;

6.27.1.2. relieving CONTRACTOR of the responsibility for any error in details, dimensions or otherwise that may exist in such submittals;

6.27.1.3. constituting a blanket approval of dimensions, quantities, or details of the material or equipment shown; or

6.27.1.4. approving departures from additional details or instructions previously furnished by ENGINEER. Such check or review shall not relieve CONTRACTOR of the full responsibility of meeting all of the requirements of the Contract Documents.

SC-6.31.

Delete the word "negligent" from the first sentence of paragraph GC-6.31., immediately after the words "(ii) is caused in whole or in part by any."

SC-6.33.

Add the word "solely" in the first sentence of paragraph GC-6.33., immediately after the word "caused."

SC-9.3.

Add a new paragraph immediately after paragraph GC-9.3. which is to read as follows:

9.3.1. ENGINEER's Resident Project Representative shall not authorize any deviation from the Contract Documents or substitutions of materials or equipment, unless authorized by ENGINEER.

SC-9.6.

Add a new paragraph immediately after paragraph GC-9.6. which is to read as follows:

The acceptance at any time of materials or equipment by or on behalf of OWNER shall not be a bar to future rejection if they are subsequently found to be defective, inferior in quality, or uniformity to material or equipment specified, or are not as represented to ENGINEER or OWNER.

SC-10.6.

Add the following new paragraph after paragraph GC-10.5:

10.6. Change Proposal Request

10.6.1. When OWNER requests CONTRACTOR to present a proposal to accomplish a change in the Work, the request will be made in the form of a Change Proposal Request (CPR) prepared by ENGINEER. The CPR will describe the change and request CONTRACTOR to propose a cost and Contract Time change. CONTRACTOR will propose cost and time changes, provide a breakdown for the costs, sign the CPR and return it to ENGINEER. ENGINEER will make recommendations to OWNER concerning acceptance. If the CPR is approved by OWNER, the CPR will be included in a Change Order. CONTRACTOR is not authorized to proceed with a change contained in a CPR until the Change Order is properly signed and issued.

10.6.2. When the CONTRACTOR desires to propose changes to the Work, it may initiate a CPR in the same form as provided in Paragraph 10.6.1. and submit the CPR to the ENGINEER for the ENGINEER's review and recommendation.

SC-11.9

Add the following language at the end of paragraph 11.9.2:

Work described in the Contract Documents but not identified in the listing of unit price items shall be considered incidental to unit price work listed and the cost of incidental work included as a part of the unit price."

SC-12.1.

Add a new paragraph after paragraph GC 12.1. which is to read as follows:

12.1.1. No extension of the Contract Time will be allowed for additional Work or for claimed delay unless the additional Work contemplated or claimed delay is shown to be on the critical path of the Project's schedule of construction or CONTRACTOR can show by Critical Path Method analysis how the additional Work or claimed delay adversely affects the critical path.

SC-12.3.

Add two new paragraphs after paragraph GC 12.3. which are to read as follows:

12.3.1. OWNER, at OWNER's sole discretion, may waive the requirements of paragraph GC-12.3. and grant extensions to the Contract Time for any reason OWNER deems valid.

12.3.2. Time extensions will not be granted for rain, wind, flood, or other natural phenomena of normal intensity for the locality where Work is performed. For purpose of determining extent of delay attributable to unusual weather phenomena, a determination shall be made by comparing the weather for at least any continuous {one-fourth} of the Contract Time involved with the average of the preceding {5}-year climatic range during the same time interval based on U.S. Weather Bureau statistics for the locality where the Work is performed.

SC-14.15.

Add the words "and/or ENGINEER" to the first sentence of paragraph GC-14.15.2. after the words "against OWNER".

SC-15.2.

Delete the paragraph after Paragraph GC-15.2.4., which paragraph starts with the words "OWNER may, after giving CONTRACTOR (and the surety, if any) seven days... " and ending with the words "lowest price for the Work performed."; and substitute the following text:

OWNER may, after giving CONTRACTOR (and the surety, if any,) 7 days' written notice and to the extent permitted by Laws and Regulations, terminate the services of CONTRACTOR.

If CONTRACTOR's services are terminated, Surety shall have the right to take over and perform the Work; provided, however, if Surety does not commence performance thereof within {10} consecutive calendar days after date of notice to CONTRACTOR that the services of CONTRACTOR have been terminated, or if Surety has taken over for CONTRACTOR and while prosecuting the Work in lieu of CONTRACTOR, any one or more of the events cited in 15.2.1. through 15.2.4. occur, then OWNER, without process or action at law, may take over any portion of the Work and complete it as described below.

If OWNER completes the Work, OWNER may exclude CONTRACTOR from the site and take possession of the Work and of all CONTRACTOR's tools, appliances, construction equipment and machinery at the site and use the same to the full extent they could be used by CONTRACTOR (without liability to CONTRACTOR for trespass or conversion), incorporate in the Work all materials and equipment stored at the site or for which OWNER has paid CONTRACTOR but which are stored elsewhere, and finish the Work as OWNER may deem expedient.

Whether OWNER or Surety completes the Work, CONTRACTOR shall not be entitled to receive any further payment until the Work is finished. If the unpaid balance of the Contract Price exceeds all claims, costs, losses and damages sustained by OWNER arising out of or resulting from completing the Work, such excess will be paid to CONTRACTOR. If such claims, costs, losses and damages exceed such unpaid balance, CONTRACTOR shall pay the difference to

OWNER. Such claims, costs, losses and damages incurred by OWNER will be reviewed by ENGINEER as to their reasonableness and when so approved by ENGINEER incorporated in a Change Order, provided that when exercising any rights or remedies under this paragraph, OWNER shall not be required to obtain the lowest price or the Work performed.

Neither OWNER, ENGINEER, nor any of their respective consultants, agents, officers, directors or employees shall be in any way liable or accountable to CONTRACTOR or Surety for the method by which the completion of the said Work, or any portion thereof, may be accomplished or for the price paid therefore.

OWNER, notwithstanding the method used in completing the Contract, shall not forfeit the right to recover damages from CONTRACTOR or Surety for CONTRACTOR's failure to timely complete the entire Contract. CONTRACTOR shall not be entitled to any claim for damages on account of the method used by OWNER in completing the Contract.

Maintenance of the Work shall continue to be CONTRACTOR's and Surety's responsibilities as provided for in the bond requirements of the Contract Documents or any special guarantees provided for under the Contract Documents or any other obligations otherwise prescribed by law.

SC-16

Delete the entire text of Article 16, which appears after the article number and the caption and substitute the following:

OWNER and CONTRACTOR may exercise such rights or remedies as either may have under the Contract Documents or by Laws or Regulations in respect to resolution of any dispute, subject to Paragraphs GC-9.10, 9.11, and 9.12.

END OF SECTION

PREVAILING WAGE RATES

for

Public Works Contracts in Oregon



BOLI

Jack Roberts
Commissioner
Bureau of Labor and Industries

Effective January 1, 1996

Oregon

BUREAU
OF LABOR
AND INDUSTRIES

January 1, 1996

Jack Roberts
Commissioner

This booklet contains the prevailing wage rates for non-residential building and construction trades in the State of Oregon. These rates are effective January 1, 1996, **and** have been amended in accordance with ORS 279.348 through ORS 279.365. A new determination of these rates is issued two times each year.

Prevailing wage rates are the minimum wages that must be paid to all workers employed in the construction, reconstruction, major renovation or painting of any public works. Copies of these rates must be incorporated into all bid specifications when the advertisement for a public works contract is issued. A provision that prevailing wage rates be paid must also be put in the contract. The rates in effect at the time the bid specifications are first advertised are those that apply for the duration of the project, with one exception; if during the bidding process the prevailing wage rates change, the public contracting agency has the option of amending the bid specifications to reflect such changes.

Several changes were made in the law by the 1995 Legislature (see page 6).

If you identify any errors in the rates published, please bring them to the attention of the Prevailing Wage Rate Coordinator in Portland (731-4074). If you have any questions about the manner in which the prevailing wage rates are enforced, contact the Wage and Hour Division in Portland (731-4074).

JACK ROBERTS
Commissioner
Bureau of Labor and Industries

PORTLAND
800 NE Oregon St. # 32
Portland, OR 97232
(503) 731-4200
FAX (503) 731-4069

EUGENE
165 E 7th Street, Suite 220
Eugene, OR 97401
(503) 686-7623
FAX (503) 686-7980

PENDLETON
200 Hailey Ave., Suite 308
Pendleton, OR 97801
(503) 276-7884
FAX (503) 276-2950

BEND
1250 NE 3rd, Suite B105
Bend, OR 97701
(503) 388-6330
FAX (503) 388-6273

MEDFORD
700 E Main, Suite 105
Medford, OR 97504
(503) 776-6270
FAX (503) 776-6284

SALEM
3865 Wolverine St. NE; E-1
Salem, OR 97310
(503) 373-1447
FAX (503) 373-7636

COOS BAY
320 Central Ave., Suite 510
Coos Bay, OR 97420
(503) 269-4575
FAX (503) 267-3194

AN EQUAL OPPORTUNITY EMPLOYER

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Forms necessary to comply with ORS 279.348 through ORS 279.365 will be found in the back of this booklet.

Contractors are encouraged to use the forms provided as master copies, and to keep on file for prevailing wage rate projects.

Oregon

BUREAU
OF LABOR
AND INDUSTRIES

DATE: August 21, 1995

TO: **ALL PUBLIC WORKS CONTRACTORS AND SUB-CONTRACTORS**

FROM: Wage and Hour Division
Bureau of Labor and Industries

Jack Roberts
Commissioner

RE: **IMPORTANT LEGISLATIVE CHANGES TO THE PREVAILING WAGE RATE LAW**

The 1995 Legislature made substantial changes to OREGON'S PREVAILING WAGE RATE LAW (PWR). The changes will affect all public works construction contractors. The Bureau of Labor and Industries will conduct formal wage surveys to determine the appropriate wages to be paid on public works projects. The threshold for qualifying projects has been raised and contractors will now pay a fee to the Bureau on contracts under the PWR law. Money from these fees will fund the surveys and support the PWR enforcement and public education effort.

The following is a synopsis of the new law, which becomes effective September 9, 1995. If you have any questions or need more information, please call the Bureau's Prevailing Wage Rate Unit at 731-4074, ext. 250 in Portland.

- **Qualifying Projects.** The threshold for PWR projects is increased from $10,000 to $25,000. *There were no changes to the provision that exempts projects regulated by the federal Davis-Bacon Act.*

- **Wage Surveys.** The Bureau, through a third party, will be conducting wage surveys in the near future so contractors can expect to be surveyed later this year.

- **Fees.** Contractors receiving public works contracts must pay a fee to the Bureau for each contract. The fee is .1 of 1% of the contract price. The fee can be no more than $5,000 and no less than $100 per contract, regardless of the contract size.

  ✓ The fee applies only to contracts between the public contracting agency and the public works contractor. Contracts between the prime contractor and its sub-contractors are not subject to the fee.

PORTLAND
800 NE Oregon St. # 32
Portland, OR 97232
(503) 731-4200
FAX (503) 731-4069

EUGENE
165 E 7th Street, Suite 220
Eugene, OR 97401
(503) 686-7623
FAX (503) 686-7980

PENDLETON
200 SE Hailey Ave., Suite 308
PO Box 730
Pendleton, OR 97801
(503) 276-7884
FAX (503) 276-2950

BEND
1250 NE 3rd, Suite B105
Bend, OR 97701
(503) 388-6330
FAX (503) 388-6273

MEDFORD
700 E Main, Suite 105
Medford, OR 97504
(503) 776-6270
FAX (503) 776-6284

SALEM
3865 Wolverine St. NE: E-1
Salem, OR 97310
(503) 373-1447
FAX (503) 373-7636

AN EQUAL OPPORTUNITY EMPLOYER

COOS BAY
320 Central Ave., Suite 510
Coos Bay, OR 97420
(503) 269-4575
FAX (503) 267-3194

✓ The fee applies on contracts awarded on or after September 9, 1995.

✓ All contracts and all contract specifications must have a provision stating that the fee shall be paid to the Bureau.

✓ The fee must be paid no later than at the time of the first progress payment, or 60 days from the date that the work first began, whichever is earlier.

✓ In order to ensure that proper credit is made for each fee received, contractors should submit sufficient contract information as appears on the attached form.

✓ The fee is payable to the Bureau and should be mailed or delivered to: Bureau of Labor and Industries, Wage and Hour Division, Prevailing Wage Rate Unit, 1160 State Office Building, 800 N.E. Oregon Street #32, Portland, OR 97232.

- **Certified Payroll Statements.** Contractors are required to file certified payroll statements with the contracting agency, but are no longer required to send copies to the Bureau. The new PWR law specifies that certified payroll records are public records, and they must be made available upon request.

- **New Prohibitions.** The new law specifically prohibits third party subsidies of the prevailing wage rate ("job targeting" or "market recovery" programs) on public works projects. The lowering of wages on private works to offset wages paid on public works is also prohibited.

- **Debarrment of Contractors.** The Bureau can now debar sub-contractors who fail to pay wages if the prime contractor pays the wages in lieu of the sub-contractor.

- **Civil Penalties.** The Bureau can assess civil penalties up to $5,000 for each PWR violation.

- **Prevailing Wage Advisory Committee.** This committee advises the Bureau on prevailing wage rate matters. Representatives from labor, management and the public make up the committee. Members are appointed by the Labor Commissioner.

BOLI/WHD
8/95

THIS INFORMATION IS AVAILABLE IN AN ALTERNATE FORMAT

ANNOUNCEMENT

The prevailing wage rates contained in this booklet generally reflect non-residential building, heavy, and highway construction rates determined for Oregon by the Secretary of Labor of the United States pursuant to the Davis-Bacon Act; certain changes have been made to better reflect prevailing practices in Oregon. Pursuant to ORS 279.348 to ORS 279.365, these rates have been adopted for use on public works contracts in Oregon. If you have specific questions regarding how rates are determined or if you would like a copy of this booklet, please contact:

Prevailing wage rate Coordinator
Bureau of Labor and Industries
Wage and Hour Division
800 NE Oregon St. # 32
Portland, OR 97232

(503)731-4074

The first copy is free. Additional copies are available for $2.00 each.

GENERAL INFORMATION

Information in this section and in the "Commonly Asked Questions" is meant to provide a convenient reference to Oregon's Prevailing wage rate Law. It is in no way a complete statement of the laws and rules.

If you have questions about the enforcement of prevailing wage rates, please contact the Wage and Hour Division. Division offices may be reached at the following phone numbers:

Bend	388-6330
Eugene	686-7623
Medford	776-6201
Pendleton	276-7884
Portland	731-4074
Salem	378-3292

Apprentices and Trainees

Apprentices and trainees may be employed on public works projects. To qualify as an apprentice or trainee, the worker must be registered in a bona fide apprenticeship or training program of the U.S. Department of Labor, Bureau of Apprenticeship and Training (BAT) or with any State Apprenticeship and Training Agency recognized by BAT. For information call 731-4072. The apprentice or trainee is to receive all fringe benefits and a percentage of the journeyman's wage rate which is listed in this booklet. This rate may be different than the rate contained in the Apprenticeship Standards for the trade. The correct percentage shall be determined by the appropriate apprenticeship or training committee. All other workers must receive rates as published.

Zone Pay

In certain trades, the basic hourly rate of pay progressively increases based upon the distance between the job site and a designated landmark; this is commonly referred to as zone pay. To determine the hourly wage, find the correct zone based on the number of road miles the job site is from the closest designated city (based either on distance from city hall or from geographical center of the city, depending on the trade) and add the amount for that zone to the basic hourly rate. Zone pay, unlike travel pay, is the basic hourly wage upon which overtime is computed.

Bid Specifications

The specifications for every public works contract must include the current prevailing wage rates in effect at the time the specifications are first advertised. A statement incorporating the existing rates by reference will not satisfy this requirement (ORS 279.352). **All contracts and all contract specifications for a public work are required to include a provision stating that the fee shall be paid to the Bureau of Labor. Sample language is included in this booklet.**

***

NOTE: **If a public agency fails to include the prevailing wage rates in the contract specifications or fails to include in the contract the provision that prevailing wage rates must be paid, the liability for any unpaid prevailing wages shall be exclusively that of the agency.[ORS 279.356(3)]**

Fringe Benefits

Payments for fringe benefits are in addition to the basic hourly rate. The term "fringe benefits" refers to the payments such as:

a) medical or hospital care; pensions on retirement or death; compensation for injuries or illness resulting from an occupational activity, or insurance to provide any of the foregoing;
b) unemployment benefits, life insurance, disability and sickness insurance or accident insurance;
c) vacation and holiday pay;
d) defraying costs of apprenticeship or other similar programs; and
e) other such bona fide benefits.

For the purpose of prevailing wage rates, fringe benefits do not include any benefits which may be required by federal, state or local law (e.g. Workers' Compensation, Unemployment Insurance, etc.).

Every Contractor or Subcontractor that provides for or contributes to a health and welfare plan or a pension plan, must post notice describing such plans in a conspicuous and accessible place on the project.[ORS 279.350(5)] Fringe benefits may be paid to the worker in cash or to a third party administering a fringe benefit program. When an hourly rate in excess of the required prevailing base rate is paid, the amount by which the rate is exceeded may be credited toward payment of fringe benefits.

Overtime

Workers employed on a public works job for more than eight hours in a day , Saturdays, Sundays or Holidays or 40 hours in a week must be paid overtime for each additional hour so worked (ORS 279.334). Overtime is calculated at no less than one and one-half times the basic hourly rate as determined by the Commissioner of Labor (not including fringe benefits which are paid at the straight rate for every hour worked). In the computation of overtime, travel pay does not need to be included but zone pay differentials do.

Work performed on Saturday, Sunday or legal holidays must also be compensated at time and one-half. Legal holidays for purposes of prevailing wage rates include the following: 1) New Year's Day on January 1; 2) Memorial Day on the last Monday in May; 3) Independence Day on July 4; 4) Labor Day on the first Monday in September; 5) Thanksgiving Day on the fourth Thursday in November; 6) Christmas Day on December 25. If one of these days falls on Saturday or Sunday, then the legal holiday becomes the preceding Friday or the following Monday.

NOTE: Contractors who are signatory to a collective bargaining agreement may be subject to different overtime requirements [ORS279.334(3)].

Certification of Payroll

The law requires every contractor and subcontractor to file certain information on wages paid to each worker employed on a public works contract. This statement must completely and accurately reflect payroll records for the work week immediately preceding the submission. A contractor or subcontractor must complete and submit the certified statement contained on Form WH-38 as well as the information required on the weekly payroll. **A Form WH-38 and instructions for completing it are included in this booklet.** The schedule for submitting payroll information is as follows: Once within 15 days of the date the contractor or subcontractor first began work on the project; once before the final inspection of the project by the public contracting agency; in addition, for projects exceeding 90 days, submissions are to be made at 90 day intervals. When work on a project starts and finishes in 15 days or less, the contractor or subcontractor which performed the work shall submit a payroll and certified statement form which accurately and completely sets out the payroll for all the work performed on the project. **Payroll information is to be filed with the public contracting agency.** The payroll information must be kept by the contractor and or subcontractor for three years.

COMMONLY ASKED QUESTIONS

1) What are "prevailing wage rates?"

A prevailing wage rate is the minimum wage, including fringe benefits, to be paid workers employed on contracts for public works. Different rates are established for specific trades and specific geographical areas.

2) Who must be paid "prevailing wage rates?"

All employees of a contractor or subcontractor engaged on a public works project when the total price of the project is **$25,000** or more must receive at least the prevailing wage rate (PWR) for time worked on the project, unless otherwise exempt.

Office/clerical employees and supervisory employees who are supervisory only and do not perform any hands-on labor are not required to be paid the PWR. A person who owns and operates his/her own truck on construction projects (Owner/Operator) is not required to be paid the PWR. **This does not include owner-operators of any other type of equipment such as bulldozer, scrapers, backhoes, cranes, drilling rigs, or welding machines.**

3) What about contracts when Federal funds are used?

When more than $2,000 of federal funds are involved, the contract is usually subject to the provisions of the federal Davis-Bacon Act, not Oregon PWR statutes. (Further information may be obtained from the U.S. Department of Labor, Wage and Hour Division, Portland, Oregon (326-3057).) In the event that federal funds are involved, but the contract is not regulated under the Davis-Bacon Act, Oregon's prevailing wage rate statutes may apply (ORS 279.348 - 279.365). Oregon statutes pertaining to overtime requirements apply on both state and federally regulated contracts. (ORS 279.334).

4) I don't have a pension fund. How do I calculate fringe benefits?

Workers must receive at a minimum the sum of the basic hourly rate plus all fringe benefits for each hour worked on a public works contract. Fringe benefits may be paid either to a third party trust account or in cash directly to the worker.

5) My employees receive health benefits. Do I get credit for the health benefit when I prepare my payroll on a public works project?

Yes. Any expenditures an employer makes for bona fide employee benefits can be charged against the fringe benefit payments designated in the Prevailing wage rate Booklet. To learn how to compute the correct hourly charge, call the Wage and Hour Division (731-4074).

6) What if the employees are not paid on an hourly basis?

All workers must receive at least the basic hourly rate of wage and fringe benefits for each hour worked on the project. If an employee is paid other than on an hourly basis, the equivalent hourly rate (for both wages and fringe benefits) must still be at least equal to the rates published.

7) How do I classify workers?

Virtually all of the job classifications/trades normally used in the non-residential construction industry are represented by the job classifications used in this PWR publication. These classification titles should be used according to common practice. Try to fit your workers into existing classifications. If you need residential construction rates, or if you have questions about how to classify workers, contact the Prevailing Wage Rate Coordinator at 731-4074.

Laborers who do basic work requiring no specific skills, training, or knowledge are generally classified as Group 1 Laborers. (Note that Landscapers are classified as Laborers, and Ornamental Ironworkers are classified as Ironworkers.

8) When are new rates determined? How long are they effective?

Prevailing wage rates are determined once each year by the Commissioner of the Bureau of Labor and Industries. The Commissioner may amend the rates at any time. The rates are usually amended at least once each year. The rates in effect at the time the bid specifications are first advertised are those that apply for the duration of the contract, with one exception. If during the bidding process the prevailing wage rate changes, the public contracting agency (not the contractor) has the option of amending the bid specifications to reflect such change.

9) How do I post prevailing wage rates?

Every contractor or subcontractor employing workers on a public works project is required to post the applicable prevailing wage rates in a conspicuous and accessible place in or about the work-site. Rates need to be posted for the duration of the job. Contractors and subcontractors who intentionally fail to post the PWR can be made ineligible to receive any public works contract for up to three years.

10) What can I do about a contractor who is not complying with Oregon's PWR law?

File a complaint with the nearest office of the Oregon Bureau of Labor and Industries or contact the Wage and Hour Division, Bureau of Labor and Industries, 800 NE Oregon St. # 32, Portland, Oregon 97232 (731-4074). Other Bureau offices are located in Bend (388-6330), Coos Bay (269-4575), Eugene (686-7623), Medford (776-6201), Pendleton (276-7884) and Salem, (378-3292). You may also complain to the contracting agency, which has the contractual authority to pay PWR claims directly to a contractor's or subcontractor's workers (ORS 279.314).

11) What happens to contractors who do not comply with PWR statutes?

Contractors and subcontractors who pay less than the prevailing wage rates may be liable to the workers affected for the amount found due plus an equal amount as liquidated damages (ORS 279.356). **Also, the law now provides for a civil penalty of up to $5,000 for any violations of the prevailing wage rate laws, including ORS 279.348 to 279.365 and the prevailing wage rate administrative rules pursuant to those statutes.** Contracting agencies have the contractual authority to withhold payments due or to be due to the contractor or subcontractor in order to pay the unpaid prevailing wages directly to the worker (ORS 279.314).

Contractors and subcontractors who intentionally refuse to pay the prevailing wage rate to workers employed on public works or to post the PWR on the job site may be determined to be ineligible to receive any public works contracts for a period of up to three years (ORS 279.361). Workers employed by the contractor or subcontractors have a right of action against the surety of the prime contractor for any unpaid prevailing wages.

A list is kept of all contractors, subcontractors, and other persons ineligible to receive public works contracts and subcontracts. When a contractor or subcontractor is a corporation, the individual officers and agents of the corporation can be debarred in addition to the corporation. As a result, individuals who intentionally fail to pay or post the PWR are prevented from simply moving from one corporation to another.

In addition, Chapter 323, Oregon Laws 1991, provides that any person that loses a competitive bid for a construction contract may bring an action for damages against the person who is awarded the contract, if the losing bidder can establish that the winner has knowingly violated any one of several laws, including the requirement to pay prevailing wage rates while performing work under the contract. The losing bidder is entitled to recover, as liquidated damages, 10% of the losing bid amount, or $5,000, whichever is greater, plus reasonable attorney fees.

12) How much do I pay apprentices?

To qualify as an apprentice, the worker must be registered in a bona fide apprenticeship program of the U.S. Department of Labor, Bureau of Apprenticeship and Training (BAT) or with any State Apprenticeship Agency recognized by BAT. For information call 731-4072. The apprentice is to receive all fringe benefits and a percentage of the journeyman's wage rate as listed in this booklet. This rate may be different than the rate contained in the Apprenticeship Standards for the trade. The correct percentage shall be determined by the appropriate apprenticeship committee. All other workers receive rates as published.

13) What records must I keep? For how long?

Contractors and subcontractors are required to keep records necessary for determining if prevailing wage rates were paid. These records must include the Payroll and Certified Statement Form (WH-38) as well as the following: The name and address of each employee; the work classification(s) of each employee; the rate(s) of wages and fringe benefits paid to each employee; the rate(s) of fringe benefit payments made in lieu of those required to be provided to each employee; total daily and weekly compensation paid to each employee; daily and weekly hours worked by each employee; apprenticeship and training agreements; any payroll and other such records pertaining to the employment of employees upon a public works contract.

Administrative rules on prevailing wage rates require that these records be kept for a period of three (3) years from the completion of the public work contract. Other legal considerations may require retention of records for a period

greater than 3 years. Records relating to public works contracts must be maintained separately from records relating to private projects/contracts.

14) What forms are public agencies required to file with the Bureau of Labor and Industries?

Public agencies are required to prepare and file a list of every public improvement that the agency intends to fund during the subsequent budget period with the Commissioner of the Bureau of Labor and Industries (ORS 279.023[2]). If, after the original filing, the agency plans additional public improvements, a revised list is to be submitted (OAR 839-16-008[2]).

The "Notice of Award of Public Works Contract" is to be filed with the Wage and Hour Division within 30 days of the date when a contract is awarded which requires the payment of prevailing wage rates (i.e., is regulated under ORS 279.348 to 279.365). **Civil Penalties may be assessed for failure to file this Notice.**

Copies of the "Planned Public Improvement Summary" (Form No. WH-118), the "Capital Improvement Project Cost Comparison Estimate" (WH-119), and the "Notice of Award of Public Works Contract" (WH-81) can be found at the back of this booklet.

15) Does a contracting agency have any power to enforce payment of prevailing wage rates on its public works projects?

Yes. According to ORS 279.314, all public contracts for work or services must contain a clause or condition permitting the contracting agency to pay a worker's past due wage claim, charging the payment against funds due or to become due to the contractor.



NOTE

The procedure for obtaining forms for the submission of certain information required from public contracting agencies, contractors, and subcontractors has been changed. Previously, these forms were obtained from the contracting agency. Beginning with the present issue of the PWR booklet, all forms necessary to a public works project are printed in their entirety. The instruction sheet WH-38A, is provided to assist contractors in completing the Payroll/Certified Statement.

The 1995 Legislature made substantial changes to Oregon's prevailing wage rate law. The changes affect most public agencies which award contracts for public works projects and the contractors working on those projects. A synopsis of these changes is given below.

* The threshold for PWR projects is increased from $10, 000 to $25,000.
* Contractors receiving public works contracts must pay a fee equal to one-tenth of one percent of the total contract price of the project.
* All contracts and contract specifications must contain a provision stating that the fee shall be paid to the Bureau.
* Contractors are no longer required to send copies of the certified payroll statements to the Bureau.
* Public contracting agencies may not divide projects to avoid compliance with the PWR law.
* Civil penalties of up to $5,000 may now be assessed for any violation of the PWR law or the administrative rules.

FOR MORE INFORMATION CONCERNING THESE CHANGES, CALL THE PREVAILING WAGE RATE COORDINATOR AT (503) 731-4074, EXT. 250.

WE HAVE ATTEMPTED TO MAKE ALL RATE CHANGES NOTICEABLE BY PRINTING THEM IN BOLD TYPE.

OREGON DETERMINATION 96-01 CONSTRUCTION TYPE: HEAVY - ENTIRE STATE. HIGHWAY - ENTIRE STATE. NON-RESIDENTIAL BUILDING - EXCLUDES COOS, CURRY, DOUGLAS AND JOSEPHINE COUNTIES (SEE PAGE 22)

TRADES	BASIC HOURLY RATE	FRINGE BENEFITS

ASBESTOS WORKERS

Installation of insulation on mechanical systems for Thermal and Acoustical purposes, also the installation of fire stop penetrations on Electrical and Mechanical Systems.

Journeyman Asbestos Worker	22.31	6.14

Removal of regulated material on mechanical systems* which are not going to be scrapped.**

o Hazardous Materials Handler Mechanic (in any type of project regardless of value)	14.25	3.35

* Mechanical systems include pipes, boilers, ducts, flues, breaching, grease ducts and acid ducts. This also includes all labor connected with the handling and distribution of materials for these systems.

** The removal of all regulated materials from mechanical systems is exclusively the work of Hazardous Materials Handlers, unless the mechanical systems are going to be scrapped. Laborers do all removal of regulated materials on mechanical systems to be scrapped and any non mechanical (walls, ceilings, floors, beams, etc.) insulation. They also do loading of any regulated material after it has been removed, bagged and tagged, as well as cleanup at the removal site and all work done at the disposal site. Persons performing the removal of regulated materials are classified as Group 3 Laborers.

NOTE: Regulated materials are those materials that are regulated for the purpose of protecting the environment or for personal protection by either E.P.A., O.S.H.A., DEQ or Federal O.S.H.A.

BOILERMAKERS	23.57	8.76
BRICKLAYERS/STONEMASONS	22.50	6.02
Area 1 (add $0.75 per hour to Fringe for Refractory repair work.)		
Area 2	21.17	5.78
(add $0.75 per hour to Fringe for Refractory repair work.)		

Area 1

Baker	Hood River	Multnomah	Wallowa
Benton (a)	Lincoln (a)	Polk	Wasco (a)
Clackamas	Linn (a)	Sherman	Washington
Clatsop	Malheur (a)	Tillamook	Yamhill
Columbia	Marion	Umatilla	
Gilliam	Morrow	Union	

BRICKLAYERS/STONEMASONS (Continued)

Area 2

Benton (b)	Douglas	Josephine	Linn (b)
Crook	Grant	Klamath	Malheur (b)
Coos	Harney	Lake	Wasco (b)
Curry	Jackson	Lane	Wheeler
Deschutes	Jefferson	Lincoln (b)	

a) North half
b) South half

CARPENTERS

Zone 1 (Base Rate):

o Group 1	21.12	6.02
o Group 2	21.27	6.02
o Group 3	21.62	6.02
o Group 4	21.77	6.02
o Group 5	21.62	6.02
o Group 6	21.77	6.02
o Group 7	22.12	6.02

Zone Differential for Carpenters
(Add to Zone 1 Rate)

Zone 2	.85
Zone 3	1.25
Zone 4	1.70
Zone 5	2.00
Zone 6	3.00

Zone 1: Projects within 30 miles of City Hall in the Cities listed below.
Zone 2: More than 30 miles but less than 40 miles.
Zone 3: More than 40 miles but less than 50 miles.
Zone 4: More than 50 miles but less than 60 miles.
Zone 5: More than 60 miles but less than 70 miles.
Zone 6: More than 70 miles.

Reference cities for Group 1 and 2 Carpenters

Albany	Eugene	Longview	Portland
Astoria	Goldendale	Madras	Port Orford
Baker	Grants Pass	Medford	Reedsport
Bend	Hermiston	McMinnville	Roseburg
Brookings	Hood River	Newport	Salem
Burns	Klamath Falls	Oregon City	The Dalles
Coos Bay	LaGrande	Ontario	Tillamook
Corvallis	Lakeview	Pendleton	Vancouver

Zones for Groups 3 and 4 Carpenters are determined by the distance between the project site and either
1) the worker's residence; or
2) City Hall of a reference city
for the appropriate group shown below, whichever is closer.

TRADES	BASIC HOURLY RATE	FRINGE BENEFITS

CARPENTERS (Continued)

Reference Cities for Group 3 and 4 Carpenters

Eugene	Medford	Portland	Vancouver
Longview	North Bend	The Dalles	

Zones for Groups 5, 6 and 7 Carpenters are determined as follows:

1. For those workers who reside within zone 1 of a reference city below, their zone pay differential shall be computed based upon the distance from the city hall of that city to the project site.

2. For those workers who reside nearer to the project than is the city hall of any reference city below, the mileage from their residence to the project may be used in computing their zone pay differential.

3. The zone pay differential for all other projects shall be computed from the city hall of Longview, North Bend, or Portland, whichever is closer to the project.

Reference Cities for Groups 5, 6 and 7

Astoria	Eugene	Newport	Salem
Bend	Klamath Falls	Portland	The Dalles
North Bend	Medford	Roseburg	Longview

Group 1

Auto. Nailing Machine
Carpenters
Form Stripper
Manhole Builders
Non-irritating Ins.
Cabinet & Shelving Installers (wood or steel)

Group 2

Floor Layers & Finishers
Stationary Power Saw Operators
Wall & Ceiling Insulators
Irritating Insulation

Group 3

Millwrights
Machine Erectors
Machinists

Group 4

Millwright/Welders (Certified Welders receive $0.25/hour over Group 3)

Group 5

Bridge, Dock & Wharf Builders
Piledrivermen

Group 6

Boom Men

Group 7

Marine Piledriver

TRADES	BASIC HOURLY RATE	FRINGE BENEFITS

CEMENT MASONS

Zone 1 (Base Rate):

o	Group 1	17.74	8.52
o	Group 2	18.09	8.52
o	Group 3	**18.09**	8.52
o	Group 4	**18.45**	8.52

Group 1 Cement Masons, finishing, hand chipping and patching grouting, end pointing, screed setting, plugging, filling bolt holes, dry packing, setting curb forms, planks, stakes, lines and grades.

Group 2 Composition Workers (includes installation of epoxy & other resinous toppings), and Power Machine Operators.

Group 3 Cement masons working on suspended, swinging and/or hanging scaffold.

Group 4 Cement Masons performing work of both Group 2 and Group 3 at the same time.

Zone Differential for Cement Masons
(Add to Zone 1 Rate)

Zone 2	.65
Zone 3	1.15
Zone 4	1.70
Zone 5	2.75

Zone 1: Projects within 30 miles of City Hall in the cities listed below.
Zone 2: More than 30 miles but less than 40 miles.
Zone 3: More than 40 miles but less than 50 miles.
Zone 4: More than 50 miles but less than 80 miles.
Zone 5: More than 80 miles.

Cities

Bend	Eugene	Medford	Salem	Vancouver
Corvallis	Longview	Portland	The Dalles	

DIVERS & DIVERS' TENDERS

o	Divers	51.91	6.02
o	Divers' Tenders	23.29	6.02

Depth Pay and Enclosure Pay are added to the Divers' Basic Hourly Rate to obtain the Total Hourly Rate for the diver.

BASIC HOURLY RATE	+	HOURLY DEPTH PAY	+	HOURLY ENCLOSURE PAY	=	DIVERS' TOTAL HOURLY PAY

TRADES	BASIC HOURLY RATE	FRINGE BENEFITS

DIVERS & DIVERS' TENDERS (continued)

o Divers' Depth Pay

Depth of Dive	Hourly Depth Pay
50-100 ft	([total ft- 50] x $1.00)/hr.
100-150 ft	$ 50 + ([total ft-100] x $1.50)/hr.
150-200 ft	$125 + ([total ft-150] x $2.00)/hr.

o Divers' Enclosure Pay(working without vertical escape)

Distance Travelled In the Enclosure	Hourly Enclosure Pay
5 - 50 ft	$ .50/hr
50 - 100 ft	$ .63/hr
100 - 150 ft	$ 2.13/hr
150 - 200 ft	$ 4.63/hr
200 - 300 ft	$ 4.63 + ([total ft-200]x $.05)/hr
300 - 450 ft	$ 9.63 + ([total ft-300]x $.10)/hr
450 - 600 ft	$24.63 + ([total ft-450]x $.20)/hr

DREDGING

Zone 1 (Base Rate):		
o Leverman (Hydraulic, Dipper, Floating Clamshell)	24.92	6.55
o Asst. Engineer (including: Watch Engineer, Welder, Mechanic, Machinist)	24.15	6.55
o Tenderman (Boatman, Attending Dredge Plant); Fireman	23.58	6.55
o Fill Equipment Operator	23.07	6.55
o Assistant Mate (Deckhand); Oiler	21.51	6.55

Zone Differential for Dredging (Add to Zone 1 Rate)

Zone 2	1.50
Zone 3	1.90
Zone 4	2.40
Zone 5	3.00

Zone 1: Center of job site not more than 15 miles from the City Hall of Portland
Zone 2: More than 15 miles but not more than 30
Zone 3: More than 30 miles but not more than 50
Zone 4: More than 50 miles but not more than 70
Zone 5: More than 70 miles.

DRYWALL/WETWALL

o Drywall (Accoustical and Drywall Applicator)	19.48	7.27
o Wetwall (Lather)	18.41	8.34

ELECTRICIANS

Area 1:		
o Electricians	**20.40**	**4.75**
o Cable Splicers	**22.44**	**4.84**
Area 2:		
o Electricians	**23.20**	**7.78**
o Cable Splicers	**24.36**	**7.81**
Area 3:	21.60	6.54
Area 4:		
o Electricians	**24.35**	**6.63**
o Cable Splicers	**26.79**	**6.70**
Area 5:		
o Electricians	**24.50**	**8.39**
o Cable Splicers	**25.25**	**8.41**
Area 6:		
o Electricians	**22.30**	6.80
o Cable Splicers	**22.30**	6.80

Area 1	Area 2	Area 2(cont)	Area 3
Malheur	Baker	Umatilla	Coos
	Gilliam	Union	Curry
	Grant	Wallowa	Lincoln
	Morrow	Wheeler	Douglas(a)
			Lane(a)
Area 4	**Area 5**	**Area 5(cont)**	**Area 6**
Benton	Clackamas	Washington	Harney
Crook	Clatsop	Yamhill(d)	Jackson
Deschutes	Columbia		Josephine
Jefferson	Hood River		Klamath
Lane(b)	Multnomah		Lake
Linn	Sherman		Douglas(b)
Marion	Tillamook		
Polk	Wasco		
Yamhill(c)			

a) Those portions lying west of a line running North and South from the NE corner of Coos County to the SE corner of Lincoln County
b) That portion lying east of a line running North and South from the NE corner of Coos County to the SE corner of Lincoln County
c) South half
d) North half

ELEVATOR CONSTRUCTORS

Area 1		
o Mechanic	**25.28**	6.78 + a
o Helper	**17.69**	6.58+ a
o Probationary Helper	**12.64**	.34
Area 2		
o Mechanic	25.51	6.82+ a
o Helper	17.86	6.61+ a
o Probationary Helper	12.76	.34

TRADES	BASIC HOURLY RATE	FRINGE BENEFITS

ELEVATOR CONSTRUCTORS (Continued)

a) Plus 8% of basic hourly rate for employees with more than 5 years of service; 6% of basic hourly rate for 6 months to 5 years of service.

Area 1	Area 2
Umatilla	All
Wallowa	Remaining
Union	Counties
Baker	

GLAZIERS

Area 1 (Add $1.00 to base rate if safety belt is required by State safety regulations) (Add $4.00 to base rate for work done from a non-motorized single-man bosun chair)	22.12	**4.64**
Area 2 (Add $0.50 to base rate if working at over 35 feet of free fall in height)	14.46	4.04

Area 1	Area 2
All Counties except Malheur	Malheur

HIGHWAY AND PARKING STRIPERS	**19.83**	**3.51**

IRONWORKERS

o Structural, Reinforcing, Ornamental, Riggers, Fence Erectors, Signal Men	20.50	9.32

LABORERS

Zone 1 (Base Rate):		
o Group 1	16.59	6.60
o Group 2	16.94	6.60
o Group 3	17.24	6.60
o Group 4	17.49	6.60
o Group 5	15.00	6.60

Note: A Hazardous Waste Removal Differential must be added to the base rate if work is performed inside the boundary of a Federally Designated Hazardous Waste Site. A Group 1 base rate is used for General Laborer on such a site. For further information on this, call the Prevailing Wage Rate Coordinator at 731-4074.

Zone Differential for Laborers (Add to Zone 1 Rate)

Zone 2	.65
Zone 3	1.15
Zone 4	1.70
Zone 5	2.75

LABORERS (Continued)

Zone 1: Projects within 30 miles of City Hall in the Cities listed below.
Zone 2: More than 30 miles but less than 40 miles.
Zone 3: More than 40 miles but less than 50 miles.
Zone 4: More than 50 miles but less than 80 miles.
Zone 5: More than 80 miles.

Reference Cities

Albany	Eugene	Longview	Portland
Astoria	Goldendale	Madras	Port Orford
Baker	Grants Pass	Medford	Reedsport
Bend	Hermiston	McMinnville	Roseburg
Brookings	Hood River	Newport	Salem
Burns	Klamath Falls	Oregon City	The Dalles
Coos Bay	LaGrande	Ontario	Tillamook
Corvallis	Lakeview	Pendleton	Vancouver

Group 1

Asphalt Plant Laborers	Guardrail, Median Rail (c)
Asphalt Spreaders	Landscape or Planting Laborer
Batch Weighman	Leverman or Aggregate Spreader (d)
Broomers	Loading Spotter
Brush Burners/Cutters	Material Yard Man (e)
Carpenter Tender	Powderman Assistant
Car & Truck Loaders	Railroad Track Laborers
Change-House Man	Ribbon Setters (f)
Chipper Operator (a)	Rip Rap Man (Hand Placed)
Choke Setter	Road Pump Tender and moving
Clean-up Laborers ***	Sewer Laborer
Concrete Laborers	Signalman
Curing, concrete	Skipman
Demolition, wrecking (industrial) ***	Slopers
Driller Assistant	Sprayman
Dry-shack Man	Stake Chaser
Dumpers, road oiling crew	Stockpiler
Dumpmen for grading crew	Tie Back Shoring
Elevator Feeders	Timber Faller/Bucker (Hand Labor)
Fence Builder	Toolroom Man (Job site)
Fine Graders	Tunnel Bull Gang (Above Ground)
Fire Watch	Weight-Man-Crusher (g)
Form Strippers (b)	
General Laborer ***	

a) Pittsburg or similar types
b) Not swinging stages
c) Reference Post, Guide Post, or Right-of Way Marker
d) Flaherty, and similar types
e) Including electrical
f) Including steel forms
g) Aggregate when used
*** Laborers can tear off roofs, clean up or handle roofing materials only when at least one new story is added or in demolition work, where no reroofing will occur.

TRADES	BASIC HOURLY RATE	FRINGE BENEFITS

LABORERS (continued)

Group 2

Applicators (a)
Brush Cutters (b)
Burners
Choker Splicer
Clary Power Spreader(c)
Clean up Nozzleman-Green Cutter (d)
Concrete Power Buggyman
Crusher Feeder
Demolition/Wrecking (e)
Grade Checker
Gunnite Nozzleman Tender
Gunite or Sandblasting Pot Tender
Handlers/Mixers (f)
Post Hole Digger, Air, gas or electric
Power Tool Operators (g)
Sand Blasting (wet)
Stake Setter
Tampers
Tunnel Muckers/Brakeman/Concrete Crew/Bull Gang (underground)
Vibrating Screed
Vibrators(less than 4" diam.)

a) Including Pot Tender for same, applying protective material by hand or nozzle on utility lines or storage tanks on project
b) Power saw
c) And similar types of spreaders
d) Concrete, rock, etc.
e) Charred Materials
f) Of all materials of an irritating nature including cement and lime
g) Includes, but not limited to: Dry Pack Machine, Jackhammer, Chipping Guns, Paving Breakers

Group 3

Asbestos Removal
Bit Grinder
Concrete Saw Operator
Drill Doctor
Drill Operators (a)
Gunite Nozzleman
High Scalers, Strippers, Drillers(b)
Laser Beam (c)
Manhole Builder
Nippers & Timbermen
Nuclear Plant Worker - Lead Shield
Powdermen
Power Saw Operators (d)
Pumpcrete Nozzleman
Sand Blasting (dry)
Pipe Layers of all Types
Sewer Timberman
Track Liners (e)
Tugger Operator
Tunnel-Chuck Tenders
Vibrator (4" and larger)
Water Blaster
Welder

a) Air Tracks, Cat Drills, Wagon Drills, Rubber-mounted drills, and other similar types
b) Covers work in Swinging Stages, chairs or belts, under extreme conditions unusual to normal drilling, blasting, barring-down, or sloping and stripping
c) Pipe laying, applicable when employee assigned to move, set up, align Laser Beam.
d) Bucking and falling
e) Anchor Machines, Ballast Regulators, Multiple Tampers, Power Jacks

LABORERS (continued)

Group 4

Asphalt Rakers
Laser Beam (Tunnel), applicable when employee assigned to move, set-up, align laser beam
Motorman - Dinky Locomotive
Shield Operator
Tunnel Miners
Tunnel Powderman

Group 5

Clean-up Laborers (building only)***
Demolition, Wrecking, & Moving (building only)***
Flagger

*** Laborers can tear off roofs, clean up or handle roofing materials only when at least one new story is added or in demolition work, where no reroofing will occur.

LIMITED ENERGY ELECTRICIANS

May only be used for electrical work not exceeding 100 va in Class II and III installations (as defined in Article 725 of the National Electrical Code):

Area 1	**20.05**	**5.55**
Area 2	**20.05**	**5.55**
Area 3	**16.11**	**4.13**
Area 4	**16.11**	**4.13**
Area 5	**16.11**	**4.13**
Area 6	**16.11**	**4.13**
Area 7	**16.11**	**4.13**
Area 8	**16.11**	**4.13**
Area 9	**20.05**	**5.55**
Area 10	13.75	4.49
Area 11	13.75	4.49
Area 12	16.21	2.14
Area 13	13.69	2.59
Area 14	13.37	2.33

Area 1	Clatsop, Columbia, Tillamook
Area 2	Clackamas, Multnomah, Washington, Yamhill (north half)
Area 3	Marion, Polk, Yamhill (south half)
Area 4	Benton, Lincoln, Linn
Area 5	Lane
Area 6	Douglas
Area 7	Coos, Curry
Area 8	Jackson, Josephine
Area 9	Hood River, Sherman, Wasco
Area 10	Crook, Deschutes, Jefferson
Area 11	Klamath, Lake, Harney
Area 12	Gilliam, Grant, Morrow, Umatilla, Wheeler
Area 13	Baker, Union, Wallowa
Area 14	Malheur

LINE CONSTRUCTION

Area 1:

TRADES	BASIC HOURLY RATE	FRINGE BENEFITS
o Group 1	25.60	5.90
o Group 2	23.12	5.81
o Group 3	17.98	4.63
o Group 4	19.94	4.70
o Group 5	17.45	4.61
o Group 6	16.40	4.57

Area 2:

o Cable Splicers	23.38	5.24
o Journeyman Lineman	21.20	5.16
o Line Equip. Mech. (Right-of-way)	17.98	5.01
o Line Equip. Oper.	17.98	5.01
o Groundman	13.15	4.80

Area 1 All counties except Malheur County
Area 2 Malheur County

Group 1	Group 2
Cable Splicers	Certified Lineman Welder
Leadman Pole Sprayer	Heavy Line Equipment Man
	Lineman
	Pole Sprayer

Group 3	Group 4
Tree Trimmer	Line Equipment Man

Group 5	Group 6
Head Groundman	Groundman
Jackhammer Man	
Powderman	

MARBLE SETTERS (Includes Granite)

Area 1	23.50	6.02
Area 2	22.17	5.78

Area 1

Baker	Hood River	Multnomah	Wallowa
Benton (a)	Lincoln (a)	Polk	Wasco (a)
Clackamas	Linn (a)	Sherman	Washington
Clatsop	Malheur (a)	Tillamook	Yamhill
Columbia	Marion	Umatilla	
Gilliam	Morrow	Union	

MARBLE SETTERS (Includes Granite)(Continued)

Area 2

Benton (b)	Douglas	Josephine	Linn (b)
Crook	Grant	Klamath	Malheur (b)
Coos	Harney	Lake	Wasco (b)
Curry	Jackson	Lane	Wheeler
Deschutes	Jefferson	Lincoln (b)	

a) North half
b) South half

PAINTERS & DRYWALL TAPERS

Area 1		
o Painters & Drywall Tapers	12.90	2.51
Area 2		
o Brush Painting (Add **$0.50** to base rate for spray, sandblasting, other pressure blasting over 3000 psi, and steam cleaning.) (Add $0.50 to base rate for work over 60 ft high on swing stage, mechanical climber, spider, or bucket truck.)	**17.84**	**3.08**
o Drywall Tapers	**22.45**	4.33

Area 1	Area 2
Malheur County	Remaining Counties

PLASTERERS

o Nozzleman	22.76	5.06
o Swinging scaffold	21.76	5.06
o all other work	21.26	5.06

PLUMBERS & STEAMFITTERS/PIPEFITTERS

Area 1 (Both)	21.62	5.94
Area 2 (Both)	**25.50**	**8.65**
Area 3 (Both)	**24.40**	**7.05**

Area 1	Area 2	Area 3
Baker	Grant (b)	All remaining counties
Harney (a)	Morrow	
Malheur	Umatilla	
	Wallowa	
	Union	

a) Except Northwest Portion b) Except Southwest Corner

OREGON DETERMINATION 96-01	CONSTRUCTION TYPE:	HEAVY - ENTIRE STATE. HIGHWAY - ENTIRE STATE. NON-RESIDENTIAL BUILDING - EXCLUDES COOS, CURRY, DOUGLAS AND JOSEPHINE COUNTIES (SEE PAGE 22)

TRADES	BASIC HOURLY RATE	FRINGE BENEFITS

POWER EQUIPMENT OPERATORS

Zone 1 (Base Rate):

o Group 1	22.40	6.55
o Group 2	22.01	6.55
o Group 3	21.33	6.55
o Group 4	20.88	6.55
o Group 5	20.34	6.55
o Group 6	18.72	6.55

Note: A Hazardous Waste Removal Differential must be added to the base rate if work is performed inside the boundary of a Federally Designated Hazardous Waste Site. For further information on this, call the Prevailing Wage Rate Coordinator at 731-4074.

ZONE RATES
(Add to Zone 1 Rate)

Zone 2	1.50
Zone 3	3.00

ZONE DESCRIPTIONS

Portland to Salem Metropolitan Area

Zone 1: Projects within the boundary of a region described as follows: Those portions of Multnomah, Clackamas, and Marion Counties which are West of the western boundary of Mt. Hood National Forest and West of Mile Post 30 on Interstate 84 and West of Mile Post 30 on State Highway 26 and West of Mile Post 30 on Highway 22. Also those portions of Washington County East of Highway 47, and of Yamhill County East of Highway 47 and Highway 99W.

Zone 2: Projects outside of any Zone 1, but less than 50 miles from the Portland city hall.

Zone 3: Projects outside of any Zone 1 or 2, and more than 50 miles from the Portland city hall.

Albany, Eugene, Roseburg, Grants Pass, Medford

Zone 1: Projects within 30 miles of the City Hall of the above cities.

Zone 2: Projects outside of any Zone 1 and more than 30 miles but less than 50 miles from the city hall.

Zone 3: Projects outside of any Zone 1 or 2, and more than 50 miles from the city hall.

Longview, Coos Bay, Klamath Falls, Bend

Zone 1: Projects within 20 miles of the City Hall of the above cities.

Zone 2: Projects outside of any Zone 1, and more than 20 but less than 40 miles from the city hall.

Zone 3: Projects outside of any Zone 1 or 2, and more than 40 miles from the city hall.

Astoria, The Dalles, Pendleton, LaGrande, Baker, Ontario, McMinnville

Zone 1: Projects within 5 miles of the city hall of the above cities.

Zone 2: No Zone 2 for these cities.

Zone 3: Projects outside of any Zone 1 or 2, and more than 5 miles from the city hall.

TRADES GROUP CLASSIFICATIONS	BASIC HOURLY RATE	FRINGE BENEFITS

POWER EQUIPMENT OPERATORS (Continued)

ASPHALT

6 Plant Oiler
6 Plant Fireman
6 Pugmill Operator (any type)
6 Truck mounted asphalt spreader, with screed
4 Screed Operator
5 Extrusion Machine Operator
2 Asphalt Plant Operator (any type)
4 Asphalt Paver Operator
5 Roller Operator (any asphalt mix)
4 Diesel-Electric Engineer, Plant
5 Asphalt Burner and Reconditioner Operator (anytype), 84
4 Roto-Mill, pavement profiler operator, under 6 foot lateral cut
5 Roto-Mill, pavement profiler, ground man
2 Roto-Mill, pavement profiler operator, 6 foot lateral cut and over

BLADE

6 Blade Operator, pulled type
4 Blade Operator
4 Blade Operator, Finish
4 Blade Operator, externally controlled by electronic, mechanical hydraulic means
4 Blade Operator, multi-engine
2 Auto Grader or "Trimmer" Operator

BULLDOZERS

4 Bulldozer Operator
4 Drill Cat Operator
4 Side-Boom Operator
2 Tandem bulldozer operator (quadnine and similar type, D-11)
4 Bulldozer Operator, twin engine (TC 12 and similar type, D-10)
4 Cable-Plow Operator (any type)

CLEARING

4 Log Skidder Operator
4 Chipper Operator
4 Incinerator Operator
4 Stump Splitter Operator
4 Faller/Buncher Operator

COMPRESSORS

6 Compressor Operator (any power), under 1,250 cu. ft. total capacity
5 Compressor Operator (any power), over 1,250 cu. ft. capacity

TRADES	BASIC HOURLY RATE	FRINGE BENEFITS
POWER EQUIPMENT OPERATORS (Continued)		
COMPACTORS - Self-Propelled		
Compactor Operator, including vibratory	5	
Wagner Patcor Operator or similar type (without blade)	5	
Compactor Operator, with blade	4	
Compactor Operator, multi-engine	4	
CONCRETE		
Plant Oiler	6	
Assistant Conveyor Operator	6	
Conveyor Operator	6	
Mixer Box Operator (C.T.B., dry batch, etc.)	6	
Cement Hog Operator	6	
Concrete Saw Operator	6	
Concrete Curing Machine Operator (riding type)	6	
Wire Mat or Brooming Machine Operator	6	
Combination Mixer and Compressor Operator, gunite work	5	
Concrete Batch Plant Quality Control Operator	5	
Beltcrete Operator	5	
Pumpcrete Operator (any type)	5	
Pavement Grinder and/or Grooving Machine Operator (riding type)	5	
Mixer Mobile Operator	4	
Cement Pump Operator, Fuller-Kenyon and similar	5	
Concrete Pump Operator	5	
Grouting Machine Operator	5	
Screed Operator	4	
Concrete Cooling Machine Operator	4	
Concrete Mixer Operator, single drum, any capacity	5	
Batch Plant and/or Wet Mix Operator, 1 and 2 drum	2	
Batch Plant and/or Wet Mix Operator, 3 units or more	1	
Cast in place pipe laying machine	5	
Maginnis Internal Full Slab Vibrator Operator	5	
Concrete Finishing Machine Operator, Clary, Johnson, Bidwell, Burgess bridge deck or similar type	5	
Curb Machine Operator, Mechanical Berm, Curb and/or Curb and Gutter	5	
Concrete Joint Machine Operator	5	
Concrete Planer Operator	5	
Tower Mobile Operator	5	
Power Jumbo Operator setting slip forms etc., in tunnels	5	
Slip Form Pumps, power driven hydraulic lifting device for concrete forms	5	
Concrete Paving Machine Operator	5	
Concrete Finishing Machine Operator	5	
Concrete Spreader Operator	5	
Concrete Paving Road Mixer	4	
Automatic Concrete Slip Form Paver Operator	2	
Concrete Canal Line Operator	2	
Concrete Breaker	4	
Reinforced Tank Banding Machine (K-17 or similar types)	4	
Concrete Profiler, Diamond Head	2	

TRADES	BASIC HOURLY RATE	FRINGE BENEFITS
POWER EQUIPMENT OPERATORS (continued)		
CRANE		
Oiler	6	
Truck Crane Oiler-Driver, 25 ton capacity or over	6	
Fireman, all equipment	6	
A-Frame Truck Operator, single drum	6	
Tugger or Coffin Type Hoist Operator	6	
Helicopter Hoist Operator	5	
Hoist Operator, single drum	5	
Elevator Operator	5	
A-Frame Truck Operator, double drum	5	
Boom Truck Operator	5	
Chicago Boom and similar types	4	
Lift Slab Machine Operator	4	
Boom Type lifting device, 5 ton capacity or less	4	
Cherry Picker or similar type crane-hoist, 5 ton capacity or less	4	
Hoist Operator, two drum	4	
Hoist Operator, three or more drums	4	
Derrick Operator, under 100 ton	4	
Hoist Operator, stiff leg, guy derrick or similar type, 50 ton and over	4	
Cableway Operator, up to 25 tons	4	
Bridge Crane Operator, Locomotive, Gantry, Overhead	4	
Cableway Operator, 25 tons and over	2	
Helicopter Operators, when used in erecting work	1	
HYDRAULIC CRANE OPERATOR		
Hydraulic Boom Truck Operator, Pittman	5	
Hydro Crane Operator, under 50 tons	4	
Hydro Crane Operator, 50 tons through 89 tons	3	
Hydro Crane Operator, 90 tons through 199 tons	2	
Hydro Crane Operator, 200 tons and over	1	
TOWER/WHIRLEY OPERATOR		
Tower Crane Operator	2	
Whirley Operator, under 90 tons	2	
Whirley Operator, 90 tons and over	1	
LATICE BOOM CRANE OPERATOR		
Lattice Boom Crane Operator, under 50 tons	4	
Lattice Boom Crane Operator, 50 tons through 89 tons, and less than 150 ft boom	3	
Lattice Boom Crane Operator, 90 tons through 199 tons, and/or 150 ft -200 ft boom	2	
Lattice Boom Crane (Operator, 200 tons and over, and/or over 200 ft boom	1	
CRUSHER		
Crusher Oiler	6	
Crusher Feederman	6	
Generator Operator	4	
Diesel-Electric Engineer	4	
Grizzley Operator	4	
Crusher Plant Operator	2	

TRADES	BASIC HOURLY RATE	FRINGE BENEFITS
POWER EQUIPMENT OPERATORS (GROUP CLASSIFICATIONS continued)		
DRILLING		
Drill Assistant	6	
Auger Oiler	6	
Churn Drill and Earth Boring Machine Operator	5	
Drill Doctor	4	
Boring Machine Operator	4	
Driller - Percussion, Diamond, Core, Cable, Rotary and similar type	4	
Cat Drill (John Henry)	4	
FLOATING EQUIPMENT		
Deckhand	6	
Boatman	6	
Fireman	5	
Diesel-Electric Engineer	4	
Jack Operator, elevating barges	4	
Barge Operator, self-unloading	4	
Piledriver Operator (not crane type)	4	
Floating Clamshell, etc. Operator, under 3 cu. yd.(only for construction projects - otherwise see Dredging)	4	
Floating Crane (derrick barge) Operator, less than 30 tons	4	
Floating Clamshell, etc. Operator, 3 cu. yd. and over (only for construction projects - otherwise see Dredging)	2	
Floating Crane (derrick barge) Operator, 30 tons but less than 150 tons	2	
Floating Crane, 150 tons and over	1	
FORK LIFT		
Self-Propelled Scaffolding Operator (excluding working platform)	6	
Fork Lift or Lumber Stacker Operator	6	
Ross Carrier Operator	6	
Lull Hi-Lift Operator or similar type	5	
Fork Lift, over 5 tons	5	
Rock Hound Operator	3	
GENERATORS		
Generator Operator	4	
Diesel-Electric Engineer	4	
GUARDRAIL EQUIPMENT		
Oiler	6	
Auger Oiler	6	
Oiler, combination guardrail machines	6	
Guardrail Punch Operator (all types)	4	
Guardrail Punch Oiler	6	
Guardrail Auger Operator (all types)	4	
Combination Guardrail machines, i.e. punch, auger etc.	4	

TRADES	BASIC HOURLY RATE	FRINGE BENEFITS
POWER EQUIPMENT OPERATORS (GROUP CLASSIFICATIONS continued)		
HAZARDOUS WASTE REMOVAL		
Assistant to the Engineer (Oiler)	5	
Assistant Incinerator Control Board Operator	4	
Incinerator Control Board Operator	3	
HEATING PLANT		
Temporary Heating Plant Operator	6	
Surface Heater and Planer Operator	4	
HYDRAULIC HOES		
Hydraulic Backhoe Operator, wheel type 3/8 cu. yd. and under with or without front end attachments 2-1/2 cu. yd. and under (Ford, John Deere, Case type)	5	
Hydraulic Backhoe Operator, Track Type 3/8 cu.yd. (Note: Over 3/8 cu. yd. takes Shovel Classification rate)	4	
LOADERS		
Bobcat, Skid Steer (under 1 cubic yard)	6	
Bucket Elevator Loader Operator, Barber-Greene and similar types	6	
Loaders, rubber-tired type, 2-1/2 cu. yd. and under	5	
Elevating Grader Operator, Tractor Towed requiring Operator or Grader	5	
Belt Loader Operator, Kolman and Ko Cal types	4	
Loader Operator, front end and overhead, 2-1/2 cu. yd. and under 4 cu. yd.	4	
Elevating Loader Operator, Athey and similar types	4	
Elevating Grader Operator, Sierra, Euclid or similar types	4	
Loader Operator, 4 cu. yd. but less that 6 cu. yd.	3	
Loader Operator, 6 cu. yd. and over	2	
OILERS		
Oiler	6	
Guardrail Punch Oiler	6	
Truck Crane Oiler-Driver, 25 ton or over	6	
Auger Oiler	6	
Grade Oiler, required to check grade	6	
Service Oiler (Greaser)	5	
Grade Checker	6	
PILEDRIVERS (Use Crane rates when driving or pulling piling)		
Hammer Operator	4	
Piledriver Operator (not crane type)	4	
PIPE LINE - Sewer Water		
Tar Pot Fireman	6	
Tar Pot Fireman (power agitated)	6	
Hydraulic Pipe Press Operator	6	
Hydra Hammer or similar types	5	
Pavement Breaker Operator	5	

TRADES	BASIC HOURLY RATE	FRINGE BENEFITS
POWER EQUIPMENT OPERATORS (GROUP CLASSIFICATIONS continued)		
PIPE LINE - Sewer Water (continued)		
4 Pipe Cleaning Machine Operator		
4 Pipe Doping Machine Operator		
4 Pipe Bending Machine Operator		
4 Pipe Wrapping Machine Operator		
4 Boring Machine Operator		
4 Back Filling Machine Operator		
PUMPS		
6 Pump Operator, any power		
6 Hydrostatic Pump Operator		
5 Pump Operator, more than 5 (any size)		
5 Pot Rammer Operator		
RAILROAD EQUIPMENT		
6 Brakeman		
6 Oiler		
6 Switchman		
6 Motorman		
6 Ballast Jack Tamper Operator		
5 Locomotive Operator		
5 Ballast Regulator Operator		
5 Ballast Tamper Multi-Purpose Operator		
5 Track Liner Operator		
5 Tie Spacer Operator		
5 Shuttle Car Operator		
REMOTE CONTROL		
2 Remote controlled earth-moving equipment		
REPAIRMEN, Heavy Duty		
6 Parts Man (Tool Room)		
6 H.D. Repairman Assistant		
6 Welder's Assistant		
4 Diesel-Electric Engineer (Plant or Floating)		
4 Bolt Threading Machine Operator		
4 Drill Doctor (Bit Grinder)		
4 H.D. Mechanic		
4 H.D. Welder		
4 Machine Tool Operator		
4 Combination H.D. Mechanic-Welder, when dispatched and/or when required to do both		
4 Welder - Certified, when dispatched and/or required		
RUBBER-TIRED SCRAPERS		
4 Rubber-tired Scraper Operator, single engine, single scraper		
4 Self-loading, paddle wheel, auger type under 15 cu. yd.		
4 Rubber-tired Scraper Operator, twin engine		
4 Rubber-tired Scraper Operator, with push-pull attachments		
3 Rubber-tired Scraper Operator, with tandem scrapers		

TRADES	BASIC HOURLY RATE	FRINGE BENEFITS
POWER EQUIPMENT OPERATORS (GROUP CLASSIFICATIONS continued) (RUBBER-TIRED SCRAPERS continued)		
2 Rubber-tired Scraper Operator, with tandem scrapers, multi engine		
4 Self-loading, paddle wheel, auger type 15 cu. yd. and over, single engine		
3 Self-loading, paddle wheel, auger type, finish and/or 2 or more units		
SHOVEL, DRAGLINE, CLAMSHELL, BACKHOE, SKOOPER, ETC., OPERATOR		
6 Oiler		
6 Grade Oiler (required to check grade)		
6 Grade Checker		
6 Fireman		
4 Diesel-Electric Engineer		
4 Stationary Drag Scraper Operator		
4 Shovel, Dragline, Clamshell, Hoe etc., Operator under 3 cu. yd.		
4 Grade-all Operator		
2 Shovel, Dragline, Clamshell, Hoe etc., Operator 3 cu. yd. and over		
SIGNALMAN		
6 Bell Boy, phones, etc., Operator		
6 Helicopter Radioman (ground)		
SURFACING (BASE) MATERIAL		
6 Roller Operator, grading of base rock (not asphalt)		
5 Roller Operator, Oiling, C.T.B.		
6 Tamping Machine Operator, mechanical, self-propelled		
6 Hydrographic Seeder Machine Operator, straw, pulp or seed		
5 Rock Spreaders, self-propelled		
5 Pulva-mixer or similar types		
4 Blade Mounted Spreaders, Ulrich and similar types		
5 Chip Spreading Machine Operator		
5 Lime Spreading Operator		
SWEEPERS		
6 Broom Operator, self-propelled		
5 Sweeper Operator (Wayne type) self-propelled		
TRACTOR - RUBBER TIRED		
5 Tractor Operator, rubber-tired, 50 H.P. Flywheel and under		
4 Tractor Operator, rubber -tired, over 50 H.P. Flywheel		
4 Tractor Operator, with boom attachment		
4 Rubber-tired Dozers and Pushers (Michigan, Cat, Hough type)		
TRENCHING MACHINE		
6 Oiler		
6 Grade Oiler (required to check grade)		

TRADES	BASIC HOURLY RATE	FRINGE BENEFITS

POWER EQUIPMENT OPERATORS
(GROUP CLASSIFICATIONS continued)
(TRENCHING MACHINE continued)

5 Trenching Machine Operator, maximum digging capacity 3 ft. depth
4 Trenching Machine Operator, maximum digging capacity over 3 ft. depth
4 Back Filling Machine Operator
2 Wheel Excavator
2 Canal Trimmer
2 Band Wagon (in conjunction with wheel excavator)

TUNNEL

4 Mucking Machine Operator
6 Conveyor Operator (any type)
4 Shield Operator
6 Air Filtration Equipment Operator
6 Dinkey Operator
6 Oiler
4 Tunnel Boring Machine Operator

WELDING MACHINES

6 Welding Machine Operator

UNDERWATER EQUIPMENT

2 Underwater Equipment Operator, remote or otherwise, when used in construction work

ROOFERS

(Installation and removal of sheet metal roofing is done by sheetmetal workers.)

Area 1:		
o Roofers	18.34	5.05
o Handling coal tar pitch	20.17	5.05
Area 2:		
o Roofers (Add $2.00 per hour to Fringe for work with irritable Bituminous material.)	16.94	5.38
Area 3:		
o Roofers (Add $1.50 per hour to Fringe for work with irritable Bituminous material.)	14.85	4.07
Area 4:		
o Roofers (Add $2.00 per hour to Fringe for work with irritable Bituminous materials)	16.00	5.75

ROOFERS (Continued)

Area 5:		
o Roofers (Add $3.00 per hour to Fringe for work with irritable Bituminous materials)	16.67	5.60

Area 1	Area 1 (cont)	Area 2	Area 2 (cont)
Baker	Multnomah	Benton	Klamath
Clackamas	Sherman	Coos	Lake
Clatsop	Tillamook	Crook	Lane
Columbia	Wasco	Curry	Lincoln
Jefferson	Washington	Deschutes	Linn
Gilliam	Wheeler	Douglas	Marion
Grant		Harney	Polk
Hood River		Jackson	Yamhill
		Josephine	

Area 3	Area 4	Area 5
Malheur	Umatilla	Morrow
	Union	
	Wallowa	

SHEETMETAL WORKERS

Area 1	**21.08**	**7.91**
(Add $1.00 to base rate for work performed on any swinging platform, swinging chair, or swinging ladder)		
(Add $1.00 to base rate for work with lead or installing material in a plant that uses lead in any form to manufacture a product, (excluding soldering)).		
(Add $1.00 to base rate for work performed in a confined space as defined by OHSA.)		
Area 2	19.60	5.51
(Add $1.75 to base rate for work performed whenever it is possible for worker to fall 30 feet or more)		
(Add $1.75 to base rate for work performed in an area where epoxy resins or other injurious chemicals are being applied)		
Area 3	22.73	7.05
(Add $1.00 to base rate for work where it is necessary to wear a chemically activated face mask)		
(Add $1.00 to base rate for work where employee is required to wear a fresh air mask due to nuclear related work)		
(Add $.45 to base rate for work on a swinging stage, swinging scaffold or bosun chair in excess of 30 feet above the ground)		

TRADES	BASIC HOURLY RATE	FRINGE BENEFITS

SHEETMETAL WORKERS (Continued)

Area 4	**18.92**	**5.06**
Area 5	**18.80**	**5.18**

Area 1

Benton	Gilliam	Linn	Tillamook
Clackamas	Grant	Marion	Wasco
Clatsop	Harney	Multnomah	Washington
Columbia	Hood River	Polk	Wheeler
Crook	Jefferson	Sherman	Yamhill
Deschutes	Lincoln		

Area 2	Area 3	Area 4	Area 5
Baker	Morrow	Douglas	Coos
Malheur	Umatilla	Jackson	Curry
	Union	Josephine	
	Wallowa	Klamath	
		Lake	
		Lane	

SOFT FLOOR LAYERS	**18.34**	4.98+ a

a) plus 4% of basic hourly rate for employees with less than one year of service, 6% for those with more than one year.

SPRINKLER FITTERS	**21.90**	6.28

TENDERS TO MASON TRADES

o Tenders for Bricklayers, Tile Setters, Marble Setters and Terrazzo Workers; Topping for Cement Finishers and Morter Mixers.
18.09 5.60

(Add $0.50 to base rate for refractory work)
(Add to base rate an amount equal to that received for safety belt requirements or other unusual job conditions by the mechanic this worker is tending)

TENDERS TO PLASTERERS	17.59	5.60
TILE SETTER/ TERRAZZO WORKER	20.45	5.53

(Add $.50 to base rate if safety belt required by State safety regulations.)
(Add $1.00 to base rate if work involves epoxy, furnane, alkor acetylene blackgrouting or waterproof membrane.)

TILE, TERRAZZO, BRICK & MARBLE FINISHERS

o Assists Tile Setters, Brick Layers, Marble Masons, Stone Masons, and Terrazzo Workers by striking, sawing, cleaning, washing or grouting. Does not lay or set any material.
15.49 4.05

(Add $.50 to base rate if safety belt required by State safety regulations. Add $1.00 to base rate if work involves epoxy, furnane, alkor acetylene black grouting or waterproof membrane.)
(Add $0.75 to fringe for refractory repair work.)

TRUCK DRIVERS

Zone 1 (Base Rate):

o Group 1	19.12	6.52
o Group 2	19.24	6.52
o Group 3	19.37	6.52
o Group 4	19.62	6.52
o Group 5	19.84	6.52
o Group 6	19.99	6.52
o Group 7	20.19	6.52

Note: A Hazardous Waste Removal Differential must be added to the base rate if work is performed inside the boundary of a Federally Designated Hazardous Waste Site. For further information on this, call the Prevailing Wage Rate Coordinator at 731-4074.

Zone Differential for Truck Drivers
(Add to Zone 1 Rate)

Zone 2	.65
Zone 3	1.15
Zone 4	1.70
Zone 5	2.75

Zone 1: Projects within 30 miles of City Hall in the Cities listed below.
Zone 2: More than 30 miles but less than 40 miles.
Zone 3: More than 40 miles but less than 50 miles.
Zone 4: More than 50 miles but less than 80 miles.
Zone 5: More than 80 miles.

Reference Cities

Albany	Eugene	Longview	Portland
Astoria	Goldendale	Madras	Port Orford
Baker	Grants Pass	Medford	Reedsport
Bend	Hermiston	McMinnville	Roseburg
Brookings	Hood River	Newport	Salem
Burns	Klamath Falls	Oregon City	The Dalles
Coos Bay	LaGrande	Ontario	Tillamook
Corvallis	Lakeview	Pendleton	

OREGON DETERMINATION 96-01 CONSTRUCTION TYPE: HEAVY - ENTIRE STATE. HIGHWAY - ENTIRE STATE. NON-RESIDENTIAL BUILDING - EXCLUDES COOS, CURRY, DOUGLAS AND JOSEPHINE COUNTIES (SEE PAGE 22)

TRADES	BASIC HOURLY RATE	FRINGE BENEFITS

TRUCK DRIVERS (Continued)

Work — Group

A-Frame or Hydra-lift Truck w/load bearing surface 1

Battery Rebuilder 1

Bus or Man-Haul Driver 1

Concrete Buggies (Power operated) 1
Drivers and Helpers handling sacked cement—add 15¢ per hour

Dump Trucks, Side, End and Bottom Dumps, including Semi-Trucks and trains or combinations thereof:
Up to and inc. 10 cu. yds 1
Over 10 cu. yds. and inc. 30 cu. yds 3
Over 30 cu. yds. and inc. 50 cu. yds 4
Over 50 cu. yds. and inc. 60 cu. yds 5
Over 60 cu. yds. and inc. 80 cu. yds 6
Over 80 cu. yds. and inc. 100 cu. yds 7

Dumpsters or Similar Equipment—all sizes 2

Flaherty Spreader Driver or Leverman 2

Lift Jitneys, Fork Lifts—all sizes—used in loading, unloading & transporting material on job site 1

Loader and/or Leverman on Concrete Dry Batch Plant, manually operated 1

Low Bed Equipment, Flat Bed Semi-Truck and Trailer or Doubles transporting equipment or wet or dry materials 2

Lubrication Man, Fuel Truck Driver, Driver, Tireman, Wash Rack, Steam Cleaner or combination 1

Lumber Carrier, Driver-Straddle Carrier—used in loading, unloading and transportation of material on job site 2

Oil Distributor Driver or Leverman 2

Pilot Car 1

Slurry Truck Driver or Leverman 1

Solo Flat Bed and Misc. Body Trucks—
0-10 tons 1

TRADES	BASIC HOURLY RATE	FRINGE BENEFITS

TRUCK DRIVERS (Continued)

Work — Group

Transit Mix and Wet or Dry Mix Trucks:
5 cu. yds. and under 1
Over 5 cu. yds. and inc. 7 cu. yds 2
Over 7 cu. yds. and inc. 11 cu. yds 3
Over 11 cu. yds. and inc. 15 cu. yds 4

Team Drivers 1

Tireman, full-time basis 1

Truck Assistant 1

Truck Mechanic—Welder—Body Repairman 3

Truck Mechanic Assistant 1

Water Wagons (Rated Capacity) up to:
3000 gallons 1
3000 to 5000 gallons 2
5000 to 10,000 gallons 3
10,000 to 15,000 gallons 4

Winch Truck—takes classification of truck on which winch is mounted

WELDERS; RIGGERS

Receive rate for craft performing operation to which welding and rigging are incidental.

THE INFORMATION ON THE FOLLOWING PAGES (20-24) IS TO BE USED FOR PUBLIC WORKS PROJECTS IN THE COUNTIES OF COOS, CURRY, DOUGLAS AND JOSEPHINE ONLY. INCLUDED IS INFORMATION TO ASSIST THE CONTRACTOR WITH CORRECT RATE APPLICATION.

When determining which rate is applicable for projects in Coos. Curry, Douglas or Josephine Counties, it is necessary to determine whether the project is "non-residential," "heavy," or "highway" construction. If more than one of the categories make up 20% or more of the total project cost, separate wage determinations must be used for each of the different types of construction. Conversely, if any of the construction categories makes up over 80% of the total cost of the project, that category will define the appropriate wage determination to be applied to the entire project.

NON-RESIDENTIAL BUILDING CONSTRUCTION

Alterations and additions to non-residential bldgs.
Apartment buildings (5 stories or over)
Arenas (enclosed)
Auditoriums
Automobile parking garages
Banks and financial buildings
Barracks
Churches
City halls
Civic centers
Commercial Buildings
Courthouses
Detention facilities
Dormitories
Farm buildings
Fire stations
Hospitals
Hotels
Industrial buildings
Institutional buildings
Mausoleums
Motels
Nursing & convalescent facilities
Office buildings
Out-patient clinics
Passenger & freight terminal
Post office
Power Plants
Prefabricated buildings
Remodeling buildings
Renovating buildings
Repairing buildings
Restaurants
Schools
Service stations
Shopping centers
Stores
Subway stations
Theaters
Warehouses
Water & Sewage treatment plant (buildings only)

HEAVY CONSTRUCTION

Antenna towers
Bridges (major bridges designed for commercial navigation)
Breakwaters
Caissons (other than building or highway)
Canals
Channels
Channel cut-offs
Chemical complexes or facilities (other than bldgs.)
Cofferdams'
Coke ovens
Dams
Dikes
Docks
Drainage projects
Dredging projects
Electrification projects (outdoor)
Flood control projects
Industrial incinerators
Irrigation projects
Jetties
Kilns
Land drainage (not incidental to other construction)
Land reclamation
Levees
Locks, waterways
Oil refineries
Pipe lines
Ponds
Pumping stations (prefabricated drop-in units)
Railroad construction
Reservoirs
Revetments
Sewage collection and disposal lines
Sewers (sanitary, storm, etc.)
Shoreline maintenance
Storage tanks
Swimming pools (outdoor)
Subways
Tipples
Tunnels
Unsheltered piers and wharves
Viaducts (other than highway)
Water mains
Waterway construction
Water supply lines (not incidental to building)
Water and sewage treatment plants (other than buildings)
Wells

HIGHWAY CONSTRUCTION

Alleys
Airport runways
Bituminous treatments
Bridle paths
Concrete pavement
Curbs
Excavation & embankment (for road construction)
Fencing (highway)
Grade crossing elimination (overpass or underpass)
Guardrails on highway
Highway signs
Highway bridges (overpasses, underpasses, grade separation)
Medians
Parking lots
Parkways
Resurfacing streets and highways
Roadbeds
Roadways
Shoulders
Sidewalks
Stabilizing courses
Storm sewer(incidental to road construction)
Street paving
Surface courses
Taxiways
Trails

TRADES	BASIC HOURLY RATE	FRINGE BENEFITS
ASBESTOS WORKERS		
Installation of insulation on mechanical systems for Thermal and Acoustical purposes, also the installation of fire stop penetrations on Electrical and Mechanical Systems.		
Journeyman Asbestos Worker	22.31	6.14
Removal of regulated material on mechanical systems* which are not going to be scrapped.**		
o Hazardous Materials Handler Mechanic (in any type of project regardless of value)	14.25	3.35
* Mechanical systems include pipes, boilers, ducts, flues breaching, grease ducts and acid ducts. This also includes all labor connected with the handling and distribution of materials for these systems.		
** The removal of all regulated materials from mechanical systems is exclusively the work of Asbestos Workers, unless the mechanical systems are going to be scrap-ped, regardless whether the insulation materials contain asbestos. Laborers do all removal of regulated materials on mechanical systems to be scrapped and any non mechanical also do loading of any regulated material after it has been removed, bagged and tagged, as well as cleanup at the removal site and all work done at the disposal site. Persons performing the removal of regulated materials are classifed as Group 3 Laborers.		
NOTE: Regulated materials are those materials that are regulated for the purpose of protecting the environment or for personal protection by either E.P.A., O.S.H.A., DEQ or Federal O.S.H.A.		
BOILERMAKERS	23.57	8.76
BRICKLAYERS/STONEMASONS	21.17	5.78
CARPENTERS	13.20	3.67
CEMENT MASONS	10.00	0
DRYWALL/WETWALL		
o Drywall (Accoustical and Drywall Applicator)	19.48	7.27
o Wetwall (Lather)	18.41	8.34

TRADES	BASIC HOURLY RATE	FRINGE BENEFITS
ELECTRICIANS		
Coos, Curry, Douglas (western portion)		
o Electricians	21.60	6.54
Josephine, Douglas (eastern portion)		
o Electricians	**22.30**	6.80
o Cable Splicers	**22.30**	6.80
ELEVATOR CONSTRUCTORS		
o Mechanic	25.51	6.82+ a
o Helper	17.86	6.61+ a
o Probationary Helper	12.76	0.34
a) Plus 8% of basic hourly rate for employees with more than 5 years of service; 6% of basic hourly rate for 6 months to 5 years of service.		
GLAZIERS	22.12	**4.64**
(Add $1.00 to base rate if safety belt is required by State safety regulations) (Add $4.00 to base rate for work done from a non-motorized single-man bosun chair)		
INSULATORS (BAT AND BLOWN)	7.85	0
IRONWORKERS		
o Structural, Reinforcing, Ornamental, Riggers, Fence Erectors, Signal Men	20.50	9.32
LABORERS	9.10	4.65
LIMITED ENERGY ELECTRICIANS	13.75	4.49
May only be used for electrical work not exceeding 100 va in Class II and IIIinstallations (as defined in Article 725 of the National Electrical Code):		
PAINTERS	13.00	0
PLASTERERS		
o Nozzleman	22.76	5.06
o Swinging scaffold	21.76	5.06
o all other work	21.26	5.06
PLUMBERS & STEAMFITTERS/PIPEFITTERS	**24.40**	**7.05**
POWER EQUIPMENT OPERATORS		
Backhoes	12.94	1.56
Bulldozers	13.50	1.56
Loader	13.50	1.56

TRADES	BASIC HOURLY RATE	FRINGE BENEFITS
ROOFERS	8.00	0
SHEETMETAL WORKERS		
Coos, Curry	**18.80**	**5.18**
Douglas, Josephine	**18.92**	**5.06**
SOFT FLOOR LAYERS	**18.34**	4.98 + a

a) plus 4% of basic hourly rate for employees with less than one year of service, 6% for those with more than one year.

SPRINKLER FITTERS	**21.90**	6.28
TENDERS TO MASON TRADES		
o Tenders for Bricklayers	18.09	5.60

(Add $0.50 to base rate for refractory work)
(Add to base rate an amount equal to that received for safety belt requirements or other unusual job conditions by the mechanic this worker is tending)

TENDERS TO PLASTERERS	17.59	5.60
TILESETTER/ TERRAZZO WORKER	20.45	5.53

(Add $.50 to base rate if safety belt required by State safety regulations. Add $1.00 to base rate if work involves epoxy, furnane, alkor acetylene black grouting or waterproof membrane.)

TILE, TERRAZZO, BRICK & MARBLE FINISHERS

o Assists Tile Setters, Brick Layers, Marble Masons, Stone Masons, and Terrazzo Workers by striking, sawing, cleaning, washing or grouting. Does not lay or set any material.

15.49 4.05

(Add $.50 to base rate if safety belt required by State safety regulations. Add $1.00 to base rate if work involves epoxy, furnane, alkor acetylene black grouting or waterproof membrane.)
(Add $0.75 to fringe for refractory repair work.)

TRUCK DRIVERS

Zone 1 (Base Rate):		
o Group 1	19.12	6.52
o Group 2	19.24	6.52
o Group 3	19.37	6.52
o Group 4	19.62	6.52
o Group 5	19.84	6.52
o Group 6	19.99	6.52
o Group 7	20.19	6.52

TRUCK DRIVERS (Continued)

Note: A Hazardous Waste Removal Differential must be added to the base rate if work is performed inside the boundary of a Federally Designated Hazardous Waste Site. For further information on this, call the Prevailing Wage Rate Coordinator at 731-4466

Zone Differential for Truck Drivers (Add to Zone 1 Rate)

Zone 2	.65
Zone 3	1.15
Zone 4	1.70
Zone 5	2.75

Zone 1: Projects within 30 miles of City Hall in the Cities listed below.
Zone 2: More than 30 miles but less than 40 miles.
Zone 3: More than 40 miles but less than 50 miles.
Zone 4: More than 50 miles but less than 80 miles.
Zone 5: More than 80 miles.

Reference Cities

Albany	Eugene	Longview	Portland
Astoria	Goldendale	Madras	Port Orford
Baker	Grants Pass	Medford	Reedsport
Bend	Hermiston	McMinnville	Roseburg
Brookings	Hood River	Newport	Salem
Burns	Klamath Falls	Oregon City	The Dalles
Coos Bay	LaGrande	Ontario	Tillamook
Corvallis	Lakeview	Pendleton	

Work	Group
A-Frame or Hydra-lift Truck w/load bearing surface	1
Battery Rebuilder	1
Bus or Man-Haul Driver	1
Concrete Buggies (Power operated)	1
Drivers and Helpers handling sacked cement—add 15¢ per hour	
Dump Trucks, Side, End and Bottom Dumps, including Semi-Trucks and trains or combinations thereof:	
Up to and inc. 10 cu. yds.	1
Over 10 cu. yds. and inc. 30 cu. yds	3
Over 30 cu. yds. and inc. 50 cu. yds	4
Over 50 cu. yds. and inc. 60 cu. yds	5
Over 60 cu. yds. and inc. 80 cu. yds	6
Over 80 cu. yds. and inc. 100 cu. yds	7
Dumpsters or Similar Equipment all sizes	2
Flaherty Spreader Driver or Leverman	2

TRADES	BASIC HOURLY RATE	FRINGE BENEFITS

TRUCK DRIVERS (Continued)

Work — Group

Lift Jitneys, Fork Lifts—all sizes—used in loading, unloading & transporting material on job site 1
Loader and/or Leverman on Concrete Dry Batch Plant, manually operated 1

Low Bed Equipment, Flat Bed Semi-Truck and Trailer or Doubles transporting equipment or wet or dry materials 2

Lubrication Man, Fuel Truck Driver, Driver, Tireman, Wash Rack, SteamCleaner or combination 1

Lumber Carrier, Driver-StraddleCarrier—used in loading, unloadingand transportation of material on job site 2

Oil Distributor Driver or Leverman 2

Pilot Car 1

Slurry Truck Driver or Leverman 1

Solo Flat Bed and Misc. Body Trucks—
0-10 tons 1

Transit Mix and Wet or Dry Mix Trucks
:5 cu. yds. and under 1
Over 5 cu. yds. and inc. 7 cu. yds 2
Over 7 cu. yds. and inc. 11 cu. yds 3
Over 11 cu. yds. and inc. 15 cu. yds. 4

Team Drivers 1

Tireman, full-time basis 1

Truck Assistant. 1

Truck Mechanic—Welder—Body Repairman 3

Truck Mechanic Assistant. 1

Water Wagons (Rated Capacity) up to:
3000 gallons. 1
3000 to 5000 gallons 2
5000 to 10.000 gallons. 3
10.000 to 15.000 gallons 4

Winch Truck—takes classification of truck on which winch is mounted

WELDERS; RIGGERS

Receive rate for craft performing operation to which welding and rigging are incidental.

Oregon

BUREAU
OF LABOR
AND INDUSTRIES

LIST OF CONTRACTORS INELIGIBLE TO RECEIVE PUBLIC WORKS CONTRACTS

Publication Date: January 1, 1996

To: All Oregon Contracting Agencies

Jack Roberts
Commissioner

Pursuant to ORS 279.361, contractors on this list are ineligible to receive public works contracts. These contractors and subcontractors, as well as any firm, corporation, partnership or association in which the contractor or subcontractor has a financial interest are ineligible to receive public works contracts until removed from this list.

If you have questions regarding the list or for the most current information regarding persons ineligible to receive prevailing wage contracts, please contact the Prevailing Wage Rate Cordinator, (Portland) 731-4074 Ext. 250.

	CONTRACTOR NAME	DATE PLACED	REMOVAL DATE
1.	Robin Allen Daniel Allen **A C & E Electric Company** 3363 Silverton Road NE Salem, OR 97301	December 1, 1994	November 30, 1997
2.	Dale Dullenty, aka D.L. Dullenty, aka Donald Dullenty, dba **Dale's Asphalt Paving & Seal Coating** 5011 NE 137th Avenue Vancouver, WA 98662	February 15, 1994	February 14, 1997
3.	Robert Dowing dba **The Electrician** 1605 E. 2nd St. Newberg, OR 97132	January 1, 1994	December 31, 1996
4.	Wayne C. Everett and **Equipment Erection Specialties, Inc.** 8645 SE Roots Road Clackamas, OR 97015	October 15, 1995	October 14, 1998

Continued on Page 2

PORTLAND
800 NE Oregon St. # 32
Portland, OR 97232
(503) 731-4200
FAX (503) 731-4069

EUGENE
165 E 7th Street, Suite 220
Eugene, OR 97401
(503) 686-7623
FAX (503) 686-7980

PENDLETON
200 Hailey Ave., Suite 308
Pendleton, OR 97801
(503) 276-7884
FAX (503) 276-2950

BEND
1250 NE 3rd, Suite B105
Bend, OR 97701
(503) 388-6330
FAX (503) 388-6273

MEDFORD
700 E Main, Suite 105
Medford, OR 97504
(503) 776-6270
FAX (503) 776-6284

SALEM
3865 Wolverine St. NE: E-1
Salem, OR 97310
(503) 373-1447
FAX (503) 373-7630

COOS BAY
320 Central Ave., Suite 510
Coos Bay, OR 97420
(503) 269-4575
FAX (503) 267-3194

AN EQUAL OPPORTUNITY EMPLOYER

LIST OF CONTRACTORS INELIGIBLE TO RECEIVE PUBLIC WORKS CONTRACTS

Publication Date: January 1, 1996

	CONTRACTOR NAME	DATE PLACED	REMOVAL DATE
5.	**Malar Construction, Inc.** 4470 S.W. Hall Blvd, #317 Beaverton, OR 97005	November 23, 1994	November 22, 1997
6.	Edward R. Romayor and **PORTLAND CUSTOM INTERIORS, INC.** 4330 SE Milwaukie Avenue Portland, OR 97202	April 28, 1995	April 27, 1998
7.	**Dean Schmitz** c/o Michael J. Scott P.O. Box 23414 Tigard, OR 97281	February 15, 1994	February 14, 1997
8.	Kenneth D. Gordon Teri Gordon Sealing Technology, Inc., dba/aka **Seal-Tec, Inc.** 6840 SE 135th Avenue Portland, OR 97236	June 1, 1993	May 31, 1996
9.	Haskell F. Tallent, dba **Sound Construction of Reno** 34773 Seavey Loop Road Eugene, OR 97405	October 14, 1994	October 13, 1997

Margaret Nolan, Deputy

for Jack Roberts, Commissioner
Bureau of Labor and Industries

PWRDEBAR.SAM

BUREAU OF LABOR AND INDUSTRIES - WAGE AND HOUR DIVISION

INSTRUCTIONS FOR COMPLETING PAYROLL/CERTIFIED STATEMENT FORM,
WH-38 (Rev 11/95)

General: This form meets needs resulting from the 1983 amendments to the Prevailing Wage Rate Law. Under this amended law, the contractor is required to pay not less than fringe benefits as predetermined by the Bureau of Labor and Industries, in addition to payment of not less than the predetermined rates. The contractor's obligation to pay fringe benefits may be met either by payment of the benefits to the various plans, funds, or programs or by making these payments to the employees as cash in lieu of fringe benefits.

This form provides for the contractor's showing of the payroll and all monies paid to the employees, whether as basic rates or as cash in lieu of fringe benefits, and provides for the contractor's representation in the payroll/certified statement that he/she is paying other benefits required by the contract and not paid as cash in lieu of fringe benefits. Detailed instructions concerning the preparation of the form follow:

Complete the box at the top of the form. Complete the appropriate Prime Contractor or Subcontractor box. Be sure to enter the date the contract was first advertised for bid. If you are not sure of this date, contact the Public Contracting Agency.

Column 1 - Name, Address, and Social Security number of Employee: The employee's full name must be shown on each payroll submitted. The employee's address must also be shown on the first payroll submitted. The address need not be shown on subsequent payrolls unless the address changes. Although not required, space is available in the name and address section so that Social Security numbers can be listed.

Column 2 - Trade Classifications: List the classification found in the Bureau of Labor and Industries publication "Prevailing Wage Rates for Public Works Contracts in Oregon," which is most descriptive of the work actually performed by the employee. Give the group number for those worker classifications which include such information. Consult the worker classifications and minimum prevailing wage rate schedule set forth in contract specifications. Refer to the appropriate prevailing wage rates in effect at the time the contract was first advertised for bid for information regarding trade classifications, basic hourly rates, and hourly fringe benefits. Indicate which workers are apprentices, if any, and give their current percentage, trade classification, and group number when applicable. If additional worker classifications are deemed necessary, contact the contracting public agency. If an employee works in more than one worker classification, use the highest rate for all hours worked, or use separate line entries to show hours worked, rate of pay, and fringe benefit for each classification.

Column 3

- DAY AND DATE: Enter the day of the week (M, T, W, Th, F, S, Sn) in the top row of boxes, and the number of the day of the month below.
- HOURS WORKED EACH DAY: Enter as overtime hours all hours worked in excess of 8 hours per day, all hours worked on Saturday and Sunday and all hours worked on legal holidays as defined in ORS 279.334. See ORS 279.334(3) for exceptions to this requirement.

Column 4

- TOTAL HOURS: Enter separately the total number of overtime hours and straight-time hours worked by each listed classification during this pay period; overtime ("OT") on top, straight time("S") immediately below.

Column 5

- BASIC HOURLY RATE OF PAY: Enter the basic hourly rate and the overtime hourly rate (if any) paid the employee in the appropriate overtime and straight time boxes. Payment of not less than one and one half times the basic or regular rate paid is required for overtime under ORS 279.334.

Column 6

- HOURLY FRINGE BENEFIT PAID AS WAGES TO THE EMPLOYEE: Enter any additional cash paid directly to the employee in lieu of fringe benefits. It is not necessary to pay time and a half for overtime work on those wages which are paid in lieu of fringe benefits.

Column 7

- GROSS AMOUNT EARNED: Enter the gross wages earned by the worker in this classification for all listed straight time hours, all listed overtime hours, and including all additional amounts paid directly to the employee.

Column 8

- TOTAL DEDUCTIONS, FICA, FED, STATE, ETC: Enter the total amount of deductions withheld from each employee for just those hours reported on this payroll/certified statement for this project. All deductions must be in accordance with the provisions of ORS 652.610.

Column 9

- NET WAGES PAID FOR WEEK: Enter the amount of wage actually paid to the employee after subtracting the total deductions reported in Column 8 from the gross amount earned shown in Column 7.

Column 10

- HOURLY FRINGE BENEFIT PAID TO PARTY, PLAN, FUND OR PROGRAM: Enter the hourly amount of fringe benefits paid to each individually approved party, plan, fund or program for each employee. List these amounts separately on the lines provided. Any contactor who is making payments to approved parties, plans, funds or programs in amounts less than the required hourly fringe benefit is obligated to pay the difference directly to the employee as cash in lieu of fringe benefits, and to show that amount in Column 6 of this form.

Column 11

- NAME OF BENEFIT PARTY, PLAN, FUND OR PROGRAM: Enter the name of the party, plan, fund or program that corresponds to the amount shown as an hourly fringe benefit in Column 10.

SUMMARY:

In order to determine if the wages and fringe benefits being certified by this statement are sufficient to meet prevailing wage rate requirements, the following check may be performed:

1. Consider each Trade Classification listed in Column 2.
2. For that Trade Classification, take the sum of:
   a) the Basic Hourly Rate of Pay (Column 5),
   b) the Hourly Fringe Benefit Paid as Wage to Employee (Column 6),
   c) and the Hourly Fringe Benefit Paid To Party, Plan, Fund or Program (Column 10).
3. This sum must equal or exceed the sum of the Basic Hourly Rate (including zone pay and special wage differentials, if any) and the Fringe Benefits as they are listed for that Trade Classification in the appropriately dated issue of the Bureau of Labor and Industries publication Prevailing Wage Rates for Public Works Contracts in Oregon.

◆◆◆

NOTICE TO CONTRACTORS: YOU ARE NO LONGER REQUIRED TO SUBMIT COPIES OF THE PAYROLL/CERTIFIED STATEMENT TO THE BUREAU OF LABOR AND INDUSTRIES. THE STATEMENT MUST BE SUBMITTED TO THE PROJECT CONTRACTING AGENCY.

Bureau of Labor and Industries
Wage and Hour Division

Payroll/Certified Statement Form WH-38
For Use in Complying with ORS 279.354

PAYROLL SUBMISSION

PRIME CONTRACTOR ☐
SUBCONTRACTOR ☐

FIRST ☐ **90 DAY** ☐ **LAST** ☐

Business Name (DBA):	CCB Registration Number:	Project Name:	Project Number:
Phone: ( )		Type Of Work:	
Street Address:		Project Location:	Project County:
Mailing Address:			
Date Pay Period Began:	Date Pay Period Ended:		

THIS SECTION FOR PRIME CONTRACTORS ONLY
Public Contracting Agency Name:
Phone: ( )
Date Contract Specifications First Advertised For Bid: Contract Amount:

THIS SECTION FOR SUBCONTRACTORS ONLY
Subcontract Amount:
Prime/General Contractor Business Name (DBA):
Phone: ( )
Date You Began Work On The Project:

(1) Name, Address, And Social Security Number of Employee	(2) Trade Classification (Include group number if applicable)		(3) DAY AND DATE HOURS WORKED EACH DAY	(4) Total Hours	(5) Basic Hourly Rate Of Pay	(6) Hourly Fringe Benefi Paid As Wage To Employee	(7) Gross Amount Earned	(8) Total Deductions FICA, FED, STATE, ETC	(9) Net Wage Paid For Week	(10) Hourly Fringe Benefit Paid To Party, Plan, Fund or Program	(11) Name Of Benefit Party, Plan, Fund, or Program
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(1) Name, Address, And Social Security Number of Employee	(2) Trade Classification (Include group number if applicable)		(3) DAY AND DATE HOURS WORKED EACH DAY							(4) Total Hours	(5) Basic Hourly Rate Of Pay	(6) Hourly Fringe Benefit Paid As Wage To Employee	(7) Gross Amount Earned	(8) Total Deductions FICA, FED, STATE, ETC.	(9) Net Wage Paid For Week	(10) Hourly Fringe Benefit Paid To Party, Plan, Fund or Program	(11) Name Of Benefit Party, Plan, Fund, or Program
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CERTIFIED STATEMENT

I _____, _____ do here by state:
(Name of signatory party) (Title)

(1) That I pay or supervise the payment of the persons employed by _____ on the _____;
(Contractor, Subcontractor or Surety) (Building or work)

that during the payroll period commencing on the _____ day of _____, 19_____, and ending the _____ day of _____, 19_____, all persons employed on said project have been paid the full weekly wages earned, that no rebates have been or will be made either directly or indirectly to or on behalf of said _____
(Contractor, Subcontractor or Surety) from the full weekly wages earned by any person, and that no deductions have been made either directly or indirectly from the full wages earned by any person, other than permissible deductions as specified in ORS 652.610, and described as follows:

_____

(2) That any payrolls otherwise under this contract required to be submitted for the above period are correct and complete; that the wage rates for workers contained therein are not less than the applicable wage rates contained in any wage determination incorporated in the contract; that the classification set forth therein for each worker conforms with work performed.

(3) That any apprentices employed in the above period are duly registered in a bona fide apprenticeship program registered with a State apprenticeship agency recognized by the Bureau of Apprenticeship and Training, United States Department of Labor, or if no such recognized agency exists in a State, are registered with the Bureau of Apprenticeship and Training, United States Department of Labor.

I have read this certified statement, know the contents thereof and it is true to my knowledge.

_____ _____
NAME AND TITLE SIGNATURE

Note to Contractors: You must attach copies of this form to each of your payroll submissions on this project. See the BOLI publication Prevailing Wage Rates for Public Works Contracts in Oregon for iinstructions on completing this form.

FILE THIS FORM WITH THE CONTRACTING AGENCY.

FORM WH-38 (Rev. 11/95)

BUREAU OF LABOR AND INDUSTRIES
NOTICE OF AWARD OF PUBLIC WORKS CONTRACT
(For use by Public Agencies in complying with ORS 279.363)

1. CONTRACTING AGENCY INFORMATION

Name_____ **Agency Number**_____

Address_____

Agency Representative_____ **Phone**_____

2. CONTRACT INFORMATION

Project Name_____ **Project Number** _____

Project Manager Name_____ **Fax Number** _____

Phone Number_____

Project Location (Street(s), City, State)_____

Project County_____

Source of Funds (i.e. 100% Federal Funds, 50/50 Federal/State,100% Local, etc.)_____

(*Note:* If this project is Federally funded and the Davis Bacon Act applies, STOP HERE)!!
Do not submit this form to the Oregon Bureau of Labor.
If Federal funds are involved, but Oregon PWR laws are to be followed, please specify.

Date Contract Specifications First Advertised for Bid_____

Date Contract Awarded_____ **Date Work Expected to Begin**_____

Date First Progress Payment Due_____ **Expected Date of Completion**_____

3. PRIME CONTRACTOR INFORMATION

Name_____

Address_____

City, State, Zip_____ **Phone**_____

Construction Contractors Board Registration Number_____

Workers' Comp Insurance Company_____

Workers' Comp Policy/Binder Number_____

THIS FORM WILL BE RETURNED TO THE CONTRACTING AGENCY FOR CORRECTION AND RESUBMITTAL IF INCOMPLETE.

RETURN THIS COMPLETED FORM TO: **Oregon Bureau of Labor and Industries**
Wage and Hour Division Rm 1160
Prevailing Wage Section
800 NE Oregon # 32
Portland, OR 97232
(503) 731-4074, ext. 250 Fax: 731-4623

WH81S(Rev. 12/95)

REV81.SAM



Bureau of Labor and Industries
Prevailing Wage Rate Unit
800 N.E. Oregon St., # 32
Portland, OR 97232
Phone: (503) 731-4074, Fax: (503) 731-4623

PUBLIC WORK CONTRACT FEE INFORMATION FORM

(For use by contractors in complying with ORS 279.357)

THIS FORM TO BE USED FOR PROJECTS AWARDED AFTER SEPTEMBER 9, 1995 ONLY

Contractors: Please complete and mail this form to BOLI at the above address, along with the appropriate fee (1/10th of 1% of the contract price*) payable to BOLI. **Minimum fee is $100.00, maximum fee is $5,000.00.** Without the following completed information, the bureau may be unable to properly credit you for payment received.

BUSINESS NAME (DBA) _____ **CCB #** _____

MAILING ADDRESS: _____ **PHONE:** (___) _____
(STREET OR PO BOX #, CITY, STATE, ZIP)

PROJECT NAME: _____

PROJECT NUMBER: _____ **PROJECT LOCATION:** _____

AGENCY AWARDING CONTRACT: _____

AGENCY CONTACT PERSON: _____ **PHONE:** (503) _____

CONTRACT AMOUNT: _____ **DATE AWARDED:** _____ **DATE WORK BEGAN:** _____

*(Contract amount X .001)

(Please duplicate this form for future use)

Bureau of Labor and Industries
Prevailing Wage Rate Unit
800 N.E. Oregon St., # 32
Portland, OR 97232
phone: (503) 731-4074, ext. 250
FAX: (503) 731-4623

PUBLIC WORKS CONTRACT FEE ADJUSTMENT FORM

THIS FORM TO BE USED FOR RECONCILIATION OF FEES ON COMPLETION OF PUBLIC WORKS PROJECTS

(As required by ORS 279.357 and OAR 839-16-210)

Contractors: Please complete and mail this form to BOLI at the above address, after completion of the public works project and not less than 30 days after the final payment by the contracting agency. Contractors are required to determine the final contract price, including all change orders or other adjustments to the original contract price and to calculate the adjusted prevailing wage rate fee, based on the revised contract price. Documentation must be included to support the final contract price. The prevailing wage rate fee, .001, (1/10th of 1%) shall be applied to the final contract price, with credit taken for fees already submitted. The contractor must submit the additional fee payable to BOLI with the adjustment form or requests for refund if applicable. **No additional fee will be charged, nor a refund made, on any reconciled amounts under $100.00.**

BUSINESS NAME (DBA) _____ **CCB #** _____

MAILING ADDRESS: _____ **PHONE:** (503) _____
(STREET OR PO BOX #, CITY, STATE, ZIP)

PROJECT NAME: _____

PROJECT NUMBER: _____ **PROJECT LOCATION:** _____

AGENCY AWARDING CONTRACT: _____ **DATE AWARDED:** _____

FINAL CONTRACT AMOUNT: _____ **FINAL FEE DUE*:** _____
(Include all change orders and adjustments to the contract price)
*(Final Contract amount X .001)

ORIGINAL CONTRACT AMOUNT: _____ **INITIAL FEE PAID*:** _____
*(Contract amount X .001)

BALANCE DUE: _____ **REFUND DUE:** _____
(Final contract fee less initial fee paid)

Sample Calculation:

Final Contract Amount:	$400,000.00	Final Fee Due:	$400.00
Original Contract Amt:	-300,000.00	Initial Fee Paid:	-300.00
Total Adjustment:	$100,000.00	Amount Due or Refund Due:	$100.00

*Documentation may consist of change orders or other contract documents substantiating the amount of the contract.

(Please duplicate this form for future use)

PLANNED PUBLIC IMPROVEMENT SUMMARY

FISCAL YEAR_____ - _____ _____ PAGE_____OF_____

(Name of State or Local Government Agency)

Project Number	Project Name	Project Type	Project Location	Estimated Project Cost	Agency or Contract Work

ORS 279.023 generally states that not less than 30 days prior to adoption of its budget for the subsequent budget period, each public agency shall prepare and file with the Commissioner of the Bureau of Labor and Industries a list of every public improvement known to that agency that the agency plans to fund in the budget period... If the agency decides to use its own equipment and personnel for constructing projects estimated to cost more than $50,000, the agency shall show that the decision conforms to the policy of the State of Oregon that public agencies shall make every effort to construct public improvements at the least cost to the public agency, and the public agency shall cause to be kept and preserved a full, true and accurate account of the costs of performing the work including all engineering and administrative expenses and a reasonable estimate of the cost, including investment cost, of the equipment used. NOTE: This Improvement Summary together with the project estimate and least cost determination constitutes a public record available in the usual manner for public review or copying. Mail a copy of this public improvement summary to: Wage and Hour Division, 800 NE Oregon St. # 32, Portland, Oregon 97232.

FORM WH - 118 (Rev 6/91)

CAPITAL IMPROVEMENT PROJECT COST COMPARISON ESTIMATE

_____
(Name of State or Local Government Agency)

DEPARTMENT:
PROPOSED YEAR:
PROJECT DESCRIPTION:

PROJECT NAME:

FUND:
PROJECT NUMBER:

Rough Quantity Estimate	Units	Work Class Description	Agency Force Estimate		Agency Contract Estimate	
			Unit Cost	Total Cost	Unit Cost	Total Cost
Estimated Construction Period _____				$		$

_____ determines that (Agency Forces)(Contractor) can perform this work at the least cost.
(Name of Agency) (cross out one)

FORM WH - 119 (Rev 6/91)

_____
(Agency Official)

BUREAU OF LABOR AND INDUSTRIES
800 NE OREGON STREET # 32
PORTLAND, OREGON 97232

ADDRESS CORRECTION REQUESTED

BULK RATE
U.S. Postage
PAID
Portland, Oregon
Permit No. 0701

SECTION 01060

SPECIAL CONDITIONS

PART 1 - GENERAL

1.01 PRECONSTRUCTION CONFERENCE

A. A preconstruction conference shall be held at the NEWBERG WASTEWATER TREATMENT PLANT after award of Contract. Engineer will notify the Contractor as to the date and time of the conference one week in advance of the proposed date. Contractor's Project Manager and Project Superintendent and Contractor's Subcontractor Representatives shall attend.

1.02 PROJECT SIGNS

A. None required

1.03 CONTRACTOR'S SUPERINTENDENT'S FIELD OFFICE

A. Establish at site of Project.

B. Equipment: Telephone, telecopy, mailing address, and sanitary facilities.

C. Assure attendance at this office during the normal working day.

D. At this office, maintain complete field file of shop drawings, posted Contract Drawings and Specifications, and other files of field operations including provisions for maintaining "As Recorded Drawings."

E. Remove field office from site upon acceptance of the entire work by the Owner.

1.04 ENGINEER'S FIELD OFFICE

A. Not required

1.05 DRAWINGS AND CONTRACT DOCUMENTS FOR CONTRACTOR USE

A. Refer to General Conditions.

B. Contractor shall pick up all "no-charge" documents within 10 days from date of Notice to Proceed.

C. Additional documents after "no-charge" documents will be furnished to Contractor at cost.

1.06 TESTING

A. Required testing, testing procedures, reports, certificates, and costs associated with all phases of securing required satisfactory test information which may be required by individual sections of Specifications or Drawings are the full responsibility of the Contractor.

1.07 ORDER OF CONSTRUCTION AND CONSTRUCTION SCHEDULE

A. Construction operations will be scheduled to allow the Owner uninterrupted operation of existing adjacent facilities. Coordinate connections with existing work to ensure timely completion of interfaced items.

B. At no time shall Contractor or his employees modify operation of the existing facilities or start construction modifications without approval of the Owner except in emergency to prevent or minimize damage.

C. Within 10 days after award of Contract, submit for approval a critical path type schedule. Account for schedule of Subcontracts. Include proper sequence of construction, various crafts, purchasing time, shop drawing approval, material delivery, equipment fabrication, startup, demonstration, and similar time consuming factors. Show on schedule as a minimum, earliest starting, earliest completion, latest starting, latest finish, and free and total float for each task or item.
Evaluate schedule not less than monthly. Update, correct, and rerun schedule and submit to Engineer in triplicate with pay application to show rescheduling necessary to reflect true job conditions. When shortening of various time intervals is necessary to correct for behind schedule conditions, indicate steps to implement to accomplish work in shortest schedule. Information shall be submitted to Engineer in writing with revised schedule.

D. If Contractor does not take necessary action to accomplish work according to schedule, he may be ordered by Owner in writing to take necessary and timely action to improve work progress. Order may require increased work forces, extra equipment, extra shifts or other action as necessary. Should Contractor refuse or neglect to take such action authorized, under provisions of this contract, Owner may take necessary actions including, but not necessarily limited to, withholding of payment and termination of contract.

E. Upon receipt of approved "Work Schedule," within 10 days, submit to Engineer an estimated payment schedule by each month of project duration. Include a composite curve to show estimated value of work complete and stored materials less specified retainage. Establish key months when work will be 50, 80, 90, and 100 percent complete. During the course of work, update with new composite curves at key months or whenever variation is expected to be more than plus or minus 10 percent. Retain original or previous composite curves as dashed curves on all updates. Include a heavy plotted curve to show ACTUAL payment curve on all updates.

1.08 PROJECT MEETINGS

A. The Engineer shall conduct construction meetings involving:
   1. Contractor's project manager.
   2. Contractor's project superintendent.
   3. Owner's designated representative(s).
   4. Engineer's designated representative(s).
   5. Contractor's subcontractors as appropriate to the work in progress.

B. Conduct meetings weekly.

C. The Engineer shall take meeting minutes and submit copies of meeting minutes to participants and designated recipients identified at the Preconstruction Conference. Corrections, additions or deletions to the minutes shall be noted and addressed at the following meeting.

D. The Engineer shall schedule meetings for most convenient time frame.

E. The Engineer shall have available at each meeting full chronological file of all previous meeting minutes.

F. The Contractor shall have available at each meeting up-to-date record drawings.

1.9 SPECIAL CONSIDERATIONS

A. Contractor shall be responsible for negotiations of any waivers or alternate arrangements required to enable transportation of materials to the site.

B. Maintain conditions of access road to site such that access is not hindered as the result of construction related deterioration.

END OF SECTION

SECTION 01340

SHOP DRAWINGS, PRODUCT DATA & SAMPLES; OPERATION & MAINTENANCE MANUALS; AND MISCELLANEOUS SUBMITTALS

PART 1 - GENERAL

1.01 SUMMARY

A. General:
   1. Section Addresses:
      a. Mechanics and administration of the submittal process for shop drawings, operation and maintenance manuals, and miscellaneous submittal items.

B. Related Sections include but are not necessarily limited to:
   1. Division 0 - Bidding Requirements, Contract Forms, and Conditions of the Contract.
   2. Division 1 - General Requirements.
   3. Sections in Divisions 2 through 16 identifying required submittals.

1.02 DEFINITIONS

A. Shop Drawings:
   1. See General Conditions.
   2. Product data and samples are Shop Drawing information.
   3. Representative types of shop drawing submittal items include but are not limited to:
      a. Instrument product data.
      b. Instrumentation drawings.
      c. Electrical equipment and fixtures
      d. Electrical conduit, wire, panel board modifications, and controls

B. Miscellaneous Submittals:
   1. Submittals other than Shop Drawings:
   2. Representative types of miscellaneous submittal items include but are not limited to:
      a. Construction schedule.
      b. Concrete, soil compaction, and pressure test reports.
      c. HVAC test and balance reports.
      d. Installed equipment and systems performance test reports.
      e. Manufacturer's installation certification letters.
      f. Instrumentation and control commissioning reports.
      g. Warranties.
      h. Service agreements.
      i. Construction photographs.
      j. Survey data.
      k. Cost breakdown (Schedule of Values).
      l. Erosion Control Plan.

1.03 TRANSMITTALS

A. Shop Drawings and Operation and Maintenance Manuals:
   1. Transmit all submittals to:

      HDR Engineering, Inc.
      500 108th Avenue, NE, Suite 1200
      Bellevue, WA 98004-5538
      Attn: Darold Woodward

   2. Utilize two copies of attached Exhibit "A" to transmit all shop drawings, product data and samples.
   3. Utilize two copies of attached Exhibit "B" to transmit all Operation and Maintenance Manuals.
   4. All transmittals must be from Contractor and bear his approval stamp. Transmittals will not be received from or returned to subcontractors:
      a. Shop drawing transmittal stamp shall read "(Contractor's Name) has satisfied Contractor's obligations under the Contract Documents with respect to Contractor's review and approval as stipulated under General Conditions Paragraph 6.25.1. Transmittals will not be received from or returned to subcontractors.
      b. Operation and Maintenance Manual transmittal stamp may be Contractor's standard approval stamp.
   5. Provide submittal information defining specific equipment or materials utilized on the project. Generalized product information not clearly defining specific equipment or materials to be provided will be rejected.
   6. Calculations required in individual specification sections will be received for information purposes only and will be returned stamped "E. Engineer's Review Not Required" to acknowledge receipt.
   7. Calculations required in individual specification sections are required as For-Information Only-For-Future-Use submittals. Calculations and other submittals identified as For-Information-Only-For Future-Use submittals shall be transmitted directly to the owner at:

      City of Newberg, Office of Community Development
      414 E. First Street
      Newberg, OR 97132
      Attn: Chuck Liebert

   8. Submittal schedule:
      a. Schedule of shop drawings:
         1) Submitted and approved within 20 days of receipt of Notice to Proceed.

      b. Shop drawings:
         1) Submittal and approval prior to 50 percent completion.
      c. Operation and Maintenance Manuals and Equipment Record Sheets:
         1) Initial submittal within 60 days after date shop drawings are approved.

B. Miscellaneous Submittals:
   1. Transmit under Contractor's standard letter of transmittal or letterhead.
   2. Submit in triplicate or as specified in individual specification section.

3. Transmit to:

HDR Engineering, Inc.
500 108th Avenue, NE, Suite 1200
Bellevue, WA 98004-5538
Attn: Darold Woodward

4. Provide carbon copy of letter of transmittal to Owner's Project Representative.

1.04 PREPARATION OF SUBMITTALS

A. Shop Drawings:
1. Number transmittals consecutively beginning with 1.
2. Number transmittals of resubmitted items with the original root number and a suffix letter starting with "A" on a new transmittal form.
3. Restrict each letter of transmittal to only one Specification Section or portion thereof.
4. Provide breakout of each transmittal contents on transmittal form. Each component thus defined will receive specific action by the Engineer. Define manufacturer, item, Contract Document tag number, and Contract Drawing/Specification reference.
5. Do not change the scope of any resubmittal from the original transmittal scope. If some components of the original or previous resubmittal transmittal received "A" or "B" Action and others did not, list the "A" or "B" Action components in subsequent resubmittal packages and indicate "A" or "B" Action code previously received on the transmittal form. With prior approval of the Engineer, components of an original submittal or prior resubmittal that have not received an "A" or "B" Action may be withheld from a resubmittal. Such components shall be listed on the resubmittal transmittal form and indicated as "Outstanding - To Be Resubmitted At a Later Date."
6. For 8-1/2 x 11 IN size sheets, provide four copies of each page for Engineer plus the number required by the Contractor. The number of copies required by the Contractor will be defined at the Preconstruction Conference, but shall not exceed 5.
7. For items not covered in paragraph 1.04-A.6 submit one reproducible transparency and one print of each drawing until approval is obtained. Utilize mailing tube; do not fold. The Engineer will mark and return the reproducible to the Contractor for his reproduction and distribution.
8. Provide clear space (3 IN SQ) for Engineer stamping of each component defined in 1.04-A.4.
9. Contractor shall not use red color for marks on transmittals. Duplicate all marks on all copies transmitted, and ensure marks are photocopy reproducible. Outline Contractor marks on reproducible transparencies with a rectangular box.
10. Transmittal contents:
    a. Coordinate and identify shop drawing contents so that all items can be easily verified by the Engineer.
    b. Identify equipment or material use, tag number, drawing detail reference, weight, and other project specific information.
    c. Provide sufficient information together with technical cuts and technical data to allow an evaluation to be made to determine that the item submitted is in compliance with the Contract Documents.
    d. Submit items like equipment brochures, cuts of fixtures, product data sheets or catalog sheets on 8-1/2 x 11 IN pages. Indicate exact item or model and all options proposed.
    e. Include legible scale details, sizes, dimensions, performance characteristics, capacities, test data, anchoring details, installation instructions, storage and handling instructions, color charts, layout drawings, parts catalogs, rough-in

diagrams, wiring diagrams, controls, weights and other pertinent data. Arrange data and performance information in format similar to that provided in Contract Documents. Provide, at minimum, the detail provided in the Contract Documents.

f. If proposed equipment or materials deviate from the Contract Drawings or Specifications in any way, clearly note the deviation and justify the said deviation in detail in a separate letter immediately following transmittal sheet.

B. Samples:
   1. Identification:
      a. Identify sample as to transmittal number, manufacturer, item, use, type, project designation, tag number, specification section or drawing detail reference, color, range, texture, finish and other pertinent data.
      b. If identifying information cannot be marked directly on sample without defacing or adversely altering samples, provide a durable tag with identifying information securely attached to the sample.
   2. Include application specific brochures, and installation instructions.
   3. Provide Contractor's stamp of approval on samples or transmittal form as indication of Contractor's checking and verification of dimensions and coordination with interrelated work.
   4. Resubmit samples of rejected items.

C. Operation and Maintenance Manuals:
   1. Number transmittals for Operation and Maintenance Manual with original root number of the approved shop drawing for the item.
   2. Submit two copies until approval is received.
   3. Identify resubmittals with the original number plus a suffix letter starting with "A."
   4. Submit Operation and Maintenance Manuals printed on 8-1/2 x 11 IN size heavy first quality paper with standard three-hole punching and bound in stiff metal hinged binder constructed as a three-post ring style. Provide binders with titles on front and on spine of binder. Tab each section of manuals for easy reference with plastic-coated dividers. Provide index for each manual. Provide plastic sheet lifters prior to first page and following last page.
   5. Reduce drawings or diagrams bound in manuals to an 8-1/2 x 11 IN or 11 x 17 IN size. However, where reduction is not practical to ensure readability, fold larger drawings separately and place in vinyl envelopes which are bound into the binder. Identify vinyl envelopes with drawing numbers.
   6. Transmittal Content:
      a. Submission of Operation and Maintenance Manuals is applicable but not necessarily limited to:
         1) Major equipment.
         2) Equipment used with electrical motor loads of 1/6 HP nameplate or greater.
         3) Specialized equipment including valves and instrumentation and control system components for HVAC and process systems such as meters, recorders, and transmitters.
         4) Valves greater than 12 IN DIA.
         5) Water control gates.
      b. Prepare operation and maintenance manuals to include, but are not necessarily limited to, the following detailed information, as applicable:
         1) Equipment function, normal operating characteristics, limiting operations.
         2) Assembly, disassembly, installation, alignment, adjustment, and checking instructions.

3) Operating instructions for start-up, routine and normal operation, regulation and control, shutdown, and emergency conditions.
4) Lubrication and maintenance instructions.
5) Guide to "troubleshooting."
6) Parts list and predicted life of parts subject to wear.
7) Outline, cross-section, and assembly drawings; engineering data; and electrical diagrams, including elementary diagrams, wiring diagrams, connection diagrams, word description of wiring diagrams and interconnection diagrams.
8) Test data and performance curves.
9) A list of recommended spare parts with a price list and a list of spare parts provided under these specifications.
10) Copies of installation instructions, parts lists or other documents packed with equipment when delivered.
11) Instrumentation or tag numbers relating the equipment back to the Contract Documents.
12) Include a filled-out copy of the Equipment Record Sheet provided by Engineer.
13) For equipment items involving components or subunits, an Equipment Record Sheet for each operating component or subunit is required.

1.05 ENGINEER'S REVIEW ACTION

A. Shop Drawings and Samples:
1. Items within transmittals will be reviewed for overall design intent and will receive one of the following actions:
a. A - FURNISH AS SUBMITTED.
b. B - FURNISH AS NOTED.
c. C - REVISE AND RESUBMIT.
d. D - REJECTED.
e. E - REVIEW NOT REQUIRED.
2. Transmittals received will be initially reviewed to ascertain inclusion of Contractor's approval stamp. Drawings not stamped by the Contractor or stamped with a stamp containing language other than that specified in Paragraph 1.03-A.4.a., will not be reviewed for technical content and will be returned without any action.
3. Transmittals returned with Action "A" or "B" are considered ready for fabrication and installation. If for any reason a transmittal that has an "A" or "B" Action is resubmitted, it must be accompanied by a letter defining the changes that have been made and the reason for the resubmittal. Destroy or conspicuously mark "SUPERSEDED" all documents having previously received "A" or "B" Action that are superseded by a resubmittal.
4. Transmittals with Action "A" or "B" combined with Action "C" (Revise and Resubmit) or "D" (Rejected) will be individually analyzed giving consideration as follows:
a. The portion of the transmittal given "C" or "D" will not be distributed (unless previously agreed to otherwise at the Preconstruction Conference). One copy or the one transparency of the "C" or "D" drawings will be marked up and returned to the Contractor. Correct and resubmit items so marked.
b. Items marked "A" or "B" will be fully distributed.
c. If a portion of the items or system proposed are acceptable, however, the major part of the individual drawings or documents are incomplete or require revision, the entire submittal may be given "C" or "D" Action. This is at the sole discretion of the Engineer. In this case, some drawings may contain relatively

few or no comments or the statement, "Resubmit to maintain a complete package." Distribution to the Owner and field will not be made (unless previously agreed to otherwise).

5. Failure to include any specific information specified under the submittal paragraphs of the specifications will result in the transmittal being returned to the Contractor with "C" or "D" Action.
6. In addition to calculations stamped and returned "E. Engineer's Review Not Required," other transmittals such as submittals which the Engineer considers as "Not Required," submittal information which is supplemental to but not essential to prior submitted information, or items of information in a transmittal which have been reviewed and received "A" or "B" Action in a prior transmittal, will be returned with Action "E. Engineer's Review Not Required."
7. Samples may be retained for comparison purposes. Remove samples when directed. Include in bid all costs of furnishing and removing samples.
8. Approved samples submitted or constructed, constitute criteria for judging completed work. Finished work or items not equal to samples will be rejected.

B. Operation and Maintenance Manuals:
   1. Engineer will review and indicate one of the following review actions:
      a. ACCEPTABLE.
      b. FURNISH AS NOTED.
      c. REVISE AND RESUBMIT.
      d. REJECTED.
   2. Acceptable submittals will be retained with the transmittal form returned with a request for five additional copies.
   3. Deficient submittals will be returned along with the transmittal form which will be marked to indicate deficient areas.

END OF SECTION

SECTION 01600

PRODUCT DELIVERY, STORAGE, AND HANDLING

PART 1 - GENERAL

1.01 SUMMARY

A. Section Includes:
   1. Scheduling of product delivery.
   2. Packaging of products for delivery.
   3. Protection of products against damage from:
      a. Handling.
      b. Exposure to elements or harsh environments.

B. Related Sections include but are not necessarily limited to:
   1. Division 0 - Bidding Requirements, Contract Forms, and Conditions of the Contract.

   2. Division 1 - General Requirements.

C. Payment:
   1. No payment will be made to Contractor for equipment or materials not properly stored and insured or without approved shop drawings.
      a. Previous payments for items will be deducted from subsequent progress estimate(s) if proper storage procedures are not observed.

1.02 DELIVERY

A. Scheduling:
   1. Schedule delivery of products or equipment as required to allow timely installation and to avoid prolonged storage.

B. Packaging:
   1. Deliver products or equipment in manufacturer's original unbroken cartons or other containers designed and constructed to protect the contents from physical or environmental damage.

C. Identification:
   1. Clearly and fully mark and identify as to manufacturer, item, and installation location.

D. Protection and Handling:
   1. Provide manufacturer's instructions for storage and handling.

PART 2 - PRODUCTS

Not applicable to this section.

PART 3 - EXECUTION

3.01 PROTECTION, STORAGE AND HANDLING

A. Manufacturer's Instruction:
   1. Protect all products or equipment in accordance with manufacturer's written directions.
      a. Store products or equipment in location to avoid physical damage to items while in storage.
      b. Handle products or equipment in accordance with manufacturer's recommendations and instructions.
   2. Protect equipment from exposure to elements and keep thoroughly dry.
   3. When space heaters are provided in equipment, connect and operate heaters during storage until equipment is placed in service.

3.02 STORAGE FACILITIES

A. Temporary Storage Building:
   1. Provide a weatherproof temporary storage building specifically for the purpose of providing for protection of products and equipment or provide sufficient space for storage in the Contractor's office. Size building to accommodate anticipated storage items.
   2. Equip building with lockable doors and lighting, and provide electrical service for equipment space heaters and heating or ventilation as necessary to provide storage environments acceptable to specified manufacturers.
   3. Provide methods of storage of products and equipment off the ground.
   4. Provide this structure within 60 days after Notice to Proceed. Locate building on-site where shown on the Drawings or in location approved by Engineer. Remove building from site prior to startup and demonstration period.

3.03 FIELD QUALITY CONTROL

A. Inspect Deliveries:
   1. Inspect all products or equipment delivered to the site prior to unloading. Reject all products or equipment that are damaged, used, or in any other way unsatisfactory for use on Project.

B. Monitor Storage Area:
   1. Monitor storage area to ensure suitable temperature and moisture conditions are maintained.

END OF SECTION

SECTION 01601

JOB CONDITIONS

PART 1 - GENERAL

1.01 SUMMARY

A. Section Includes:
   1. Job conditions.

B. Related Sections include but are not necessarily limited to:
   1. Division 0 - Bidding Requirements, Contract Forms, and Conditions of the Contract.
   2. Division 1 - General Requirements.

1.02 PROJECT CONDITIONS

A. Prior to installation of material, equipment and other work, verify with Subcontractors, material or equipment manufacturers, and installers that the substrate or surface to which those materials attach is acceptable for installation of those materials or equipment. (Substrate is defined as building surfaces to which materials or equipment is attached to i.e., floors, walls, ceilings, etc.).

B. Correct unacceptable substrate until acceptable for installation of equipment or materials.

END OF SECTION

SECTION 01640

PRODUCT SUBSTITUTIONS

PART 1 - GENERAL

1.01 SUMMARY

A. Section Includes:
   1. The procedure for requesting substitution approval for a product which is specified by descriptive or performance criteria or defined by reference to one or more of the following:
      a. Name of manufacturer.
      b. Name of vendor.
      c. Trade name.
      d. Catalog number.
   2. See Section 01062 to address substitutions for major equipment.

B. Related Sections include but are not necessarily limited to:
   1. Division 0 - Bidding Requirements, Contract Forms, and Conditions of The Contract.

   2. Division 1 - General Requirements.

C. Requests for Substitution - General:
   1. Base all bids on materials, equipment, and procedures specified.
   2. Certain types of equipment and kinds of material are described in specifications by means of references to names of manufacturers and vendors, trade names, or catalog numbers. When this method of specifying is used, it is not intended to exclude from consideration other products bearing other manufacturer's or vendor's names, trade names, or catalog numbers, provided said products are capable of accomplishing the same tasks as the products specifically indicated.
   3. Other types of equipment and kinds of material may be acceptable.

1.02 QUALITY ASSURANCE

A. In making request for substitution or in using an approved product, Contractor represents:

   1. He has investigated proposed product, and has determined that it is adequate or superior in all respects to that specified, and that it will perform function for which it is intended.
   2. He will provide same guarantee for substitute item as for product specified.
   3. He will coordinate installation of accepted substitution into work, to include building modifications if necessary, making such changes as may be required for work to be complete in all respects.
   4. He waives all claims for additional costs related to substitution which subsequently arise.

1.03 DEFINITIONS

A. Product: Manufactured material or equipment.

1.04 PROCEDURE FOR REQUESTING SUBSTITUTION

A. Considered after award of Contract.

B. Written requests through Contractor only.

C. Transmittal Mechanics:
   1. Follow the transmittal mechanics prescribed for shop drawings in Section 01340. Product substitution will be treated in a manner similar to "deviations," as described in paragraph 1.04-A.10.f of Section 01340. List the letter describing the deviation and justifications on the transmittal form in the space provided under the column with the heading "DESCRIPTION." Include in the transmittal letter, either directly or as a clearly marked attachment, the items listed in paragraph D below.

D. Transmittal Contents:
   1. Product identification:
      a. Manufacturer's name.
      b. Telephone number and representative contact name.
      c. Specification section or drawing reference of originally specified product, including discrete name or tag number assigned to original product in the Contract Documents.
   2. Manufacturer's literature clearly marked to show compliance of proposed product with Contract Documents.
   3. Itemized comparison of original and proposed product addressing product characteristics including but not necessarily limited to:
      a. Size.
      b. Composition or materials of construction.
      c. Weight.
      d. Electrical or mechanical requirements.
   4. Product experience:
      a. Location of past projects utilizing product.
      b. Name and telephone number of persons associated with referenced projects knowledgeable concerning proposed product.
      c. Available field data and reports associated with proposed product.
   5. Data relating to changes in construction schedule.
   6. Data relating to changes in cost.
   7. Samples:
      a. At request of Engineer.
      b. Full size if requested by Engineer.
      c. Held until substantial completion.
      d. Engineer not responsible for loss or damage to samples.

1.05 APPROVAL OR REJECTION

A. Written approval or rejection of substitution given by the Engineer.

B. Engineer reserves the right to require proposed product to comply with color and pattern of specified product if necessary to secure design intent.

C. In event substitution results in a change of Contract price or time, provisions in General Conditions will be applied for adjustment.

D. Substitutions will be rejected if:
   1. Submittal is not through the Contractor with his stamp of approval.

2. Requests are not made in accordance with this Section.
3. In the Engineer's opinion, acceptance will require substantial revision of the original design.
4. In the Engineer's opinion, substitution is not equal to original product specified or will not perform adequately the function for which it was intended.

END OF SECTION

SECTION 01650

FACILITY STARTUP

PART 1 - GENERAL

1.01 SUMMARY

A. Section Includes:
   1. Procedures and actions, required of the Contractor, which are necessary to achieve and demonstrate Substantial Completion.
   2. Requirements for Substantial Completion Submittals.

B. Related Sections include but are not necessarily limited to:
   1. Division 0 - Bidding Requirements, Contract Forms, and Conditions of the Contract.
   2. Division 1 - General Requirements.
   3. Section 13440 - Instrumentation for Process Control: General Requirements.
   4. Section 13500 - Programmable Logic Controller.

1.02 DEFINITIONS

A. Pre-Demonstration Period: The period of time, of unspecified duration after initial construction and installation activities during which Contractor, with assistance from manufacturer's representatives, performs in the following sequence:
   1. Finishing type construction work to ensure the Project has reached a state of Substantial Completion.
   2. Equipment startup.
   3. Personnel training.

B. Substantial Completion: See Division 0, General Conditions.

1.03 SUBMITTALS

A. Submit in the chronological order listed below prior to the completion of the Pre-Demonstration Period.
   1. Master operation and maintenance training schedule:
      a. Submit 30 days (minimum) prior to first training session for Owner's personnel.
      b. Schedule to include:
         1) Target date and time for Owner witnessing of each system initial startup.
         2) Target date and time for Operation and Maintenance training for each system, both field and classroom.
         3) Target date for initiation of Demonstration Period.
      c. Submit for review and approval by Owner.
      d. Include holidays observed by Owner.
      e. Attend a schedule planning and coordination meeting 30 calendar days prior to first anticipated training session:
         1) Provide a status report and schedule-to-complete for requirements prerequisite to manufacturer's training.
         2) Identify initial target dates for individual manufacturer's training sessions.
      f. Owner reserves the right to insist on a minimum 7 days' notice of rescheduled training session not conducted on master schedule target date for any reason.

g. Schedule to be resubmitted until approved.

2. Substantial Completion Submittal:
   a. File Contractor's Notice of Substantial Completion and Request for Inspection.
   b. Approved Operation and Maintenance manuals received by Engineer minimum 1 week prior to scheduled training.
   c. Written request for Owner to witness each system pre-demonstration startup. Request to be received by Owner minimum 1 week before scheduled training of Owner's personnel on that system.
   d. Equipment installation and pre-demonstration startup certifications.
   e. Letter verifying completion of all pre-demonstration startup activities including receipt of all specified items from manufacturers or suppliers as final item prior to initiation of Demonstration Period.

1.04 COST OF STARTUP

A. Contractor to pay all costs associated with Facility startup.

PART 2 - PRODUCTS - (NOT APPLICABLE TO THIS SECTION)

PART 3 - EXECUTION

3.01 GENERAL

A. Facility Startup Divided into Two Periods:
   1. Pre-Demonstration Period including:
      a. Completion of construction work to bring Project to a state of Substantial Completion.
      b. Startup of Equipment.
      c. Training of Personnel.
      d. Completion of the filing of all required submittals.
      e. Filing of Contractor's Notice of Substantial Completion and Request for Inspection.
   2. Demonstration Period including:
      a. Demonstration of functional integrity of Project.

3.02 PRE-DEMONSTRATION PERIOD

A. Completion of Construction Work:
   1. Complete the work to bring the Project to a state of substantial completion.

B. Equipment Startup:
   1. Requirements for individual items of equipment are included in Divisions 2 through 16 of these Specifications.
   2. Prepare the equipment so it will operate properly and safely and be ready to demonstrate functional integrity during the Demonstration Period.
   3. Procedures include but are not necessary limited to the following:
      a. Test or check and correct deficiencies of:
         1) Power, control, and monitoring circuits for continuity prior to connection to power source.
         2) Voltage of all circuits.
         3) Instrumentation and control signal generation, transmission, reception, and response. See Section 13440.

4) Tagging and identification systems.
5) All equipment: Proper connections, alignment, calibration and adjustment.

b. Perform other tests, checks, and activities required to make the equipment ready for Demonstration Period.
c. Documentation:
1) Prepare a log showing each equipment item subject to this paragraph and listing what is to be accomplished during Equipment Startup. Provide a place for the Contractor to record date and person accomplishing required work. Submit completed document before requesting inspection for Substantial Completion certification.

4. Obtain certifications, without restrictions or qualifications, and deliver to Engineer:
a. Manufacturer's equipment installation check letters.
b. Instrumentation Supplier's Instrumentation Installation Certificate.

C. Personnel Training:
1. See individual equipment specification sections.
2. Conduct all personnel training after completion of Equipment Startup for the equipment for which training is being conducted.
a. Personnel training on individual equipment or systems will not be considered completed unless:
1) All pretraining deliverables are received and approved before commencement of training on the individual equipment or system.
2) No system malfunctions occur during training.
3) All provisions of field and classroom training specifications are met.
b. Training not in compliance with the above will be performed again in its entirety by the manufacturer at no additional cost to Owner.

D. Complete the filing of all required submittals:
1. Shop drawings.
2. Operation and Maintenance Manuals.
3. Training material.

E. Filing of Contractor's Notice of Substantial Completion and Request for Inspection of Project:
1. File the notice when the following have been completed:
a. Construction work (brought to state of Substantial Completion).
b. Equipment Startup.
c. Personnel Training.
d. Submittal of required documents.
2. Engineer will review required submittals for completeness within 5 calendar days of Contractor's notice. If complete, Engineer will complete inspection of the Work, within 10 calendar days of Contractor's notice.
3. Engineer will inform Contractor in writing of the status of the Work reviewed, within 14 calendar days of Contractor's notice.
a. Work determined not meeting state of Substantial Completion:
1) Contractor: Correct deficiencies noted or submit plan of action for correction within 5 days of Engineer's determination.
2) Engineer: Reinspect work within 5 days of Contractor's notice of correction of deficiencies.
3) Reinspection costs incurred by Engineer will be billed to Owner who will deduct them from final payment due Contractor.
b. Work determined to be in state of tentative Substantial Completion: Engineer to prepare tentative "Engineer's Certificate of Substantial Completion."

c. Engineer's Certificate of Substantial Completion:
   1) Certificate tentatively issued subject to successful Demonstration of functional integrity.
   2) Issued for Project as a whole.
   3) Issued subject to completion or correction of items cited in the certificate (punch list).
   4) Issued with responsibilities of Owner and Contractor cited.
   5) Executed by Engineer.
   6) Accepted by Owner.
   7) Accepted by Contractor.

d. Upon successful completion of Demonstration Period, Engineer will endorse certificate attesting to the successful demonstration, and citing the hour and date of beginning the successful Demonstration Period of functional integrity as the effective date of Substantial Completion.

3.03 DEMONSTRATION PERIOD

A. General:
   1. Demonstrate the functional integrity of the mechanical, electrical, and control interfaces of the respective equipment and components comprising the facility as evidence of Substantial Completion.
   2. Duration of Demonstration Period: 40 consecutive hours.
   3. If, during the Demonstration Period, the aggregate amount of time used for repair, alteration, or unscheduled adjustments to any equipment or systems that renders the affected equipment or system inoperative exceed 10 percent of the Demonstration Period, the demonstration of functional integrity will be deemed to have failed. In the event of failure, a new Demonstration Period will recommence after correction of the cause of failure. The new Demonstration Period shall have the same requirements and duration as the Demonstration Period previously conducted.
   4. Conduct the demonstration of functional integrity under full operational conditions.
   5. Owner will provide operational personnel to provide process decisions affecting plant performance. Owner's assistance will be available only for process decisions. Contractor will perform all other functions including but not limited to equipment operation and maintenance until successful completion of the Demonstration Period.
   6. Owner reserves the right to simulate operational variables, equipment failures, routine maintenance scenarios, etc., to verify the functional integrity of automatic and manual backup systems and alternate operating modes.
   7. Time of beginning and ending any Demonstration Period shall be agreed upon by Contractor, Owner, and Engineer in advance of initiating Demonstration Period.
   8. Throughout the Demonstration Period, provide knowledgeable personnel to answer Owner's questions, provide final field instruction on select systems and to respond to any system problems or failures which may occur.
   9. Provide all labor, supervision, utilities, chemicals, maintenance, equipment, vehicles or any other item necessary to operate and demonstrate all systems being demonstrated.

END OF SECTION

SECTION 01710

CLEANING

PART 1 - GENERAL

1.01 SUMMARY

A. Section Includes:
   1. Intermediate and final cleaning of Work not including special cleaning of closed systems specified elsewhere.

B. Related Sections include but are not necessarily limited to:
   1. Division 0 - Bidding Requirements, Contract Forms, and Conditions of the Contract.

   2. Division 1 - General Requirements.

1.02 STORAGE AND HANDLING

A. Store cleaning products and cleaning wastes in containers specifically designed for those materials.

1.03 SCHEDULING

A. Schedule cleaning operations so that dust and other contaminants disturbed by cleaning process will not fall on newly painted surfaces.

PART 2 - PRODUCTS

2.01 MATERIALS

A. Cleaning Agents:
   1. Compatible with surface being cleaned.
   2. New and uncontaminated.
   3. For Manufactured Surfaces: Material recommended by manufacturer.

PART 3 - EXECUTION

3.01 CLEANING - GENERAL

A. Prevent accumulation of wastes that create hazardous conditions.

B. Conduct cleaning and disposal operations to comply with laws and safety orders of governing authorities.

C. Do not dispose of volatile wastes such as mineral spirits, oil, or paint thinner in storm or sanitary drains or sewers.

D. Dispose of degradable debris at an approved solid waste disposal site.

E. Dispose of nondegradable debris at an approved solid waste disposal site or in an alternate manner approved by Engineer and regulatory agencies.

F. Handle materials in a controlled manner with as few handlings as possible.

G. Do not drop or throw materials from heights greater than 4 FT or less than 4 FT if conditions warrant greater care.

H. On completion of work, leave area in a clean, natural looking condition. Remove all signs of temporary construction and activities incidental to construction of required permanent Work.

I. Do not burn on-site.

3.02 INTERIOR CLEANING

A. Cleaning During Construction:
   1. Keep work areas clean so as not to hinder health, safety or convenience of personnel in existing facility operations.
   2. At maximum weekly intervals, dispose of waste materials, debris, and rubbish.
   3. Vacuum clean interior areas when ready to receive finish painting. Continue vacuum cleaning on an as-needed basis, until substantial completion.

B. Final Cleaning:
   1. Complete immediately prior to final inspection with Engineer and Owner.
   2. Remove grease, mastic, adhesives, dust, dirt, stains, fingerprints, labels, and other foreign materials from sight-exposed surfaces.
   3. Wipe all lighting fixture reflectors, lenses, lamps and trims clean.
   4. Wash and shine glazing and mirrors.
   5. Polish glossy surfaces to a clear shine.
   6. Ventilating systems:
      a. Clean permanent filters and replace disposable filters if units were operated during construction.
      b. Clean ducts, blowers and coils if units were operated without filters during construction.
   7. Replace all burned out lamps.
   8. Broom clean process area floors.
   9. Mop office, lab, and control room floors.

3.03 EXTERIOR (SITE) CLEANING

A. Cleaning During Construction:
   1. Construction debris:
      a. Confine in strategically located container(s): 1) Cover to prevent blowing by wind. 2) Haul from site minimum once a week.
      b. Remove from work area to container daily.
   2. Vegetation:
      a. Keep weeds, grass, and other vegetation trimmed to 3 IN maximum height.
   3. Soils, sand, and gravel deposited on paved areas and walks:
      a. Remove as required to prevent muddy or dusty conditions.
      b. Do not flush into storm sewer system.

B. Final Cleaning:
   1. Remove trash and debris containers from site:
      a. Re-seed areas disturbed by location of trash and debris containers.

2. Clean paved roadways.

3.04 FIELD QUALITY CONTROL

A. Immediately prior to final completion, conduct an inspection with Engineer to verify condition of all work areas.

END OF SECTION

SECTION 13440

INSTRUMENTATION FOR PROCESS CONTROL: BASIC REQUIREMENTS

PART 1 - GENERAL

1.01 SUMMARY

A. Section Includes:
   1. Basic requirements for complete instrumentation system for process control.

B. Related Sections include but are not necessarily limited to:
   1. Division 0 - Bidding Requirements, Contract Forms, and Conditions of the Contract.
   2. Division 1 - General Requirements.
   3. Section 16120 - Wire and Cable - 600 Volt and Below.

1.02 QUALITY ASSURANCE

A. Referenced Standards:
   1. Institute of Electrical and Electronic Engineers (IEEE):
      a. C62.41, IEEE Guide for Surge Voltages in Low-Voltage AC Power Circuits.
   2. Instrument Society of America (ISA):
      a. S5.1, Instrumentation Symbols and Identification.
      b. S5.2, Binary Logic Diagrams for Process Operations.
      c. S5.3, Graphic Symbols for Distributed Control/Shared Display Instrumentation, Logic and Computer Systems.
      d. S5.4, Standard Instrument Loop Diagrams.
      e. S20, Specification Forms for Process Measurement and Control Instruments, Primary Elements and Control Valves.
      f. RP7.1-56, Pneumatic Control Circuit Pressure Test.
   3. National Institute of Standards and Technology (NIST).

B. Qualifications: Within 5 days after the Bids are opened, the Contractor shall submit proof of the following qualifications:
   1. Instrumentation contractor:
      a. Financial capability.
      b. Maintain a qualified technical staff.
      c. Have design capability.
      d. Have a physical plant and fabricating personnel.
      e. Have competent service, startup, and authorized training personnel.
   2. Reference and experience. Instrumentation contractor must meet the following requirements:
      a. Experience:
         1) Must have at least ten projects of similar size and functional magnitude.
         2) Provide a list of references of seven projects of similar size and functional magnitude which the instrumentation contractor has performed. Include name and telephone numbers of most knowledgeable Owner and Design Engineer contacts.
         3) Provide color photographs of main control panels used for other projects.
      b. Staff:
         1) All involved staff must have experience on at least three projects of similar size and scope.

2) Submit full identification of staff qualifications including design, service, startup and training personnel.

c. UL-508 or ETL-508 certification:

1) Provide evidence of certification as a UL-508 or ETL-508 custom control panel fabrication facility.

1.03 DEFINITIONS

A. Calibrate: To standardize a device so that it provides a specified response to known inputs.

1.04 SYSTEM DESCRIPTION

A. Control System Requirements:

1. This Specification Section 13440 provides the general requirements for the instrument and control system.
2. The instrument and control system consists of all primary elements, transmitters, switches, controllers, computers, recorders, indicators, panels, signal converters, signal boosters, amplifiers, special power supplies, special or shielded cable, special grounding or isolation, auxiliaries, software, wiring, and other devices required to provide complete control of the plant as specified in the Contract Documents.

B. Unless otherwise required for instrument compatibility, electric control signals shall be 4 to 20 milliampere, 24 V DC.

C. All signals shall be directly linearly proportional to measured variable unless specifically noted otherwise.

D. Single Instrumentation Contractor:

1. Furnish and coordinate instrumentation system through a single instrumentation contractor. The instrumentation contractor shall be responsible for functional operations of all systems, performance of control system engineering, supervision of installation, final connections, calibrations, preparation of drawings and operation and maintenance manuals, startup, training, demonstration of substantial completion and all other aspects of the control system.

1.05 SUMMARY OF WORK

A. Control Panel Modifications:

1. Existing as-built control panel drawings from the original PLC installation will be available for reference:
   a. Two copies will be provided for the Contractor's use.
   b. Verify information contained in the as-builts prior to beginning work.
2. Plant control panel (PCP):
   a. Remove existing backup PLC from panel and extend wiring to temporary location on wall. Transfer control to relocated backup PLC and remove main PLC from control panel. Place main PLC back into service for plant operations.
   b. Install TI rack 1 and 2 in existing PLC location.
   c. Wire new inputs/outputs specified.
   d. Add new LI-101A and LI-101B to panel face and wire to existing field inputs for wetwell levels.
   e. Remove PCP graphic panel.
   f. Remove existing PLC SIM #1 and I/O racks 1 - 3.
   g. Remove existing LI-101 (wetwell level indicator).
3. Headworks control panel (HCP):

a. Install new PLC rack 3 inside HCP below existing rack 2.
b. Wire new inputs/outputs specified.
c. Remove existing PLC SIM #2 and I/O racks 1 - 2.
d. Remove thumbwheels: KC-202A, KC-202B, KC-210/211, KC-216, KC-215A, KC-215B. Remove associated distribution panel NLDP-716.
e. Remove hardwired analog alarms to annunciator from LDAH-201A, AAH-209, AAL-209, LSL-547A, LAH-547A, LSL-548A, LAH-555A. Replace with new PLC outputs shown in the I/O list. Remove associated ASH, ASL potentiometers.

4. Secondary control panel (SCP):
a. Wire new inputs/outputs specified.
b. Wire new PLC outputs to operate panel indicators from drivers 1A, 2A, 3A, 4A, 5A.
c. Install new PLC racks 4, 5 inside SCP on left hand side panel.
d. Remove existing PLC SIM #2 and I/O racks 1 - 2.
e. Remove ratio/flow controllers FFC-601, FIC-517, FIC-518, FIC-519, FIC-520.
f. Remove thumbwheel KC-559.
g. Remove SIM #3 and I/O racks 1 - 4.
h. Remove WAS time clock.
i. Remove hardwired analog alarms for LSH-306, LSL-306, ASL-401, ASH-401, ASL-402, ASH-402, ASL-403, ASL-404, LSL-507, LSH-507, LSL-508, LSH-508, FSL-545, FSL-546. Remove associated potentiometers for alarm setpoints.

5. Chlorination - Reclaim Water Control Panel:
a. Install TI rack 6 on left hand mounting pan.
b. Wire new inputs/outputs specified.
c. Remove controller FIC-601.
d. Remove SIM #4 and I/O rack 1.

6. Solids Handling Control Panel:
a. Install TI rack 7 on lower right hand mounting pan.
b. Install TI rack 8 on lower left hand mounting pan.
c. Wire new inputs/outputs specified.
d. Remove graphic panel and replace with blank.
e. Remove graphic panel drives 1C, 2C, 3C, 4C.
f. Remove thumbwheels KC-706A, C-706B, KC-707, KC-715, KC-714A, KC-714B. Remove associated distribution panel NLDP-708.
g. Remove hand switches HS-742, HS-743, HS-794.
h. Remove ratio controls FFC-752, FFC-753.
i. Remove SIM #5 and I/O racks 1 - 3.

B. Instrumentation:
1. Furnish and install instruments listed in Section 13342.

1.06 SUBMITTALS

A. Shop Drawings:
1. See Section 01340.
2. Product technical data including:
a. Acknowledgement that products submitted meet requirements of standards referenced.
b. Manufacturer's installation instructions.
c. Instrument component technical brochures.
d. Instrument data sheets:
1) ISA S20 or approved equal.
2) Separate data sheet for each type of instrument.
e. Materials of construction.

f. Minimum and maximum flow ranges.
g. Pressure loss curves.
h. Physical limits of components including temperature and pressure limits.
i. Size and weight.
j. Electrical power requirements and wiring diagrams.
k. NEMA rating of housings.

3. Loop diagrams per ISA S5.4.
   a. Each loop diagram on a separate 8-1/2 x 11 IN sheet.
   b. Each sheet shall contain the following minimum information.
      1) All loop devices clearly identified.
      2) Identification of the loop and each loop component, including connections to such things as recorders and computers. Numbering and tagging must agree with the P&ID.
      3) All interconnections with identifying numbers for:
         a) Electrical cables.
         b) Conductor pairs.
      4) Identification of connections including:
         a) Junction boxes.
         b) Terminals.
         c) Bulkheads.
         d) Ports.
         e) Computer input/output connections.
         f) Grounding systems.
      5) Signal levels and ranges.
      6) Device location.
      7) Energy sources designating voltage, pressure, and other applicable requirements.
      8) Enough process lines and equipment to clearly show the process side of the loop and provide clarity of control action. This includes:
         a) What is being measured.
         b) What is being controlled.
         c) Other information required to complete the process loop.
      9) Reference to supplementary records and drawings to show inter-relation to other control loops.
      10) Controller action.

4. Process connected instrument installation details containing the following minimum information:
   a. Bill of materials providing as a minimum the following information:
      1) Tube material and size.
      2) Connection size.
      3) Fitting size, material, and rating.
      4) Valve type and material.
      5) Instrument description.
      6) Pipe stand size and material.
   b. Tube slope requirements.
   c. Minimum clearances.
   d. Required elevations and dimensions.

5. Comprehensive set of point-to-point wiring diagrams showing all interconnections between packaged systems or equipment control panels, motor control centers, instrumentation and all other electrical equipment as required to depict a complete and functional plant-wide electrical control system. Instrumentation wiring already shown on loop diagrams need not be included on point-to-point wiring diagrams.
   a. Diagrams shall provide the following minimum information:

1) Terminal block identification (includes terminals on remote equipment furnished by Others).
2) Wire identification number.
3) Wire size.
4) Wire type.
5) Wire color.
6) Wire shielding and insulation type.
7) Conductor quantities and associated conduit size.
8) Ground points.
9) Interconnection requirements to existing systems or equipment furnished by Others.

b. Diagrams shall be provided on 11 x 17 Drawings.

6. Electrical schematic control diagrams. Diagrams shall include:
   a. Terminal identification.
   b. Unique identification of all control devices and contacts.
      1) Utilize Owner's device identification numbers where applicable.
   c. Wire identification.
   d. Equipment identification.
   e. Indication of remote and local devices and wiring.
   f. Overcurrent protection indication.
   g. Voltage.
7. Panel fabrication drawings.
8. PLC equipment drawings.
9. Nameplate layout drawings.
10. Drawings, systems, and other elements are represented schematically in accordance with ISA S5.1 and S5.3. The nomenclature, tag numbers, equipment numbers, panel numbers, and related series identification contained in the Contract Documents shall be employed exclusively throughout submittals.
11. Provide circuit diagrams and certification with the shop drawing indicating how voltage transient protection requirements are met.
12. Warranties: Provide copies of warranties and list of factory authorized service agents.
13. Testing reports:
    a. Source quality control reports.
14. All drawings must be prepared utilizing AutoCAD R12 or newer. Electronic files for as-built drawings shall be submitted with the final O&Ms.

B. Operation and Maintenance Manuals:
   1. See Section 01340.

1.06 DELIVERY, STORAGE, AND HANDLING

A. Do not remove shipping blocks, plugs, caps, and desiccant dryers installed to protect the instrumentation during shipment until the instruments are installed and permanent connections are made.

PART 2 - PRODUCTS

2.01 PERFORMANCE AND DESIGN REQUIREMENTS

A. System Operating Criteria:

1. Repeatability: For any repeated magnitude of control signal, from either an increasing or decreasing direction, the final control element shall take a repeated position within 0.5 percent of full travel regardless of force required to position final element.
2. Performance: All instruments and control devices shall perform in accordance with manufacturer's specifications.

B. Equipment Surge Protection:
1. Provide power supplies for electronic equipment to successfully withstand surges in new AC power circuits per the wave form, voltage amplitude, current amplitude, and frequency provided in IEEE C62.41.
a. Successfully withstanding transients requires that none of the following conditions occur as a result of the transient:
1) Erroneous output.
2) Component failure.
3) Calibration change exceeding normal tolerances.

2.02 ACCESSORIES

A. Provide instruments with manufacturer's identification nameplate showing:
1. Manufacturer's model number.
2. Manufacturer's serial number.
3. Range. (English units)
4. Power supply requirement.

PART 3 - EXECUTION

3.01 INSTALLATION

A. Install products in accordance with manufacturer's instructions.

B. Install instrument mounting pipe stands level and plumb.

C. Keep foreign matter out of the system.

D. Plug all open ends and connections to keep out contaminants.

E. Use bottom entry for all conduit entry to instruments and junction boxes.

F. Install electrical components per Division 16.

G. Instrument Mounting:
1. Mount all instruments where they will be accessible from fixed ladders, platforms, or grade.
2. Mount all local indicating instruments with face forward toward the normal operating area, within reading distance, and in the line of sight.
3. Mount instruments level, plumb, and support rigidly.
4. Mount to provide:
a. Protection from heat, shock, and vibrations.
b. Accessibility for maintenance.
c. Freedom from interference with piping, conduit and equipment.
5. Do not mount current-to-pressure transducers on the control valves unless the transducers are received from the Manufacturer already valve mounted and tubed, or specific instructions to valve mount the transducers are given on the Drawings.

H. Connect surge arresters to ground.

I. Panel-Mounted Instruments:
   1. Mount and wire so removal or replacement may be accomplished without interruption of service to adjacent devices.
   2. Locate all devices mounted inside enclosures so terminals and adjustment devices are readily accessible without use of special tools and with terminal markings clearly visible.

J. See Section 16120.

3.02 FIELD QUALITY CONTROL

A. See Section 01650.

B. Maintain accurate daily log of all startup activities, calibration functions, and final setpoint adjustments.

C. Instrumentation Calibration:
   1. Verify that all instruments and control devices are calibrated to provide the performance required by the Contract Documents.
   2. Calibrate all field-mounted instruments, other than local pressure and temperature gages, after the device is mounted in place to assure proper installed operation.
   3. Calibrate in accordance with the manufacturer's specifications.
   4. Bench calibrate pressure and temperature gages. Field mount gage within 1 day of calibration.
   5. Calibrate each transmitter and gage across its specified range at 0, 25, 50, 75, and 100 percent. Check for both increasing and decreasing input signals to detect hysteresis.
   6. Replace any instrument which cannot be properly adjusted.
   7. Stroke control valves to verify control action, positioner settings, and solenoid functions.
   8. Mark range, date, setpoint and calibrator's initials on each instrument by means of blue or black ink on a waterproof tag affixed to the instrument.
   9. Certify calibration equipment by an independent agency with traceability to NIST immediately prior to utilization of the equipment on this Project. Re-certify calibration equipment if the accuracy of the equipment is questioned by the Engineer.
   10. Dead weight calibrate precision test gages and use as secondary calibration standards. Recalibrate precision test gages on a weekly basis or as requested by Engineer. Provide a dead weight tester certified with traceability to NIST.

D. Provide verification of system assembly, power, ground, and I/O tests.

E. Verify existence and measure adequacy of all grounds required for instrumentation and controls.

END OF SECTION

SECTION 13442

PRIMARY ELEMENTS AND TRANSMITTERS

PART 1 - GENERAL

1.01 SUMMARY

A. Section Includes:
   1. Level components.

B. Related Sections include but are not necessarily limited to:
   1. Division 0 - Bidding Requirements, Contract Forms, and Conditions of the Contract.
   2. Division 1 - General Requirements.
   3. Section 13440 - Instrumentation for Process Control: General Requirements.
   4. Section 13441 - Control Loop Descriptions.
   5. Section 15060 - Pipe and Pipe Fittings: Basic Requirements.
   6. Section 15061 - Pipe: Steel.

1.02 QUALITY ASSURANCE

A. Referenced Standards:
   1. American Gas Association (AGA):
      a. Gas Measurement Committee Report #3.
   2. American Iron and Steel Institute (AISI).
   3. American National Standards Institute (ANSI):
      a. B16.5, Pipe Flanges and Flanged Fittings.
      b. PTC 19.3, Instruments and Apparatus, Part 3 Temperature Measurement.
      c. MC96.1, Temperature Measurement Thermocouples.
   4. American Society of Mechanical Engineers (ASME):
      a. Fluid Meters, Sixth Edition.
   5. American Society for Testing and Materials (ASTM):
      a. A126, Standard Specification for Gray Iron Castings for Valves, Flanges, and Pipe Fittings.
      b. A182, Standard Specification for Forged or Rolled Alloy - Steel Pipe Flanges, Forged Fittings and Valves and Parts for High Temperature Service.
      c. A240, Standard Specification for Heat Resisting Chromium and Chromium-Nickel Stainless Steel Plate, Sheet, and Strip for Pressure Vessels.
      d. B61, Standard Specification for Steam or Valve Bronze Castings.
   6. National Electrical Manufacturers Association (NEMA):
      a. ICS 6, Enclosures for Industrial Controls and Systems.

1.03 SYSTEM DESCRIPTION

A. The instruments specified in this Section are the primary element components. These instruments are integrated with other control system components specified under the 13440 specification series.

1.04 SUBMITTALS

A. Shop Drawings:
   1. See Sections 01340 and 13440.

B. Operation and Maintenance Manuals:
   1. See Section 01340.

1.05 SEQUENCING AND SCHEDULING

A. All instruments will be installed in active process areas.

B. Any required outages must be coordinated with the Owner to avoid disruption of plant operation.

PART 2 - PRODUCTS

2.01 LEVEL COMPONENTS

A. Ultrasonic open channel flow instrumentation:
   1. Acceptable Manufacturers:
      a. Miltronics Multiranger Plus.
      b. Kistler-Morse.
   2. Microprocessor based echo-time measuring type consisting of a non-contacting transducer and a controller.
   3. Transducer:
      a. FM approved for Class 1, Division 1, Group A, B, C, D.
      b. CPVC body with teflon facing on flanged models, PVC facing on unflanged models, foam facing and aiming kit for lime storage application.
      c. One-inch NPT fitting.
      d. Operating temperature: -40 to 200 degrees F.
      e. Provide Manufacturer's mounting bracket.
   4. Transmitter:
      a. NEMA 4X high density polycarbonate.
      b. Power supply: 24 Vdc.
      c. Operating temperature: -5 to 140 degrees F.
      d. Outputs:
         1) Isolated 4-20 mAdc into 500 ohms max.
         2) 5 SPDT from "C" relays rated 5 amps at 220 Vac non-inductive.
      e. Controls: Data and operating parameters entered via removable programming module.
      f. Programmed echo analysis functions to eliminate foam, turbulence and dust.
   5. Performance:
      a. Range: 1'-45'.
      b. Accuracy: 0.25% of range or 0.24" for ranges less than 10'.
      c. Resolution: 0.1% of range or 0.08" whichever is greater.
   6. Indication:
      a. Four (4) digit LCD.
      b. Engineering units.
   7. Calibration:
      a. Via removable programming module.
      b. Internal self diagnostic features.
      c. Operational data stored in non-volatile EEPROM.
      d. Capable of restarting after power failure.
      e. Supply one (1) programming module for every five (5) transmitters.
   8. Cabling: Supply adequate cabling between transducer and transmitter.

9. Schedule:

Instrument Number	Function	Service
FIT-116	Return Flow	Parshall Flume-In Manhole
FIT-601A	Chlorine Contact Basin 1 Flow	V-notch Weir-Outdoor
FIT-602A	Chlorine Contact Basin 2 Flow	V-notch Weir-Outdoor
FIT-602	Final Effluent Flow	Cipoletti Weir-Outdoor under Chlorine Building

2.02 ACCEPTABLE MANUFACTURERS

A. Subject to compliance with the Contract Documents, the Manufacturers listed in the articles describing the elements are acceptable.

B. Submit requests for substitutions in accordance with Specification Section 01640.

PART 3 - EXECUTION

3.01 INSTALLATION

A. Install in accordance with manufacturer's instructions.

END OF SECTION

SECTION 13445

INDICATORS

PART 1 - GENERAL

1.01 SUMMARY

A. Section Includes:
1. Digital panel meters.

B. Related Sections include but are not necessarily limited to:
1. Division 0 - Bidding Requirements, Contract Forms, and Conditions of the Contract.

2. Division 1 - General Requirements.
3. Section 13440 - Instrumentation for Process Control: General Requirements.

1.02 QUALITY ASSURANCE

A. Referenced Standards:
1. National Electrical Manufacturers Association (NEMA):
a. ICS 6, Enclosures for Industrial Controls and Systems.

B. Miscellaneous:
1. Assure units comply with electrical area classifications and NEMA enclosure type shown on Drawings.

1.03 SUBMITTALS

A. Shop Drawings:
1. See Section 01340.
2. Product technical data including:
a. Acknowledgement that products submitted meet requirements of standards referenced.
b. Manufacturer's installation instructions.

B. Operation and Maintenance Manuals:
1. See Section 01340.

PART 2 - PRODUCTS

2.01 ACCEPTABLE MANUFACTURERS

A. Subject to compliance with the Contract Documents, the manufacturers listed in the paragraphs describing the devices are acceptable:

B. Submit requests for substitution in accordance with Specification Section 01640.

2.02 INDICATORS

A. Digital Panel Meters:
1. Acceptable manufacturers:

a. Newport.
b. Chessell Corporation.

2. Materials:
   a. Case: Polycarbonate or equal.
3. Design and fabrication:
   a. Solid-state electronics.
   b. Capable of receiving signals linearly proportional to process variable indicated.
   c. Display:
      1) Minimum of two updates per second of process variable indication.
      2) Seven segment digits. Digits shall be:
         a) LED or vacuum fluorescent.
         b) Minimum 0.50 IN high.
      3) Use of multipliers not acceptable.
      4) Engineering units.
   d. Accuracy: ±0.1 percent of full scale. ±1 count at 77 DegF.
   e. Operating temperature: 32 to 140 DegF.
   f. Relative humidity: 95 percent at 104 DegF (non-condensing).
   g. 1/8 DIN indicating meter.
   h. Splash cover.
   i. 4-20 mA DC input.
   j. Units labels.
4. Schedule:

Tag Number	Location	Function	Digits	Scale
LI-101A	HCP	Wetwell A Level	4	FT
LI-101B	HCP	Wetwell B Level	4	FT

PART 3 - EXECUTION

3.01 INSTALLATION

A. Install products in accordance with manufacturer's instructions.

END OF SECTION

SECTION 13500

PROGRAMMABLE LOGIC CONTROLLER (PLC) CONTROL SYSTEM

PART 1 - GENERAL

1.01 SUMMARY

A. Section Includes:
   1. Design and fabrication of replacement programmable logic controller (PLC) control system, including installation, wiring, and training.
   2. Checkout and field testing.
   3. Outside services of factory-trained service representative.

B. Related Sections include but are not necessarily limited to:
   1. Division 0 - Bidding Requirements, Contract Forms, and Conditions of the Contract.
   2. Division 1 - General Requirements.
   3. Section 13440 - Instrumentation for Process Control: General Requirements.
   4. Section 16120 - Wire and Cable - 600 Volt and Below.

1.02 QUALITY ASSURANCE

A. Referenced Standards:
   1. American National Standards Institute (ANSI)/Institute of Electrical and Electronic Engineers (IEEE):
      a. C37.90.2, Trial-Use Standard Withstand Capability of Relay Systems to Radiated Electromagnetic Interference from Transceivers.
      b. C62.41, IEEE Recommended Practice on Surge Voltages in Low-Voltage AC Power Circuits.
   2. Electronic Industries Association (EIA):
      a. TIA-232-E, Interface Between Data Terminal Equipment and Data Circuit-Terminating Equipment Employing Serial Binary Data Interchange.
      b. 422-A, Electrical Characteristics of Balanced Voltage Digital Interface Circuits.
   3. National Electrical Manufacturers Association (NEMA):
      a. ICS 1, General Standards for Industrial Control and Systems.
      b. ICS 1.1, Safety Guidelines for the Application, Installation and Maintenance of Solid State Control.
      c. ICS 4, Terminal Blocks for Industrial Use.
      d. ICS 6, Enclosures for Industrial Controls and Systems.
      e. Publication No.250, Enclosures for Electrical Equipment (1000 V maximum).
   4. National Fire Protection Association (NFPA):
      a. National Electric Code (NEC).

1.03 SUBMITTALS

A. Shop Drawings:
   1. See Section 01340.
   2. See Section 13440.
   3. Product technical data including:
      a. Results of factory testing procedures.
      b. Arrangement drawings for PLC system components.

c. Panel and enclosure plans, sections and details.
d. Access opening locations and required clearances for each panel and enclosure.

e. Enclosure internal wiring and terminal blocks.
f. Tabular I/O listing including the following data:
   1) Each I/O point.
   2) Name of I/O device such as solenoid valve or limit switch.
   3) Instrumentation tag number of the I/O device in the Contract Documents.

   4) Electrical characteristics of I/O signal.
   5) PLC system internal address of each I/O.
g. Index of all training offered by PLC system equipment manufacturers including operations and maintenance.
h. Spare parts guarantee.

4. Certifications.
   a. Qualifications of installation supervisor.
   b. Qualifications of programmer(s).

B. Operation and Maintenance Manuals:
1. See Section 01340.
2. Submit maintenance procedures available to Owner. Include the location and phone numbers of service centers (including 24 HR "hot lines"). Provide specific information including operation and maintenance requirements, programming assistance, troubleshooting guide, parts ordering, field service personnel requests, and service contracts.

1.04 SYSTEM DESCRIPTION

A. Provide I/O racks and cards listed below:

Plant Control Panel

Rack 1 - 4 slot 505-6504

Slot	Description	Part No.	Comments
PS	Power Supply	505-6660	
PLC	TI 555 CPU	555-1102	with 962K Word RAM
1	Spare		
2	Spare		
3	Spare		
4	Spare		

Rack 2 - 8 slot 505-6508

Slot	Description	Part No.	Comments
PS	Power Supply	505-6660	
PLC	Remote Base Controller	505-6851A	
1	8 pt. Analog Input	505-6108A	WX1-WX8
2	8 pt. Analog Output	505-6208	WY9-WY16
3	32 pt. 120 VAC Input	505-4232	X513-X544
4	32 pt. 120 VAC Input	505-4232	X545-X576
5	32 pt. 120 VAC Output	505-4832	Y577-Y608

6	Spare
7	Spare
8	Spare

Headworks Control Panel

Rack 3 - 8 slot 505-6508

Slot	Description	Part No.	Comments
PS	Power Supply	505-6660	
PLC	Remote Base Controller	505-6851A	
1	8 pt. Analog Input	505-6108A	WX33-WX40
2	32 pt. 120 VAC Input	505-4232	X673-X704
3	32 pt. 120 VAC Input	505-4232	X705-X736
4	32 pt. 120 VAC Output	505-4832	Y737-Y768
5	32 pt. 120 VAC Output	505-4832	Y769-Y800
6	32 pt. 120 VAC Output	505-4832	Y801-Y832
7	Spare		
8	Spare		

Secondary Control Panel

Rack 4 - 8 slot 505-6508

Slot	Description	Part No.	Comments
PS	Power Supply	505-6660	
PLC	Remote Base Controller	505-6851A	
1	8 pt. Analog Input	505-6108A	WX57-WX64
2	8 pt. Analog Input	505-6108A	WX65-WX72
3	8 pt. Analog Input	505-6108A	WX73-WX80
4	8 pt. Analog Output	505-6208	WY81-WY88
5	8 pt. Analog Output	505-6208	WY89-WY96
6	32 pt. 24 VDC Output	505-4532	Y849-Y880
7	32 pt. 24 VDC Output	505-4532	Y881-Y912
8	32 pt. 24 VDC Output	505-4532	Y913-Y944

Rack 5 - 8 slot 505-6508

Slot	Description	Part No.	Comments
PS	Power Supply	505-6660	
PLC	Remote Base Controller	505-6851A	
1	32 pt. 120 VAC Input	505-4232	X945-X976
2	32 pt. 120 VAC Input	505-4232	X977-X1008
3	32 pt. 120 VAC Input	505-4232	X1009-X1040
4	32 pt. 120 VAC Input	505-4232	X1041-X1072
5	32 pt. 120 VAC Input	505-4232	X1073-X1104
6	32 pt. 120 VAC Output	505-4832	Y1105-Y1136
7	Spare		
8	Spare		

Chlorination-Reclaim Water Control Panel

Rack 6 - 8 slot 505-6508

Slot	Description	Part No.	Comments
PS	Power Supply	505-6660	
PLC	Remote Base Controller	505-6851A	
1	8 pt. Analog Input	505-6108A	WX113-WX120
2	8 pt. Analog Output	505-6208	WY120-WY128
3	32 pt. 120 VAC Input	505-4232	X1201-X1232
4	32 pt. 120 VAC Output	505-4832	Y1233-Y1264
5	32 pt. 24 VDC Output	505-4532	Y1265-Y1296
6	Spare		
7	Spare		
8	Spare		

Solids Handling Control Panel

Rack 7 - 8 slot 505-6508

Slot	Description	Part No.	Comments
PS	Power Supply	505-6660	
PLC	Remote Base Controller	505-6851A	
1	8 pt. Analog Input	505-6108A	WX161-WX169
2	8 pt. Analog Output	505-6208	WY170-WY176
3	8 pt. Analog Output	505-6208	WY177-WY184
4	32 pt. 24 VDC Output	505-4532	Y1361-Y1392
5	Spare		
6	32 pt. 24 VDC Output	505-4532	Y1361-Y1392
7	32 pt. 24 VDC Output	505-4532	Y1393-Y1392
8	Spare		

Rack 8 - 8 slot 505-6508

Slot	Description	Part No.	Comments
PS	Power Supply	505-6660	
PLC	Remote Base Controller	505-6851A	
1	32 pt. 120 VAC Input	505-4232	X1457-X1488
2	32 pt. 120 VAC Input	505-4232	X1489-X1520
3	32 pt. 120 VAC Input	505-4232	X1521-X1552
4	32 pt. 120 VAC Input	505-4232	X1553-X1579
5	Spare		
6	Spare		
7	Spare		
8	Spare		

B. Provide all wiring and auxiliaries required by the I/O listing following the technical specifications.

1.05 SEQUENCING

A. Installation will require coordination with plant operations.

B. Submit schedule for field installation for approval by Engineer and Owner prior to beginning field installation.

C. Each control panel includes hardwired backup operation circuits which will be utilized during installation.

D. Owner will place equipment on a single panel in manual to allow parallel connection of new PLC wiring with existing wiring at night and after new PLC installation, each panel will be placed under control of the existing PLC.

E. After replacement PLC installation is complete, Owner and Engineer will load new software and activate replacement PLC.

F. After new PLC is active, remove all existing PLC components and wiring to the greatest extent possible. Manual operation will be allowed during demolition on an individual panel basis.

G. Deliver existing PLC components to Owner.

PART 2 - PRODUCTS

2.01 ACCEPTABLE MANUFACTURERS

A. Subject to compliance with the Contract Documents, the following manufacturers are acceptable:
   1. Siemens TI Series 505.
   2. No alternatives will be accepted.

2.02 PERFORMANCE AND DESIGN REQUIREMENTS

A. See Section 13440.

B. The PLC system shall accomplish the control requirements of the Drawings, and Specifications, and I/O list.

C. The design application and installation of the PLC system shall conform to NEMA ICS 1.1.

D. The PLC system shall operate in ambient conditions of 32 to 140 DegF temperature and 0 to 95 percent relative humidity without the need for purging or air conditioning.

E. Input/Output Connection Requirements:
   1. Discrete outputs shall be fused:
      a. Provide blown fuse indication.
      b. External fusing shall be provided if output module does not possess internal fusing.
      c. Fuses provided external to output model shall:
         1) Be in accordance with module manufacturer's specifications.
         2) Be installed at terminal block.

2. Make connections to I/O subsystem by terminating all field wiring on terminal blocks within the I/O enclosure.
3. Provide terminal blocks with continuous marking strip.
4. Size terminals to accommodate all active data base points and spares.
5. Provide terminals for individual termination of each signal shield.
6. Field wiring shall not be disturbed when removing or replacing an I/O module.
7. Provide loop isolators for all PLC analog inputs and outputs.

F. All PLC control system components shall be capable of meeting or exceeding electromagnetic interference tests per ANSI/IEEE C37.90.2.

2.03 COMPONENTS

A. PLC System Central Processor Unit (CPU):
1. Siemens TI Model 555.
2. Completely solid state CPU designed to provide all control functions required by the Contract Documents.
3. To provide communications with other control systems and man-machine interfaces as specified.
4. To use electrical ladder diagram style programming for discrete logic applications.
5. Memory:
   a. Battery-backed RAM.
   b. 962K Word RAM.
6. Memory battery backup shall be capable of 60 days memory retention with fresh battery.
   a. Provide visual indication of battery status and alarm low battery voltage.
   b. Memory battery backup shall be capable of 14 days memory retention after the "Battery Low" indicating LED is on.
7. Plug-in card design to allow quick field replacement of faulty devices.
   a. Provide unit designed for field replacement and expansion of memory without requiring rewiring or use of special tools.
8. Built-in three-mode (proportional-integral-derivative) control capabilities.
   a. As directly selectable algorithms requiring no user knowledge of programming languages.
9. On line reconfigurable.
10. Lighted status indicators for "RUN" and "FAILURE."
11. Built-in two-directional communication port to allow interfacing with other control systems.

B. Input/output (I/O) Modules.
1. Provide plug-in modular-type I/O racks with cables to connect to all other required PLC system components.
2. Provide I/O system with:
   a. I/O solid state boards with status lights indicating I/O status and board failure.
   b. Electric isolation between logic and field device.
   c. Interchangeable boards for similar I/O type to allow substitution of operating boards for failed units by the operator.
   d. Capability of withstanding low energy common mode transient to 1500 V without failure.
   e. Incorporate noise suppression design.
   f. Capable of meeting or exceeding electrical noise tests, NEMA ICS1-109.60-109.66.

g. Capable of being removed and inserted into the I/O rack under power, without affecting any other I/O modules in the rack.
h. Install 20 percent spare I/O modules.

3. Discrete I/O modules:
   a. Types:
      1) 32 pt 120 VAC input 505-4232.
      2) 32 pt 120 VAC output 505-4832.
      3) 32 pt 24 VDC output 505-4532.
   b. Interface to ON/OFF devices.
   c. I/O status indicator on module front.
   d. Voltage rating to match circuit voltage.
   d. Output module current rating:
      1) Match maximum circuit current draw.
      2) Minimum 1.5 A/point for 120 V AC applications.
   e. Isolated modules for applications where one module interfaces with devices utilizing different sources of power.
   f. Individually fused with blown fuse indication.
4. Analog I/O modules:
   a. Types:
      1) 8 pt analog input 505-610 8A.
      2) 8 pt analog input 505-6208.
   b. Input modules to accept signals indicated on Drawings or Specifications.
   c. Minimum 12 bit resolution.
   d. I/O chassis supplied power for powering connected field devices.
   e. Differential inputs and outputs.
   f. User configurable for desired fault-response state.
   g. Provide output signals as indicated on Drawings and Specifications.
   h. Individual D/A converter for each output module.
   i. Individual A/D converter for each input module.
5. Component placement:
   a. Mount all controller components vertically within the enclosure to allow maximum convection cooling.
6. Wiring:
   a. Factory wire enclosures to identified terminal blocks equipped with screw type lugs.
   b. Install all wiring without in raceways:
      1) Size raceways per the requirements of NEC Article 373.
      2) Raceways shall have removable covers.
   c. Wire bending space shall be in accordance with Tables 3-7B, C in NEMA ICS 6.
   d. Keep AC power lines separate from low-level DC lines, I/O power supply cables, and all I/O rack interconnect cables.
   e. Keep AC signal wires separate from DC signal wires.
   f. When I/O wiring must cross AC power wiring, it shall only do so at right angles.
   g. Allow 2 IN between the I/O modules and any raceway, between the terminal strip and raceway, and between the terminal strip and I/O modules.
   h. Grounding:
      1) Separate ground wires from power wiring at the enclosure point of entry.
      2) Minimize ground wire length within the enclosure by locating the ground reference point as close as possible to the point of entry of the plant power supply.
      3) Ground all electrical racks or chassis and machine elements to a central ground bus.
         a) Locate the central ground bus in the magnetic area of the enclosure.

b) Any non-conductive materials (such as paint) shall be scraped away from the area where a chassis makes contact with the enclosure.

4) Ground the enclosure to the ground bus. It is imperative that good electrical connections are made at the point of contact between the ground bus and enclosure.

i. Termination requirements:

1) Provide terminal blocks where required for connection to PLC analog or discrete wiring.

2) Terminal block markings, mechanical characteristics and electrical characteristics shall be in accordance with NEMA ICS 4.

3) Make connections to I/O subsystem by terminating all field wiring on terminal blocks within the enclosure.

4) Terminals shall facilitate wire sizes as follows:

a) 120 V AC applications: Wire size 12 AWG and smaller.

b) Other: Wire size 14 AWG and smaller.

5) Provide terminal blocks with continuous marking strip.

6) Tag each I/O terminal to indicate tag number of the connected device.

7) Size terminals to accommodate all active database points, spares and future expansion.

8) Provide terminals for individual termination of each signal shield.

9) Field wiring shall not be disturbed when removing or replacing an I/O module.

j. Analog wiring:

1) Utilize loop isolators for all PLC outputs.

2) Analyze all input signals where new inputs are added. Utilize loop isolators where required to avoid excessive resistance burden on current loops or unacceptable signal loss or voltage signals.

2.04 ACCESSORIES

A. Provide all accessories required to furnish a complete PLC control system to accomplish the requirements of the Drawings and Specifications.

2.05 MAINTENANCE MATERIALS

A. Furnish Owner with the following extra materials:

1. One spare I/O card of each card type for every 10 cards or fraction thereof installed.
2. A list of all the recommended spares for maintenance purposes with each item separately priced. The list shall include all the special tools and test equipment necessary for the maintenance of the complete system.

2.06 FACTORY TRAINING

A. Provide formal 3 day training session at the manufacturer's or manufacturer's representative facility for five operating and maintenance personnel.

B. Provide one day on-site PLC maintenance/operation training with materials for 10 attendees.

PART 3 - EXECUTION

3.01 INSTALLATION

A. Install PLC control system in accordance with manufacturer's written instructions.

3.02 FIELD QUALITY CONTROL

A. Employ and pay for services of equipment manufacturer's field service representative(s) to:

1. Inspect equipment covered by these Specifications.
2. Supervise adjustments and installation checks.
3. Maintain and submit an accurate daily or weekly log of all commissioning functions.

   a. All commissioning functions may be witnessed by the Engineer.
   b. All reports shall be co-signed by the Contractor and the Engineer if witnessed.

4. Conduct startup of equipment and perform operational checks.
5. Provide Owner with a written statement that manufacturer's equipment has been installed properly, started up, and is ready for operation by Owner's personnel.

3.03 SYSTEM FIELD CHECKOUT

A. The following documentation shall be submitted to Engineer as proof of readiness to begin field checkout:
   1. Completed instrument list.
   2. Calibration sheets for each installed instrument.
   3. Loop sheet, per relevant ISA standards, for each installed loop, with installer's signature.

B. Notify Engineer of readiness to begin system checkout, in writing, and schedule system checkout on dates agreed by Owner and Engineer.

C. At the system checkout:
   1. Instrument supplier's technicians (sales representatives not acceptable unless certified by their company to be technicians) on-site.
   2. Test instruments as required.

D. Record the results of system checkout, effect whatever remedial action is required and arrange for reinspection to review said remedial action.

E. The completion of the above does not relieve Contractor from guarantees specified elsewhere in this section.

F. Field check-out/certification:
   1. Prepare a checkout/certification list using the I/O list.
   2. Test each I/O point and verify its operation, calibration, and I/O configuration. This will require coordination with the electrician, mechanical contractors, and other equipment suppliers.
   3. As testing proceeds, check-off each I/O point on the checkout/certification list.
   4. When testing is complete, submit the checkout/certification list to the Engineer.
   5. After acceptance of the checkout/certification list, the Engineer will schedule a five day I/O demonstration. Demonstrate each I/O point to the Engineer using a PC to simulate and examine I/O in the PLC. All field equipment and devices shall be active and respond to signals from the PLC or generate signals for input to the PLC.

END OF SECTION

SECTION 16010

ELECTRICAL: BASIC REQUIREMENTS

PART 1 - GENERAL

1.01 SUMMARY

A. Section Includes:
   1. Basic requirements for electrical work.

B. Install and wire all equipment, including prepurchased equipment, and perform all tests necessary to assure conformance to the Drawings and Specifications and ensure that equipment is ready and safe for energization.

C. Related Sections include but are not necessarily limited to:
   1. Division 0 - Bidding Requirements, Contract Forms, and Conditions of the Contract.

   2. Division 1 - General Requirements.

D. Drawings Use and Interpretation:
   1. Drawings indicate the location and arrangement of electrical equipment and the approximate location of other equipment requiring electrical work.
      a. For exact locations of building elements, refer to dimensioned architectural/structural drawings.
      b. Field measurements take precedence over dimensioned drawings.
   2. Electrical drawings are used to indicate area classifications.

E. Installation of all systems and equipment is subject to clarification as indicated in reviewed shop drawings and field coordination drawings.

F. Dimensions indicated for electrical equipment and dimensions indicated for the installation of electrical equipment are restrictive dimensions.

1.02 AREA CLASSIFICATIONS

A. Outdoor locations may contain hazardous areas:
   1. Corrosive and hazardous areas are identified on the Drawings:
      a. Areas not identified as such shall be considered wet.

B. Indoor locations may contain damp and wet corrosive areas.

1.03 DEFINITIONS

A. Outdoor Areas:
   1. Those locations on the Project site where the equipment is normally exposed to wind, dust, rain, snow, etc.

B. Indoor Areas:
   1. Those locations on the Project site where the equipment is normally protected from wind, dust, rain, snow, etc.

C. Shop Fabricated:
   1. Manufactured or assembled equipment for which a UL test procedure has not been established.

1.04 QUALITY ASSURANCE

A. Referenced Standards:
   1. American Iron and Steel Institute (AISI):
      a. Steel Products Manual - Stainless and Heat Resisting Steel.
   2. American National Standards Institute (ANSI):
      a. C2, National Electrical Safety Code.
   3. American Society for Testing and Materials (ASTM):
      a. A36, Specification for Structural Steel.
      b. A153, Zinc Coating (Hot-Dip) on Iron and Steel Hardware.
   4. Factory Mutual System (FM):
      a. A Guide to Equipment, Materials and Services.
   5. Institute of Electrical and Electronics Engineers (IEEE):
      a. 141, Recommended Practice for Electrical Power Distribution for Industrial Plants.
      b. 242, Recommended Practice for Protection and Coordination of Industrial and Commercial Power Systems.
   6. National Electrical Manufacturers Association (NEMA):
      a. ICS 6, Enclosures for Industrial Controls and Systems.
   7. National Fire Protection Association (NFPA):
      a. 70, National Electrical Code (NEC).
   8. Underwriters Laboratories, Inc (UL):
      a. 508, Safety Industrial Control Equipment.
      b. 698, Industrial Control Equipment for Use in Hazardous Locations.

B. When a specific code or standard has not been cited, the applicable codes and standards of the following code-making authorities and standards organizations shall apply:
   1. American Association of State Highway and Transportation Officials (AASHTO).
   2. American Iron and Steel Institute (AISI).
   3. American National Standard Institute (ANSI).
   4. American Society for Testing and Materials (ASTM).
   5. ETL Testing Laboratories, Inc (ETL).
   6. Insulated Cable Engineers Association (ICEA).
   7. Institute of Electrical and Electronic Engineers (IEEE).
   8. Illuminating Engineering Society of North America (IES).
   9. Instrument Society of America (ISA).
   10. Lightning Protection Institute (LPI).
   11. National Electrical Manufacturers Association (NEMA).
   12. National Fire Protection Association (NFPA).
   13. Occupational, Health and Safety Administration (OSHA).
   14. Underwriters Laboratories Inc (UL).

C. In case of conflict or disagreement between codes, standards, laws, ordinances, rules, regulations, drawings and specifications, or within either document itself, the more stringent condition shall govern.

1.05 SYSTEM DESCRIPTION

A. Provide functioning systems in compliance with manufacturer's instructions, performance requirements specified or shown on the Drawings, and modifications resulting from reviewed shop drawings and field coordinated drawings.

B. Furnish and install PLC network cabling utilizing existing conduits/ductbanks as shown on the plans.

C. FIT-116:
   1. Pull out existing TSP and replace with two new TSP. Approximately 150 FT.
   2. Provide any necessary extension of conduits (up to 10 feet) required for new instrument mounting.
   3. Provide new sensor cable conduit seal.

D. FIT-601:
   1. Pull out existing TSP and replace with two new TSP. Approximately 50 FT.
   2. Provide any necessary extension of conduits (up to 10 feet) required for new instrument mounting.
   3. Provide new sensor cable conduit seal.

E. FIT-601A:
   1. Pull out existing TSP and replace with two new TSP. Approximately 50 FT.
   2. Provide any necessary extension of conduits (up to 10 feet) required for new instrument mounting.

F. FIT-602A:
   1. Pull out existing TSP and replace with two new TSP. Approximately 50 FT.
   2. Provide any necessary extension of conduits (up to 10 feet) required for new instrument mounting.

1.06 SUBMITTALS

A. Shop Drawings:
   1. See Sections 01340 and 11005.
   2. Submit shop drawings prior to purchase or fabrication of equipment. See individual Division 16 sections for specific requirements.
   3. Prior to submittals of shop drawings, coordinate electrical equipment, control panels, and instrumentation, with all applicable equipment and systems interfacing with that equipment.
   4. Submittals shall be made in the following combinations:
      a. Conduits, busway, wireway, cable tray, ductbank details, wire and cable 600 V and below, medium voltage cable, boxes and fittings.
      b. Wiring devices.
   5. For each product, clearly identify manufacturer by name.
   6. Provide manufacturer's technical information on products to be used, including:
      a. Product descriptive bulletin.
      b. Electrical data pertinent to the Project and necessary to assure compliance with Specifications and Drawings.
      c. Equipment dimensions, where applicable.
      d. Evidence that the products submitted meet the requirements of the standards referenced.
   7. When general data sheets are provided as part of the submittal, specifically identify the products to be used on this Project.

8. Ensure that all submittals clearly indicate the equipment is UL or ETL listed or is constructed utilizing UL or ETL listed or UL recognized components. Where a UL standard has not been established clearly identify that no UL standard exists for that equipment.
9. For all equipment, provide manufacturer's installation instructions.

B. Operation and Maintenance Manuals:
1. See Section 01340.

1.07 DELIVERY, STORAGE, AND HANDLING

A. See Section 01600.

B. Ensure that equipment is not used as steps, ladders, scaffolds, platforms, or for storage-either inside or on top of enclosures.

C. Protect nameplates on electrical equipment to prevent defacing.

D. Repair, restore or replace damaged, corroded and rejected items at no additional cost to the Owner.

PART 2 - PRODUCTS

2.01 ACCEPTABLE MANUFACTURERS

A. Refer to related Division 16 sections.
1. All equipment of a similar type shall be by one manufacturer unless otherwise noted in the Specifications.

2.02 MATERIALS

A. Trade names and catalog numbers may be used in the Drawings or Specifications to establish quality standards and basics of design.
1. Other listed manufacturers in the applicable specification sections with equal equipment may be acceptable.
2. If no other manufacturer is listed, then manufacturers of equal equipment may be acceptable.

B. Listed:
1. Where UL test procedures have been established for the product type, electrical equipment shall be approved by UL or ETL and shall be provided with the UL or ETL label.

2.03 FABRICATION

A. When equipment is shop fabricated for the Project, the electrical devices and enclosures utilized shall be UL or ETL listed and labeled or shall be UL recognized.

PART 3 - EXECUTION

3.01 INSTALLATION

A. Equipment shall be installed in accordance with the requirements of the NEC.

B. Equipment Dimensions and Clearances:
   1. Do not use equipment or arrangements of equipment that reduce required clearances or exceed the space allocation.

C. Install equipment in accordance with the manufacturer's instructions.

D. Equipment Access:
   1. Install equipment so it is readily accessible for operation and maintenance.
   2. Equipment shall not be blocked or concealed.
   3. Do not install electrical equipment such that it interferes with normal maintenance requirements of other equipment.

E. Equipment shall be installed plumbed, square and true with the building construction and shall be securely fastened.

F. Provide all necessary anchoring devices and supports.
   1. Use supports as detailed on the Drawings and as specified.
      a. Where not detailed on the Drawings or specified, use supports and anchoring devices rated for the equipment load and as recommended by the manufacturer.
   2. Supports and anchoring devices shall be rated and sized based on dimensions and weights verified from approved equipment submittals.
   3. Hardware shall be malleable type, corrosion resistant and shall be supported by heavily plated machine screws or brass, bronze or stainless steel bolts.
   4. Do not cut, or weld to, building structural members.
   5. Do not mount safety switches and external equipment to other equipment enclosures, unless enclosure mounting surface is properly braced to accept mounting of external equipment.

G. Material that may cause rusting or streaking on a building surface shall not be used.

3.02 FIELD QUALITY CONTROL

A. Do not remove or damage fireproofing materials.
   1. Install hangers, inserts, supports, and anchors prior to installation of fireproofing.
   2. Repair or replace fireproofing removed or damaged.

B. After installation, all equipment shall be tested as recommended by the manufacturer.

C. Verify all components are operational.

D. Verify all system and equipment ground continuity.

E. Replace equipment and systems found inoperative or defective and re-test.
   1. If equipment or system fails re-test, replace it with products which conform with Contract Documents.
   2. Continue remedial measures and re-tests until satisfactory results are obtained.
   3. Remedial measures and re-tests will be done at no cost to the Owner.

F. At Completion of Installation:
   1. Test to ensure all equipment is free of short circuits and improper grounds.
   2. Test to ensure all equipment is operational.

3.03 CLEANING

A. Clean dirt and debris from all surfaces.

B. Apply touch-up paint as required to repair scratches, etc.

C. Replace nameplates damaged during installation.

D. Thoroughly vacuum the interior of all enclosures to remove dirt and debris.

3.04 DEMONSTRATION

A. Demonstrate equipment in accordance with Section 01650.

END OF SECTION

SECTION 16111

CONDUIT, CONDUIT FITTINGS AND CONDUIT SUPPORTS

PART 1 - GENERAL

1.01 SUMMARY

A. Section Includes:
1. Conduits, conduit fittings and conduit supports.

B. Related Sections include but are not necessarily limited to:
1. Division 0 - Bidding Requirements, Contract Forms, and Conditions of the Contract.

2. Division 1 - General Requirements.
3. Section 16010 - Electrical: Basic Requirements.

1.02 QUALITY ASSURANCE

A. Referenced Standards:
1. American National Standards Institute (ANSI):
   a. C80.1, Rigid Steel Conduit - Zinc-Coated.
2. American Society for Testing and Materials (ASTM):
   a. A36, Standard Specification for Structural Steel.
   b. A153, Zinc Coating (Hot-Dip) on Iron and Steel Hardware.
   c. A307, Carbon Steel Externally Threaded Standard Fasteners.
   d. A563, Standard Specification for Carbon Steel Nuts.
   e. A569, Steel Carbon, Hot-Rolled Sheet and Strip, Commercial Quality.
   f. A570, Hot-Rolled Sheet and Strip, Structural Quality.
   g. A575, Merchant Quality Hot-Rolled Carbon Steel Bars.
   h. A635, Standard Specification for Steel, Sheet and Strip, Heavy-Thickness Coils, Carbon, Hot-Rolled.
   i. D1784, Standard Specification for Rigid Poly(Vinyl Chloride) (PVC) Compounds and Chlorinated Poly(Vinyl Chloride) (CPVC) Compounds.
   j. D1788, Standard Specification for Rigid Acrylonitrile-Butadiene-Styrene (ABS) Plastics.
   k. D2564, Solvent Cements for (PVC) Plastic Pipe, Tubing, and Fittings.
   l. F512, Standard Specification for Smooth-Wall Poly(Vinyl Chloride) (PVC) Conduit and Fittings for Underground Installation.
3. ETL Testing Laboratories, Inc (ETL).
4. National Electric Manufacturers Association (NEMA):
   a. RN-1, Polyvinyl-Chloride (PVC) Externally Coated Galvanized Rigid Steel Conduit and Intermediate Metal Conduit.
   b. TC-2, Electrical Plastic Tubing (EPT) and Conduit (EPC-40 and EPC-80).
   c. TC-6, PVC and ABS Plastic Utilities Duct for Underground Installation.
5. National Fire Protection Association (NFPA):
   a. 70, National Electric Code (NEC).
6. Underwriters Laboratories Inc (UL):
   a. 1, Flexible Metal Conduit.
   b. 6, Rigid Metal Conduit.
   c. 209, Cellular Metal Floor Raceways and Fittings.
   d. 360, Liquid-Tight Flexible Steel Conduit.
   e. 467, Grounding and Bonding Equipment.

f. 514, Nonmetallic Outlet Boxes, Flush-Device Boxes, and Covers.
g. 651, Schedule 40 and 80 Rigid PVC Conduit.
h. 886, Outlet Boxes and Fittings for Use in Hazardous (Classified) Locations.
i. 1242, Intermediate Metal Conduit.

1.03 SUBMITTALS

A. Shop Drawings:
1. See Sections 01340 and 16010.
2. Proposed routing of conduits buried under floor slabs-on-grade (where permitted).
a. Identify conduit by tag number of equipment served or by circuit schedule number.
3. Proposed routing and details of construction, including conduit and rebar, of conduits embedded in floor slabs, columns, etc.
a. Identify conduit by tag number of equipment served or by circuit schedule number.
4. Proposed location and details of construction for openings in slabs and walls for raceway runs.
5. Proposed routing of wireway including trench duct and floor duct.

1.04 DELIVERY, STORAGE, AND HANDLING

A. Rigid, Non-Metallic Conduit and Fittings:
1. Shall not be stored exposed to sunlight or other UV rays.

PART 2 - PRODUCTS

2.01 ACCEPTABLE MANUFACTURERS

A. Subject to compliance with the Contract Documents, the listed manufacturers are acceptable.

2.02 GALVANIZED RIGID STEEL CONDUIT (RGS)

A. Acceptable Manufacturers:
1. Allied Tube and Conduit Corporation.
2. Triangle PWC Inc.
3. Western Tube and Conduit Corporation.
4. Wheatland Tube Company.
5. LTV Steel Company.

B. Mild steel with continuous welded seam.

C. Metallic zinc applied by hot-dip galvanizing or electro-galvanizing.
1. Threads: Galvanized after cutting.

D. Internal Coating:
1. Baked lacquer, varnish or enamel for a smooth surface.

E. Standard:
1. ANSI C80.1.

2.03 PVC-COATED RIGID STEEL CONDUIT (PVC-RGS)

A. Acceptable Manufacturers:
   1. Occidental Coating Company.
   2. Perma-Cote.
   3. Rob-Roy Ind.

B. Acceptable Manufacturers of PVC Coating Repair Kits:
   1. Occidental Coating Company.
   2. Perma-Cote.
   3. Rob-Roy Ind.
   4. Raychem "GelTek" tape.

C. Nominal 40 mil Polyvinyl Chloride Exterior Coating:
   1. Coating: Bonded to hot-dipped galvanized rigid steel conduit conforming to ANSI C80.1.
   2. The bond between the PVC coating and the conduit surface: Greater than the tensile strength of the coating.

D. Nominal 2 mil, minimum, urethane interior coating.

E. Urethane coating on threads.

F. Conduit:
   1. Epoxy prime coated prior to application of PVC and urethane coatings.

G. Female Ends: Have a plastic sleeve extending a minimum of 1 pipe diameter or 2 IN, whichever is less beyond the opening.
   1. Inside diameter of the sleeve:
      a. The same as the outside diameter of the conduit to be used with it.

H. Standards:
   1. ANSI C80.1.
   2. NEMA RN-1.

2.04 PVC-COATED FLEXIBLE GALVANIZED STEEL (LIQUID-TIGHT) CONDUIT (FLEX-LT)

A. Acceptable Manufacturers:
   1. Anamet, Inc.
   2. Electri-Flex Company.
   3. International Metal Hose Company.

B. Core formed of continuous, spiral wound, hot-dip galvanized steel strip with successive convolutions securely interlocked.

C. Extruded PVC outer jacket positively locked to the steel core.

D. Liquid and vaportight.

E. Standard:
   1. UL 360.

2.05 CONDUIT FITTINGS AND ACCESSORIES

A. Acceptable Manufacturers:
   1. Adalet.
   2. Appleton.
   3. Carlon.
   4. Certainteed.
   5. Crouse-Hinds.
   6. Killark.
   7. Occidental Coating Company.
   8. OZ Gedney Company.
   9. Perma-Cote.
   10. RACO.
   11. Rob-Roy Ind.
   12. Steel City.
   13. Thomas and Betts.
   14. Western Plastics Company.

B. See Section 01800.

C. Fittings for Use with RGS:
   1. Materials: The following are minimum requirements unless otherwise noted.
      a. Body: Malleable iron, zinc- or cadmium-plated; steel, hot-dipped galvanized; or steel zinc plated with aluminum lacquer or aluminum enamel finish.
      b. Covers: Malleable iron, zinc plated.
      c. Gaskets: Neoprene or PVC, integrally fused to or recessed into the body.
      d. Insulators-phenolic, thermosetting:
         1) Minimum 105 DegC UL rating.
      e. Grounding saddles tin-plated copper or bronze suitable for use with copper and aluminum conductors.
      f. Bonding jumpers: Tinned copper flexible braid.
      g. Locknuts: Malleable iron, zinc plated.
   2. All fittings: Threaded unless otherwise noted.
   3. All covers: Gasketed.
   4. Standards:
      a. UL 6.
      b. UL 467.
      c. UL 514.
      d. UL 1242.
   5. Hubs shall be raintight.
   6. Straight couplings: Same material and finish as the conduit with which they are used.
   7. Expansion couplings:
      a. 2 or 4 IN nominal straight-line conduit movement in either direction.
      b. Weathertight.
      c. Insulating bushing.
      d. Sleeve-steel, zinc plated.
   8. Expansion/deflection couplings:
      a. 2 or 4 IN nominal straight-line conduit movement in either direction.
      b. 30-degree nominal deflection from the normal in all directions.
      c. Watertight.
      d. Insulating bushing.
      e. End couplings/hubs - bronze; or steel zinc-plated with aluminum cellulose lacquer finish.

f. Outer jacket-neoprene.
g. Jacket clamps-stainless steel.
h. Inner sleeve (when used) - molded plastic.

9. Service entrance heads:
   a. Weather resistant.
   b. Body - malleable iron, hot-dipped galvanized or copper-free aluminum.
10. Pulling elbows and tees:
   a. Raintight.
   b. Cover - steel, zinc-plated.
11. Mogul pulling elbows:
   a. Die cast copper free aluminum.
12. Couplings for threadless RGS:
   a. Concrete-tight.
   b. Gland compression type or self-threading type.
      1) Self-threading type: Steel, zinc-plated with case hardened steel forming threads.

D. Fittings for Use with PVC-RGS:
1. The same material and construction as those fittings listed under paragraph "Fittings for Use with RGS and coated as defined under paragraph "PVC-RGS."

E. Fittings for Use with FLEX-LT:
1. Fittings shall meet the following minimum requirements unless otherwise noted:
   a. Body: Malleable iron, zinc-plated.
   b. Ferrule: Steel, zinc-plated.
   c. Locknuts and compression nuts: Malleable iron, zinc-plated.
   d. Sealing ring: Neoprene.
2. Standard: UL 514.

2.06 CONDUIT SUPPORT SYSTEMS

A. For Use with RGS:
1. Acceptable manufacturers:
   a. Unistrut Building Systems.
   b. B-Line Systems Inc.
   c. Kindorf.
2. All components shall be hot-dipped galvanized.
   a. Standard: ASTM A153.
3. Channels and brackets:
   a. Formed from hot rolled carbon steel sheet and strip.
   b. Standard: ASTM A570.
4. Fittings:
   a. Formed from structural steel or hot-rolled carbon steel sheet and strip.
   b. Standards:
      1) ASTM A36 and A635.
5. Clamps:
   a. Formed from low carbon hot rolled steel sheet and strip.
   b. Standard: ASTM A569.
6. Channel nuts:
   a. Formed from mild steel bar stock, case hardened.
   b. Standard: ASTM A575.
7. Screws, nuts, bolts and continuous threaded rods.
   a. Formed from mild steel bar stock.
   b. Standards:

1) ASTM A307 and A563.

B. For Use with PVC-RGS:
1. All components: Comply with the requirements of paragraph "For Use with RGS and with the coating requirements of paragraph "PVC-RGS"; except screws, nuts and bolts shall be stainless steel.
a. Stainless steel channels, brackets, fittings, clamps, channel nuts and continuous threaded rod may be used in lieu of PVC coating these components.

2.09 ALL CONDUIT FITTINGS, WIREWAYS, AND UNDERFLOOR DUCT

A. Mark Products:
1. UL or ETL listed.
2. Identify the nominal trade size on the product.
3. Stamp with the name or trademark of the manufacturer.

B. Substitution: Submit requests for substitution in accordance with Specification Section 01640.

PART 3 - EXECUTION

3.01 INSTALLATION

A. Conduits shall be routed in the field unless otherwise indicated.

B. Size of Raceways and Conduits:
1. Size in accordance with the NEC.
2. Conduits shall not be smaller than 3/4 IN trade size, unless otherwise shown on the Drawings.

C. Conduit Runs:
1. All conduits within a structure shall be installed exposed except as follows:
a. Above suspended ceilings.
b. Within stud, masonry and concrete walls of finished areas.
2. Expose exterior to structure conduits only where shown on the Contract Drawings.

D. Conduit:
1. Shall not interfere with, or prevent access to, piping, valves, ductwork, or other equipment for operation, maintenance and repair.

E. Total of Bends in a Conduit Run:
1. Less than 360 degrees.
2. Provide pull boxes, condulets, or pulling elbows or tees as needed.

F. Raceway runs, where shown, indicate the preferred location. Site conditions may affect actual routing. Coordinate routing and measurement with other trades and with equipment suppliers to avoid interference with equipment, piping, ductwork, etc.

G. Extend existing conduits utilizing the materials shown on the details or where not shown with the same material as the existing conduit.

H. FLEX-LT:
   1. Install as the final conduit to primary elements (instrumentation), and equipment that is likely to vibrate.
   2. Shall not be used as a conduit run:
      a. Maximum length shall not exceed:
         1) 36 IN to motors.
         2) 24 IN to all other equipment.

I. Conduit Support Systems:
   1. Compatible with the material and finish of the conduit supported.
      a. Hot-dipped galvanized steel for use with RGS.
      b. PVC coated hot-dipped galvanized steel for use with PVC-RGS.

J. Field Bending of Conduits:
   1. Utilize tools and equipment designed for the purpose and for the material being processed to make all field bends.
   2. Do not reduce the internal diameter of the conduit when making conduit bends.
   3. RGS:
      a. Use an EMT bending shoe to make bends in 1/2 IN and 3/4 IN conduit.
      b. Use a hydraulic bender to make bends in 1 IN and larger conduit.
   4. PVC-RGS:
      a. 1/2 and 3/4 IN bends may be made using a plastic-coated bending hickey or EMT bending shoe.
      b. Use a hydraulic bender to make bends in 1 IN and larger conduit.
      c. Prepare tools and equipment to prevent or minimize damage to the PVC coating.

K. Field Cutting and Threading Conduit:
   1. Utilize tools and equipment designed for the purpose and for the material being processed when cutting and threading.
   2. RGS:
      a. Use pipe roller cutter for cutting to length.
      b. Use reamer to debur, smooth, and evenly chamfer the inside.
      c. Use pipe threader to thread the conduit.
         1) Degrease threads after threading and apply a zinc rich paint.
   3. PVC-RGS:
      a. Use pipe roller cutter for cutting to length.
      b. Use reamer to debur, smooth, and evenly chamfer the inside.
      c. Use pipe threader to thread the conduit.
         1) Degrease and apply a zinc rich paint after threading the threads.
   4. FLEX and FLEX-LT:
      a. Use hacksaw and cutting vise or miter box for cutting to length.
      b. Debur interior and exterior after cutting.

L. Conduit Installation:
   1. Install conduit and fittings, as required (including offsets and crossovers), for a complete system that has a neat appearance and is in compliance with all applicable codes.
   2. Accessible conduit, wireway, and underfloor raceway:
      a. Run in straight lines parallel to or at right angles to building lines.
         1) Install conduit adjacent to walls and floors.
         2) Maintain minimum 6 IN separation between instrumentation and power conduits.
      b. Maintain minimum 6 IN separation from process, gas, air and water pipes.
   3. Conduit support systems:

a. Support conduit from the building structure.
   1) Do not support conduit from process, gas, air or water piping; or from other conduits.
b. Provide hangers and brackets to limit the maximum uniform load on a single support to 25 LBS; or to the maximum uniform load recommended by the manufacturer if the support is rated less than 25 LBS.
   1) Do not exceed maximum concentrated load recommended by the manufacturer on any support.
   2) Conduit hangers: Continuous threaded rods combined with struts or conduit clamps:
      a) Do not use perforated strap hangers and iron bailing wire.
   3) Do not use suspended ceiling support systems to support raceways.
   4) Hangers in metal roof decks:
      a) Utilize fender washers.
      b) Not extend above top of ribs.
      c) Not interfere with vapor barrier, insulation, or roofing.
c. Conduit support system fasteners:
   1) Use sleeve-type expansion anchors as fasteners in masonry wall construction. Do not use concrete nails and powder-driven fasteners.
   2) Comply with the requirements of Section 03431 for fasteners in precast-prestressed concrete construction.
   3) Comply with the requirements of Section 05505 for fasteners in cast-in-place concrete construction.
d. Maximum spacing between conduit supports:
   1) RGS: 10 FT.
e. Support all conduits within 3 FT of the conduit termination.
f. Support all conduits at 90-degree bends and at vertical drops.
g. Provide substantial vertical support for all conduit drops for stability and to minimize vibration.
h. Where sufficient room exists within the housing, conduit to roof-mounted equipment shall be stubbed up inside the housing.

4. Male threads of conduit systems shall be coated with an electrically conductive anti-seize compound.
5. Threaded connections shall be made wrench-tight.
6. Conduit joints shall be watertight.
   a. Where exposed to possible submersion.
   b. In areas classified as wet.
   c. Underground.
7. Terminate conduits:
   a. In NEMA 1 and 12 type enclosures:
      1) With an insulated grounding bushing on the interior.
      2) With a locknut on the exterior.
   b. In NEMA 3R, 4, 4X and 7/9 type enclosures:
      1) Into a threaded hub.
      2) With an insulating bushing, unless the hub provides equivalent protection to the conductors.
   c. When stubbed up through the floor:
      1) With an insulated grounding bushing.
8. Threadless couplings shall only be used to join new RGS to existing RGS conduit when the existing conduit end is not threaded and it is not practical or possible to cut threads on the existing conduit with a pipe threader.

M. The protective coating integrity of conduits, fittings, and accessories shall be maintained.
   1. Repair RGS, utilizing a zinc rich paint.
   2. Repair PVC-RGS utilizing a patching compound, of the same material as the coating, provided by the manufacturer of the conduit; or a self-adhesive, highly conformable, cross-linked silicone composition strip, followed by a protective coating of vinyl tape.
      a. The total nominal thickness: 40 mil.
   3. Repair surfaces which will be inaccessible after installation prior to installation.

N. Remove moisture and debris from new conduit before wire is pulled into place.
   1. Pull mandrel with diameter nominally 1/4 IN smaller than the interior of the conduit, to remove obstructions.
   2. Swab conduit by pulling a clean, tight-fitting rag through the conduit.
   3. Tightly plug ends of conduit with tapered wood plugs or plastic inserts until wire is pulled.

O. Only nylon or polyethylene rope shall be used to pull wire and cable in conduit systems.

END OF SECTION

SECTION 16120

WIRE AND CABLE - 600 VOLT AND BELOW

PART 1 - GENERAL

1.01 SUMMARY

A. Section Includes:
1. Building wire and cable (600 V and below), instrumentation cable, splices, taps, electrical tape and pulling lubricant.

B. Related Sections include but are not necessarily limited to:
1. Division 0 - Bidding Requirements, Contract Forms, and Conditions of the Contract.

2. Division 1 - General Requirements.
3. Section 16010 - Electrical: Basic Requirements.

1.02 QUALITY ASSURANCE

A. Referenced Standards:
1. Insulated Cable Engineers Association/National Electrical Manufacturers Association (ICEA/NEMA):
a. S-66-524/WC 7, Cross-Linked Thermosetting- Polyethylene-Insulated Wire and Cable for Transmission and Distribution of Electrical Energy.
b. S-68-516/WC 8, Ethylene-Propylene Rubber-Insulated Wire and Cable for the Transmission and Distribution of Electrical Energy.
c. S-61-402/WC 5, Thermoplastic-Insulated Wire and Cable for the Transmission and Distribution of Electrical Energy.
2. National Fire Protection Association (NFPA):
a. 70, National Electrical Code (NEC).
3. Underwriters Laboratories, Inc (UL):
a. 44, Rubber Insulated Wires and Cables.
b. 486A, Wire Connectors and Soldering Lugs for use with Copper Conductors.
c. 486B, Wire Connectors for use with Aluminum Conductors.
d. 510, Insulating Tape.

1.03 DEFINITIONS

A. Cable: Multi-conductor, insulated, with outer sheath.
1. May contain either building wire or instrumentation wire.

B. Instrumentation Cable: Multiple conductors, insulated, twisted with outer sheath, intended for transmission and distribution of low current (4-20 mA DC) or low voltage (0-10 V DC) analog signals, No. 16 AWG and smaller. Commonly used types are defined in the following:
1. TSP: Twisted-shielded pair.

C. Power Cable: Containing multi-conductor insulated building wire, No. 12 AWG and larger.

D. Control Cable: Containing multi-conductor insulated control wires, No. 16, No. 14 or No. 12 AWG.

E. Wire: Single conductor, insulated, with or without outer jacket depending upon type.

1.04 SUBMITTALS

A. Shop Drawings:
   1. See Sections 01340 and 16010.

PART 2 - PRODUCTS

2.01 MANUFACTURED UNITS

A. Instrumentation Cable:
   1. Subject to compliance with Contract Documents, the following manufacturers are acceptable:
      a. Alpha Wire Corporation.
      b. American Insulated Wire Corporation.
      c. Belden Wire and Cable.
      d. Carol Cable Company.
   2. Conform to UL 444, Communications Cable, NEC type CMP, thinned copper conductors, 100 percent shield coverage. Teflon insulated with Teflon jacket.
   3. TSP:
      a. Two #16 conductors.
      b. Overall shielding.

B. Building wire, power cable, control cable and instrumentation cable:
   1. UL listed or UL recognized.
   2. Surface mark with manufacturers name or trademark, conductor size, insulation type and UL label.

C. PLC System Cabling:
   1. I/O communications (T1-505 series) and PLC LAN trunk cable:
      a. 300 V, 60 DegC.
      b. Two #16 SWG solid, twisted, bare copper, 4.2 Ohms/Mft.
      c. 100% shielding with tinned copper braid.
      d. 124 Ohm nominal impedance, 78% velocity of propagation.
      e. Black PVC jacket.
      f. Belden 9860.
   2. I/O communication tap cable (TI-505 series):
      a. 300 V, 60 DegC.
      b. Two #25 AWG stranded, twisted, tinned copper, 31.8 Ohms/Mft.
      c. 100% shielding with Beldfoil with stranded tinner copper drain wire.
      d. 124 Ohm nominal impedance, 66% velocity of propagation.
      e. Blue PVC jacket.
      f. Belden 9271.

D. Splices and Taps:
   1. Subject to compliance with Contract Documents, the following manufacturers are acceptable:
      a. Burndy Corporation.
      b. Ideal.
      c. Minnesota Mining and Manufacturing Co.
      d. Penn Union.
      e. Thomas and Betts.

2. UL listed.
3. Conform to UL 486A.

E. Electrical Tape:
1. Pressure sensitive vinyl.
2. Premium grade.
3. Heat, cold, moisture, and sunlight resistant.
4. UL listed.
5. Thickness, depending on use conditions: 7, 8.5, or 10 mil.
6. For cold weather or outdoor location, tape must also be all-weather.
7. Comply with UL 510.

F. Pulling Lubricant: Cable manufacturer's standard containing no petroleum or other products which will deteriorate insulation.

G. Submit requests for substitutions in accordance with Specification Section 01640.

PART 3 - EXECUTION

3.01 INSTALLATION

A. Conductor size limitations:
1. Power conductors shall not be smaller than No. 12 AWG unless otherwise indicated on the drawings.
2. Control conductors shall not be smaller than No. 14 AWG unless otherwise indicated on the drawings.
3. Instrumentation conductors shall not be smaller than No. 16 AWG unless otherwise indicated on the drawings.

B. Install at wiring in raceway unless otherwise indicated on the drawings.

C. Feeder, branch, control and instrumentation circuits shall not be combined in conduit, wireway, junction or pull boxes; except as permitted in the following:
1. Where specifically indicated on the drawings or field conditions dictate and written permission is obtained from the Engineer.
   a. Feeder and branch circuits shall be isolated from each other and from all control and instrumentation circuits.
   b. Control circuits shall be isolated from feeder, branch and instrumentation circuits.
      1) Where combining of control circuits is permitted the combinations shall comply with the following:
         a) 12 VDC, 24 VDC and 48 VDC may utilize a common raceway.
      2) 125 VDC shall be isolated from all other AC and DC circuits.
      3) AC control circuits shall be isolated from all DC circuits.
   c. Instrumentation circuits shall be isolated from feeder, branch and control circuits.
      1) Certain instrumentation equipment are "two-wire" devices which accept a 24 VDC input and produce a 4-20 mA DC output. This wiring shall be in a common raceway.
      2) Where combining of instrumentation circuits is permitted the combinations shall comply with the following:
         a) 4-20 mA DC and 0-10 VDC analog signal circuits may utilize a common raceway.

D. Ground the drain wire of shielded cables at one end only.
   1. The preferred grounding location is at the load, not at the source.

E. Maintain electrical continuity of the shield when splicing twisted shielded conductors.

F. Make splices and taps only at pull or junction boxes.
   1. Crimp or indenter-type connectors: Installation shall be made using a ratchet type compression tool.
   2. Insulated conical spring type connectors may be used for wire smaller than #6 AWG.

G. Electrical Tape Usage:
   1. For insulating connections: 7 mil vinyl tape.
   2. For insulating connections made in cold weather or in outdoor locations: 8.5 mil, all weather vinyl tape.

H. Terminate instrumentation and control wiring, including spare wires, at control panels and motor control centers on terminal boards mounted inside the equipment.
   1. Contractor shall supply terminal boards as required.
   2. Do not field wire directly to devices.
   3. Ground both ends of spare wires.

END OF SECTION

Newberg WWTP I/C Enhancements

SIM	R	S	P	T	Addr	EQNUM	EQNAME	DEVICE	FUNCTION	DRAWING	I R	I S	I T	TI Mod	TI	TI Addr
1	2	5	1	IR	0001	P01-3	INF. PUMP 3	SIK-106	SPEED FDBK	3170A106	2	1	1	505-6108A	WX	1
1	2	5	2	IR	0002	P01-4	INF. PUMP 4	SIK-107	SPEED FDBK	3170A107	2	1	2	505-6108A	WX	2
							WETWELL SIDE A	LIT-101A	LEVEL	3170A003	2	1	3	505-6108A	WX	3
							WETWELL SIDE B	LIT-101B	LEVEL	3170A004	2	1	4	505-6108A	WX	4
							EQ BASIN RETURN	FIT-116	FLOW	3170A116	2	1	5	505-6108A	WX	5
									SPARE		2	1	6	505-6108A	WX	6
									SPARE		2	1	7	505-6108A	WX	7
									SPARE		2	1	8	505-6108A	WX	8
1	2	1	1	O	0001	P01-3	INF. PUMP 3	SIK-106	SPEED CMD	3170A106	2	2	1	505-6208	WY	9
1	2	1	2	O	0002	P01-4	INF. PUMP 4	SIK-107	SPEED CMD	3170A107	2	2	2	505-6208	WY	10
									SPARE		2	2	3	505-6208	WY	11
									SPARE		2	2	4	505-6208	WY	12
									SPARE		2	2	5	505-6208	WY	13
									SPARE		2	2	6	505-6208	WY	14
									SPARE		2	2	7	505-6208	WY	15
									SPARE		2	2	8	505-6208	WY	16
1	1	1	1	IN	0001	G-1	DIVERSION GATE	TEL-R1	OPEN	3170S3	2	3	1	505-4232	X	513
1	1	1	2	IN	0002	G-1	DIVERSION GATE	TEL-R2	75%	3170S3	2	3	2	505-4232	X	514
1	1	1	3	IN	0003	G-1	DIVERSION GATE	TEL-R3	50%	3170S3	2	3	3	505-4232	X	515
1	1	1	4	IN	0004	G-1	DIVERSION GATE	TEL-R4	25%	3170S3	2	3	4	505-4232	X	516
1	1	1	5	IN	0005	G-1	DIVERSION GATE	TEL-R5	CLOSED	3170S3	2	3	5	505-4232	X	517
1	1	1	6	IN	0006	G-1	G1 AND G2	TEL-R6	LOCAL	3170S3	2	3	6	505-4232	X	518
1	1	1	7	IN	0007	TEL-1	BYPASS GATE	TEL-R7	CLOSED	3170S3	2	3	7	505-4232	X	519
1	1	1	8	IN	0008	TEL-1	BYPASS GATE	TEL-R8	OPEN	3170S3	2	3	8	505-4232	X	520
1	1	1	9	IN	0009	TEL-1	CP1	TEL-R9	POWER	3170S3	2	3	9	505-4232	X	521
1	1	1	10	IN	0010	TEL-1	8TH	TEL-R10	POWER	3170S3	2	3	10	505-4232	X	522
1	1	1	11	IN	0011	TEL-1	8TH	TEL-R11	HIGH	3170S3	2	3	11	505-4232	X	523
1	1	1	12	IN	0012	TEL-1	CHARLES	TEL-R12	POWER	3170S3	2	3	12	505-4232	X	524
1	1	1	13	IN	0013	TEL-1	CHARLES	TEL-R13	HIGH	3170S3	2	3	13	505-4232	X	525
1	1	1	14	IN	0014	TEL-1	ANDREW	TEL-R14	POWER	3170S3	2	3	14	505-4232	X	526
1	1	1	15	IN	0015	TEL-1	ANDREW	TEL-R15	HIGH	3170S3	2	3	15	505-4232	X	527

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SIM	R	S	P	T	Addr	EQNUM	EQNAME	DEVICE	FUNCTION	DRAWING	I R	I S	I T	TI Mod	TI	TI Addr
1	1	1	16	IN	0016	TEL-1		TEL-R16	SPARE	3170S3	2	3	16	505-4232	X	528
1	1	2	1	IN	0017	G-2	BYPASS GATE	HS-007	AUTO	3170S3	2	3	17	505-4232	X	529
1	1	2	2	IN	0018	G-1	DIVERSION GATE	HS-005A	AUTO	3170S3	2	3	18	505-4232	X	530
1	1	2	3	IN	0019	G-1	DIVERSION GATE	HS-005B	OPEN	3170S3	2	3	19	505-4232	X	531
1	1	2	4	IN	0020	G-1	DIVERSION GATE	HS-005C	CLOSE	3170S3	2	3	20	505-4232	X	532
1	1	2	5	IN	0021	P01-1	INF. PUMP 1	HS-108	AUTO	3170S3	2	3	21	505-4232	X	533
1	1	2	6	IN	0022	P01-2	INF. PUMP 2	HS-109	AUTO	3170S3	2	3	22	505-4232	X	534
1	1	2	7	IN	0023	P01-3	INF. PUMP 3	HS-110	AUTO	3170S3	2	3	23	505-4232	X	535
1	1	2	8	IN	0024	P01-4	INF. PUMP 4	HS-111	AUTO	3170S3	2	3	24	505-4232	X	536
1	1	2	9	IN	0025	P01-1	INF. PUMP 1	ZS-102	FLOW	3170S3	2	3	25	505-4232	X	537
1	1	2	10	IN	0026	P01-2	INF. PUMP 2	ZS-103	FLOW	3170S3	2	3	26	505-4232	X	538
1	1	2	11	IN	0027	P01-3	INF. PUMP 3	ZS-104	FLOW	3170S3	2	3	27	505-4232	X	539
1	1	2	12	IN	0028	P01-4	INF. PUMP 4	ZS-105	FLOW	3170S3	2	3	28	505-4232	X	540
1	1	2	13	IN	0029	P01-1	INF. PUMP 1	QS-108	RUN	3170S3	2	3	29	505-4232	X	541
1	1	2	14	IN	0030	P01-1	INF. PUMP 1	TSH-108	HIGH TEMP	3170S3	2	3	30	505-4232	X	542
1	1	2	15	IN	0031	P01-2	INF. PUMP 2	QS-109	RUN	3170S3	2	3	31	505-4232	X	543
1	1	2	16	IN	0032	P01-2	INF. PUMP 2	TSH-109	HIGH TEMP	3170S3	2	3	32	505-4232	X	544
1	1	3	1	IN	0033	P01-3	INF. PUMP 3	QS-110A	RUN	3170S4	2	4	1	505-4232	X	545
1	1	3	2	IN	0034	P01-3	INF. PUMP 3	TSH-110	HIGH TEMP	3170S4	2	4	2	505-4232	X	546
1	1	3	3	IN	0035	P01-3	INF. PUMP 3	QS-110B	VFD VAULT	3170S4	2	4	3	50		

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SIM	R	S	P	T	Addr	EQNUM	EQNAME	DEVICE	FUNCTION	DRAWING	I R	I S	I T	TI Mod	TI	TI Addr
1	2	5	1	IR	0001	P01-3	INF. PUMP 3	SIK-106	SPEED FDBK	3170A106	2	1	1	505-6108A	WX	1
1	2	5	2	IR	0002	P01-4	INF. PUMP 4	SIK-107	SPEED FDBK	3170A107	2	1	2	505-6108A	WX	2
							WETWELL SIDE A	LIT-101A	LEVEL	3170A003	2	1	3	505-6108A	WX	3
							WETWELL SIDE B	LIT-101B	LEVEL	3170A004	2	1	4	505-6108A	WX	4
							EQ BASIN RETURN	FIT-116	FLOW	3170A116	2	1	5	505-6108A	WX	5
									SPARE		2	1	6	505-6108A	WX	6
									SPARE		2	1	7	505-6108A	WX	7
									SPARE		2	1	8	505-6108A	WX	8
1	2	1	1	O	0001	P01-3	INF. PUMP 3	SIK-106	SPEED CMD	3170A106	2	2	1	505-6208	WY	9
1	2	1	2	O	0002	P01-4	INF. PUMP 4	SIK-107	SPEED CMD	3170A107	2	2	2	505-6208	WY	10
									SPARE		2	2	3	505-6208	WY	11
									SPARE		2	2	4	505-6208	WY	12
									SPARE		2	2	5	505-6208	WY	13
									SPARE		2	2	6	505-6208	WY	14
									SPARE		2	2	7	505-6208	WY	15
									SPARE		2	2	8	505-6208	WY	16
1	1	1	1	IN	0001	G-1	DIVERSION GATE	TEL-R1	OPEN	3170S3	2	3	1	505-4232	X	513
1	1	1	2	IN	0002	G-1	DIVERSION GATE	TEL-R2	75%	3170S3	2	3	2	505-4232	X	514
1	1	1	3	IN	0003	G-1	DIVERSION GATE	TEL-R3	50%	3170S3	2	3	3	505-4232	X	515
1	1	1	4	IN	0004	G-1	DIVERSION GATE	TEL-R4	25%	3170S3	2	3	4	505-4232	X	516
1	1	1	5	IN	0005	G-1	DIVERSION GATE	TEL-R5	CLOSED	3170S3	2	3	5	505-4232	X	517
1	1	1	6	IN	0006	G-1	G1 AND G2	TEL-R6	LOCAL	3170S3	2	3	6	505-4232	X	518
1	1	1	7	IN	0007	TEL-1	BYPASS GATE	TEL-R7	CLOSED	3170S3	2	3	7	505-4232	X	519
1	1	1	8	IN	0008	TEL-1	BYPASS GATE	TEL-R8	OPEN	3170S3	2	3	8	505-4232	X	520
1	1	1	9	IN	0009	TEL-1	CP1	TEL-R9	POWER	3170S3	2	3	9	505-4232	X	521
1	1	1	10	IN	0010	TEL-1	8TH	TEL-R10	POWER	3170S3	2	3	10	505-4232	X	522
1	1	1	11	IN	0011	TEL-1	8TH	TEL-R11	HIGH	3170S3	2	3	11	505-4232	X	523
1	1	1	12	IN	0012	TEL-1	CHARLES	TEL-R12	POWER	3170S3	2	3	12	505-4232	X	524
1	1	1	13	IN	0013	TEL-1	CHARLES	TEL-R13	HIGH	3170S3	2	3	13	505-4232	X	525
1	1	1	14	IN	0014	TEL-1	ANDREW	TEL-R14	POWER	3170S3	2	3	14	505-4232	X	526
1	1	1	15	IN	0015	TEL-1	ANDREW	TEL-R15	HIGH	3170S3	2	3	15	505-4232	X	527

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SIM	R	S	P	T	Addr	EQNUM	EQNAME	DEVICE	FUNCTION	DRAWING	I R	I S	I T	TI Mod	TI	TI Addr
1	1	1	16	IN	0016	TEL-1		TEL-R16	SPARE	3170S3	2	3	16	505-4232	X	528
1	1	2	1	IN	0017	G-2	BYPASS GATE	HS-007	AUTO	3170S3	2	3	17	505-4232	X	529
1	1	2	2	IN	0018	G-1	DIVERSION GATE	HS-005A	AUTO	3170S3	2	3	18	505-4232	X	530
1	1	2	3	IN	0019	G-1	DIVERSION GATE	HS-005B	OPEN	3170S3	2	3	19	505-4232	X	531
1	1	2	4	IN	0020	G-1	DIVERSION GATE	HS-005C	CLOSE	3170S3	2	3	20	505-4232	X	532
1	1	2	5	IN	0021	P01-1	INF. PUMP 1	HS-108	AUTO	3170S3	2	3	21	505-4232	X	533
1	1	2	6	IN	0022	P01-2	INF. PUMP 2	HS-109	AUTO	3170S3	2	3	22	505-4232	X	534
1	1	2	7	IN	0023	P01-3	INF. PUMP 3	HS-110	AUTO	3170S3	2	3	23	505-4232	X	535
1	1	2	8	IN	0024	P01-4	INF. PUMP 4	HS-111	AUTO	3170S3	2	3	24	505-4232	X	536
1	1	2	9	IN	0025	P01-1	INF. PUMP 1	ZS-102	FLOW	3170S3	2	3	25	505-4232	X	537
1	1	2	10	IN	0026	P01-2	INF. PUMP 2	ZS-103	FLOW	3170S3	2	3	26	505-4232	X	538
1	1	2	11	IN	0027	P01-3	INF. PUMP 3	ZS-104	FLOW	3170S3	2	3	27	505-4232	X	539
1	1	2	12	IN	0028	P01-4	INF. PUMP 4	ZS-105	FLOW	3170S3	2	3	28	505-4232	X	540
1	1	2	13	IN	0029	P01-1	INF. PUMP 1	QS-108	RUN	3170S3	2	3	29	505-4232	X	541
1	1	2	14	IN	0030	P01-1	INF. PUMP 1	TSH-108	HIGH TEMP	3170S3	2	3	30	505-4232	X	542
1	1	2	15	IN	0031	P01-2	INF. PUMP 2	QS-109	RUN	3170S3	2	3	31	505-4232	X	543
1	1	2	16	IN	0032	P01-2	INF. PUMP 2	TSH-109	HIGH TEMP	3170S3	2	3	32	505-4232	X	544
1	1	3	1	IN	0033	P01-3	INF. PUMP 3	QS-110A	RUN	3170S4	2	4	1	505-4232	X	545
1	1	3	2	IN	0034	P01-3	INF. PUMP 3	TSH-110	HIGH TEMP	3170S4	2	4	2	505-4232	X	546
1	1	3	3	IN	0035	P01-3	INF. PUMP 3	QS-110B	VFD VAULT	3170S4	2	4	3	505-4232	X	547
1	1	3	4	IN	0036	P01-4	INF. PUMP 4	QS-111A	RUN	3170S4	2	4	4	505-4232	X	548
1	1	3	5	IN	0037	P01-4	INF. PUMP 4	TSH-111	HIGH TEMP	3170S4	2	4	5	505-4232	X	549
1	1	3	6	IN	0038	P01-4	INF. PUMP 4	QS-111B	VFD FAULT	3170S4	2	4	6	505-4232	X	550
1	1	3	7	IN	0039	P01-1	INF. WETWELL A	LSH-112A	WETWELL A HIGH LVL	3170S4	2	4	7	505-4232	X	551
1	1	3	8	IN	0040	P01-1	INF. WETWELL A	LSH-112B	WETWELL A LOW LVL	3170S4	2	4	8	505-4232	X	552
1	1	3	9	IN	0041	P01-1	INF. WETWELL B	LSH-112C	WETWELL B HIGH LVL	3170S4	2	4	9	505-4232	X	553
1	1	3	10	IN	0042	P01-1	INF. WETWELL B	LSH-112D	WETWELL B LOW LVL	3170S4	2	4	10	505-4232	X	554
1	1	3	13	IN	0045	P01-3	INF. PUMP 3	SIK-106	AUTO/MAN REQUEST	3170S4	2	4	11	505-4232	X	555
1	1	3	14	IN	0046	P01-3	INF. PUMP 3	SIK-106	AUTO/MAN STATUS	3170S4	2	4	12	505-4232	X	556
1	1	3	15	IN	0047	P01-4	INF. PUMP 4	SIK-107	AUTO/MAN REQUEST	3170S4	2	4	13	505-4232	X	557
1	1	3	16	IN	0048	P01-4	INF. PUMP 4	SIK-107	AUTO/MAN STATUS	3170S4	2	4	14	505-4232	X	558

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SIM	R	S	P	T	Addr	EQNUM	EQNAME	DEVICE	FUNCTION	DRAWING	I R	I S	I T	TI Mod	TI	TI Addr
1	1	4	1	IN	0049	PCP	PLANT CONTROL PANEL		CLAR. MODE SEQ ADV.	3170S5	2	4	15	505-4232	X	559
1	1	4	2	IN	0050	PCP	PLANT CONTROL PANEL		DIALER STATUS	3170S5	2	4	16	505-4232	X	560
1	1	4	3	IN	0051	PCP	PLANT CONTROL PANEL		LAMP TEST	3170S5	2	4	17	505-4232	X	561
1	1	4	5	IN	0053	PCP	PLANT CONTROL PANEL		ACKNOWLEDGE	3170S5	2	4	18	505-4232	X	562
									SPARE		2	4	19	505-4232	X	563
									SPARE		2	4	20	505-4232	X	564
									SPARE		2	4	21	505-4232	X	565
									SPARE		2	4	22	505-4232	X	566
									SPARE		2	4	23	505-4232	X	567
									SPARE		2	4	24	505-4232	X	568
									SPARE		2	4	25	505-4232	X	569
									SPARE		2	4	26	505-4232	X	570
									SPARE		2	4	27	505-4232	X	571
									SPARE		2	4	28	505-4232	X	572
									SPARE		2	4	29	505-4232	X	573
									SPARE		2	4	30	505-4232	X	574
									SPARE		2	4	31	505-4232	X	575
									SPARE		2	4	32	505-4232	X	576
1	1	5	1	CR	0001	G-1	DIVERSION GATE	CR7	OPEN	3170S5	2	5	1	505-4832	Y	577
1	1	5	2	CR	0002	G-1	DIVERSION GATE	CR8	75%	3170S5	2	5	2	505-4832	Y	578
1	1	5	3	CR	0003	G-1	DIVERSION GATE	CR9	50%	3170S5	2	5	3	505-4832	Y	579
1	1	5	4	CR	0004	G-1	DIVERSION GATE	CR10	25%	3170S5	2	5	4	505-4832	Y	580
1	1	5	5	CR	0005	G-1	DIVERSION GATE	HS-007	CLOSE	3170S5	2	5	5	505-4832	Y	581
1	1	5	6	CR	0006	G-2	BYPASS GATE	HS-007	OPEN	3170S5	2	5	6	505-4832	Y	582
1	1	5	7	CR	0007	G-2	BYPASS GATE	HS-007	CLOSE	3170S5	2	5	7	505-4832	Y	583
1	1	5	9	CR	0009	P01-1	INF. PUMP 1	HS-108	TO IN0021	3170S5	2	5	8	505-4832	Y	584
1	1	5	10	CR	0010	P01-2	INF. PUMP 2	HS-109	TO IN0022	3170S5	2	5	9	505-4832	Y	585
1	1	5	11	CR	0011	P01-3	INF. PUMP 3	HS-110	TO IN0023	3170S5	2	5	10	505-4832	Y	586
1	1	5	12	CR	0012	P01-4	INF. PUMP 4	HS-111	TO IN0024	3170S5	2	5	11	505-4832	Y	587
1	1	5	13	CR	0013	P01-3	INF. PUMP 3	SIK-106	AUTO/MANUAL	3170S5	2	5	12	505-4832	Y	588
1	1	5	14	CR	0014	P01-3	INF. PUMP 3	SIK-106	LOCKOUT	3170S5	2	5	13	505-4832	Y	589

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SIM	R	S	P	T	Addr	EQNUM	EQNAME	DEVICE	FUNCTION	DRAWING	I R	I S	I T	TI Mod	TI	TI Addr
1	1	5	15	CR	0015	P01-4	INF. PUMP 4	SIK-107	AUTO/MANUAL	3170S5	2	5	14	505-4832	Y	590
1	1	5	16	CR	0016	P01-4	INF. PUMP 4	SIK-107	LOCKOUT	3170S5	2	5	15	505-4832	Y	591
1	2	2	9	CR	0089	P0-3	INF. PUMP 3		VFD #3 RESET	3170S13	2	5	16	505-4832	Y	592
1	2	2	10	CR	0090	P0-4	INF. PUMP 4		VFD #4 RESET	3170S13	2	5	17	505-4832	Y	593
1									SPARE		2	5	18	505-4832	Y	594
1									SPARE		2	5	19	505-4832	Y	595
1									SPARE		2	5	20	505-4832	Y	596
1									SPARE		2	5	21	505-4832	Y	597
1									SPARE		2	5	22	505-4832	Y	598
1									SPARE		2	5	23	505-4832	Y	599
1									SPARE		2	5	24	505-4832	Y	600
1									SPARE		2	5	25	505-4832	Y	601
									SPARE		2	5	26	505-4832	Y	602
									SPARE		2	5	27	505-4832	Y	603
									SPARE		2	5	28	505-4832	Y	604
									SPARE		2	5	29	505-4832	Y	605
									SPARE		2	5	30	505-4832	Y	606
									SPARE		2	5	31	505-4832	Y	607
									SPARE		2	5	32	505-4832	Y	608
						FIT-113	PLANT INFLUENT PUMPS 2, 3		FLOW	3170A115	3	1	1	505-6108A	WX	33
						FIT-114	PLANT INFLUENT PUMPS 1, 4		FLOW	3170A115	3	1	2	505-6108A	WX	34
						BSN2-01	BAR SCREEN	LDT-201	DIFF. LEVEL	3170A201	3	1	3	505-6108A	WX	35
							GRIT CHAMBER	AIT-209	PH	3170A209	3	1	4	505-6108A	WX	36
							SLUDGE STORAGE 1	LIT-547	LEVEL	3170A547	3	1	5	505-6108A	WX	37
							SLUDGE STORAGE 2	LIT-548	LEVEL	3170A548	3	1	6	505-6108A	WX	38
									SPARE		3	1	7	505-6108A	WX	39
									SPARE		3	1	8	505-6108A	WX	40
2	1	1	1	IN	0257	BSN2-01	BAR SCREEN	ZS-202A	UP	3170S22	3	2	1	505-4232	X	673
2	1	1	2	IN	0258	BSN2-01	BAR SCREEN	ZS-202B	DOWN	3170S22	3	2	2	505-4232	X	674
2	1	1	3	IN	0259	BSN2-01	BAR SCREEN	HS-202	AUTO	3170S22	3	2	3	505-4232	X	675

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SIM	R	S	P	T	Addr	EQNUM	EQNAME	DEVICE	FUNCTION	DRAWING	I R	I S	I T	TI Mod	TI	TI Addr
2	1	1	4	IN	0260	BSN2-01	BAR SCREEN	QS-302	RUN	3170S22	3	2	4	505-4232	X	676
2	1	1	5	IN	0261	B2-01	BLOWER 1	HS-203	AUTO	3170S22	3	2	5	505-4232	X	677
2	1	1	6	IN	0262	B2-01	BLOWER 1	QS-203	RUN	3170S22	3	2	6	505-4232	X	678
2	1	1	7	IN	0263	B2-01	BLOWER 1	FS-206	CLOSED	3170S22	3	2	7	505-4232	X	679
2	1	1	8	IN	0264	B2-02	BLOWER 2	HS-204	AUTO	3170S22	3	2	8	505-4232	X	680
2	1	1	9	IN	0265	B2-02	BLOWER 2	QS-204	RUN	3170S22	3	2	9	505-4232	X	681
2	1	1	10	IN	0266	B2-02	BLOWER 2	FS-207	CLOSED	3170S22	3	2	10	505-4232	X	682
2	1	1	11	IN	0267	B2-03	BLOWER 3	HS-205	AUTO	3170S22	3	2	11	505-4232	X	683
2	1	1	12	IN	0268	B2-03	BLOWER 3	QS-205	RUN	3170S22	3	2	12	505-4232	X	684
2	1	1	13	IN	0269	B2-03	BLOWER 3	FS-208	CLOSED	3170S22	3	2	13	505-4232	X	685
2	1	1	14	IN	0270	P2-01	GRIT PUMP 1	HS-210	CLOSED	3170S22	3	2	14	505-4232	X	686
2	1	1	15	IN	0271	P2-01	GRIT PUMP 1	ZS-212	AUTO	3170S22	3	2	15	505-4232	X	687
2	1	1	16	IN	0272	P2-02	GRIT PUMP 2	HS-211	CLOSED	3170S22	3	2	16	505-4232	X	688
2	1	2	1	IN	0273	P2-02	GRIT PUMP 2	ZS-213	AUTO	3170S22	3	2	17	505-4232	X	689
2	1	2	2	IN	0274	MME2-01	CLASSIFIER	HS-214	AUTO	3170S22	3	2	18	505-4232	X	690
2	1	2	3	IN	0275	CV2-02	GRIT CHAMBER AIR VALVE	HS-216A	AUTO	3170S22	3	2	19	505-4232	X	691
2	1	2	4	IN	0276	CV2-03	GRIT CHAMBER AIR VALVE	HS-216B	AUTO	3170S22	3	2	20	505-4232	X	692
2	1	2	5	IN	0277	MME2-04	CLASSIFIER	HS-217B	AUTO	3170S22	3	2	21	505-4232	X	693
2	1	2	6	IN	0278	MME2-04	CLASSIFIER	HS-217C	FORWARD	3170S22	3	2	22	505-4232	X	694
2	1	2	7	IN	0279	P5-15	SLUDGE TRANSFER PUMP 1	HS-551B	AUTO	3170S22	3	2	23	505-4232	X	695
2	1	2	8	IN	0280	P5-15	SLUDGE TRANSFER PUMP 1	HS-551D	#1	3170S22	3	2	24	505-4232	X	696
2	1	2	9	IN	0281	P5-15	SLUDGE TRANSFER PUMP 1	HS-551D	#2	3170S22	3	2	25	505-4232	X	697
2	1	2	10	IN	0282	P5-15	SLUDGE TRANSFER PUMP 1	HS-557	REMOTE	3170S22	3	2	26	505-4232	X	698
2	1	2	11	IN	0283	P5-15	SLUDGE TRANSFER PUMP 1		RUN	3170S22	3	2	27	505-4232	X	699
2	1	2	12	IN	0284	P5-15	SLUDGE TRANSFER PUMP 1		FAIL	3170S22	3	2	28	505-4232	X	700
2	1	2	13	IN	0285	P5-15	SLUDGE TRANSFER PUMP 1	ZS-552	CLOSED	3170S22	3	2	29	505-4232	X	701
2	1	2	14	IN	0286	P5-16	SLUDGE TRANSFER PUMP 2	HS-553B	AUTO	3170S22	3	2	30	505-4232	X	702
2	1	2	15	IN	0287	P5-16	SLUDGE TRANSFER PUMP 2	HS-553D	#1	3170S22	3	2	31	505-4232	X	703
2	1	2	16	IN	0288	P5-16	SLUDGE TRANSFER PUMP 2	HS-553D	#2	3170S22	3	2	32	505-4232	X	704
2	1	3	1	IN	0289	P5-16	SLUDGE TRANSFER PUMP 2	HS-558	REMOTE	3170S23	3	3	1	505-4232	X	705
2	1	3	2	IN	0290	P5-16	SLUDGE TRANSFER PUMP 2		FAIL	3170S23	3	3	2	505-4232	X	706

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SIM	R	S	P	T	Addr	EQNUM	EQNAME	DEVICE	FUNCTION	DRAWING	I R	I S	I T	TI Mod	TI	TI Addr
2	1	3	3	IN	0291	P5-16	SLUDGE TRANSFER PUMP 2		RUN	3170S23	3	3	3	505-4232	X	707
2	1	3	4	IN	0292	P5-16	SLUDGE TRANSFER PUMP 2	ZS-554	CLOSED	3170S23	3	3	4	505-4232	X	708
2	1	3	5	IN	0293	P5-14	SLUDGE TRANSFER PUMP 3	HS-549B	AUTO	3170S23	3	3	5	505-4232	X	709
2	1	3	6	IN	0294	P5-14	SLUDGE TRANSFER PUMP 3	HS-549C	#1	3170S23	3	3	6	505-4232	X	710
2	1	3	7	IN	0295	P5-14	SLUDGE TRANSFER PUMP 3	HS-549D	PUMP TO TANK #1	3170S23	3	3	7	505-4232	X	711
2	1	3	8	IN	0296	P5-14	SLUDGE TRANSFER PUMP 3	HS-549D	PUMP TO TANK #2	3170S23	3	3	8	505-4232	X	712
2	1	3	9	IN	0297	P5-14	SLUDGE TRANSFER PUMP 3	HS-556	REMOTE	3170S23	3	3	9	505-4232	X	713
2	1	3	10	IN	0298	P5-14	SLUDGE TRANSFER PUMP 3		RUN	3170S23	3	3	10	505-4232	X	714
2	1	3	11	IN	0299	P5-14	SLUDGE TRANSFER PUMP 3		FAIL	3170S23	3	3	11	505-4232	X	715
2	1	3	12	IN	0300	P5-14	SLUDGE TRANSFER PUMP 3	PSH-550	HIGH	3170S23	3	3	12	505-4232	X	716
2	1	3	13	IN	0301		TRUCK	LSH-555	HIGH LEVEL	3170S23	3	3	13	505-4232	X	717
2	1	3	14	IN	0302	P5-01	SCUM PUMP 1	HS-509D	START	3170S23	3	3	14	505-4232	X	718
2	1	3	15	IN	0303	P5-02	SCUM PUMP 2	HS-510D	START	3170S23	3	3	15	505-4232	X	719
2	1	3	16	IN	0304	P5-14	SLUDGE TRANFER PUMP 3	HS-549F	START	3170S23	3	3	16	505-4232	X	720
2	1	4	1	IN	0305	P5-15	SLUDGE TRANSFER PUMP 1	HS-551F	START	3170S23	3	3	17	505-4232	X	721
2	1	4	2	IN	0306	P5-16	SLUDGE TRANSFER PUMP 2	HS-553F	START	3170S23	3	3	18	505-4232	X	722
2	1	4	3	IN	0307	P5-15	SLUDGE TRANSFER PUMP 1	HS-555	EMERG. STOP	3170S23	3	3	19	505-4232	X	723
2	1	4	4	IN	0308	P7-05	THICKENED SLUDGE PUMP 1	HS-740	START	3170S23	3	3	20	505-4232	X	724
2	1	4	5	IN	0309	P7-06	THICKENED SLUDGE PUMP 2	HS-741F	START	3170S23	3	3	21	505-4232	X	725
2	1	4	13	IN	0317	P5-15	SLUDGE TRANSFER PUMP 1	HS-551C	SLUDGE PUMP	3170S23	3	3	22	505-4232	X	726
2	1	4	14	IN	0318	P5-16	SLUDGE TRANSFER PUMP 2	HS-553C	SLUDGE PUMP	3170S23	3	3	23	505-4232	X	727
2	2	5	1	IN	0385	B2-01	BLOWER 1		HIGH TEMP	3170S27	3	3	24	505-4232	X	728
2	2	5	2	IN	0386	B2-02	BLOWER 2		HIGH TEMP	3170S27	3	3	25	505-4232	X	729
2	2	5	3	IN	0387	B2-03	BLOWER 3		HIGH TEMP	3170S27	3	3	26	505-4232	X	730
									SPARE		3	3	27	505-4232	X	731
									SPARE		3	3	28	505-4232	X	732
									SPARE		3	3	29	505-4232	X	733
									SPARE		3	3	30	505-4232	X	734
									SPARE		3	3	31	505-4232	X	735
									SPARE		3	3	32	505-4232	X	736
2	1	5	1	CR	0257	BSN2-01	BAR SCREEN	HS-202	RUN	3170S24	3	4	1	505-4832	Y	737

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SIM	R	S	P	T	Addr	EQNUM	EQNAME	DEVICE	FUNCTION	DRAWING	I R	I S	I T	TI Mod	TI	TI Addr
2	1	5	2	CR	0258	CV2-02	GRIT CHAMBER AIR VALVE	HS-216A	OPEN	3170S24	3	4	2	505-4832	Y	738
2	1	5	3	CR	0259	CV2-03	GRIT CHAMBER AIR VALVE	HS-216B	OPEN	3170S24	3	4	3	505-4832	Y	739
2	1	5	4	CR	0260	B2-01	BLOWER 1	HS-203	RUN	3170S24	3	4	4	505-4832	Y	740
2	1	5	5	CR	0261	B2-02	BLOWER 2	HS-204	RUN	3170S24	3	4	5	505-4832	Y	741
2	1	5	6	CR	0262	B2-03	BLOWER 3	HS-205	RUN	3170S24	3	4	6	505-4832	Y	742
2	1	5	7	CR	0263	P2-01	GRIT PUMP 1	HS-210	RUN	3170S24	3	4	7	505-4832	Y	743
2	1	5	8	CR	0264	P2-02	GRIT PUMP 2	HS-211	RUN	3170S24	3	4	8	505-4832	Y	744
2	1	5	9	CR	0265	MME2-01	CLASSIFIER	HS-214	RUN	3170S24	3	4	9	505-4832	Y	745
2	1	5	10	CR	0266	CV2-01	GRIT WASHER	HS-215B	OPEN	3170S24	3	4	10	505-4832	Y	746
2	1	5	11	CR	0267	MME2-04	CLASSIFIER	HS-217B	RUN	3170S24	3	4	11	505-4832	Y	747
2	1	5	12	CR	0268	P5-14	SLUDGE TRANSFER PUMP 3	HS-549B	RUN	3170S24	3	4	12	505-4832	Y	748
2	1	5	13	CR	0269	P5-15	SLUDGE TRANSFER PUMP 1	HS-551B	RUN	3170S24	3	4	13	505-4832	Y	749
2	1	5	14	CR	0270	P5-16	SLUDGE TRANSFER PUMP 2	HS-553B	RUN	3170S24	3	4	14	505-4832	Y	750
2	1	5	15	CR	0271	BSN2-01	BAR SCREEN	QL-202A	RUNNING ILL	3170S24	3	4	15	505-4832	Y	751
2	1	5	16	CR	0272	B2-01	BLOWER 1	QL-203A	RUNNING ILL	3170S24	3	4	16	505-4832	Y	752
2	1	6	1	CR	0273	B2-03	BLOWER 3	QL-205A	RUNNING ILL	3170S24	3	4	17	505-4832	Y	753
2	1	6	2	CR	0274	P2-01	GRIT PUMP 1	QL-210A	RUNNING ILL	3170S24	3	4	18	505-4832	Y	754
2	1	6	3	CR	0275	P2-02	GRIT PUMP 2	QL-211A	RUNNING ILL	3170S24	3	4	19	505-4832	Y	755
2	1	6	4	CR	0276	MME2-01	CLASSIFIER	QL-214A	RUNNING ILL	3170S24	3	4	20	505-4832	Y	756
2	1	6	5	CR	0277	CV2-01	GRIT WASHER	QL-215	RUNNING ILL	3170S24	3	4	21	505-4832	Y	757
2	1	6	6	CR	0278	CV2-02	GRIT CHAMBER AIR VALVE	QL-216A	RUNNING ILL	3170S24	3	4	22	505-4832	Y	758
2	1	6	7	CR	0279	CV2-03	GRIT CHAMBER AIR VALVE	QL-216B	RUNNING ILL	3170S24	3	4	23	505-4832	Y	759
2	1	6	8	CR	0280	MME2-04	CLASSIFIER	QL-217A	RUNNING FWD ILL	3170S24	3	4	24	505-4832	Y	760
2	1	6	9	CR	0281	MME2-04	CLASSIFIER	QL-217B	RUNNING REV ILL	3170S24	3	4	25	505-4832	Y	761
2	1	6	10	CR	0282	P5-14	SLUDGE TRANSFER PUMP 3	QL-549A	RUNNING ILL	3170S24	3	4	26	505-4832	Y	762
2	1	6	11	CR	0283	P5-15	SLUDGE TRANSFER PUMP 1	QL-551A	RUNNING ILL	3170S24	3	4	27	505-4832	Y	763
2	1	6	12	CR	0284	P5-16	SLUDGE TRANSFER PUMP 2	QL-553A	RUNNING ILL	3170S24	3	4	28	505-4832	Y	764
2	1	6	13	CR	0285	P5-14	SLUDGE TRANSFER PUMP 3	QL-549D	ENABLED ILL	3170S24	3	4	29	505-4832	Y	765
2	1	6	14	CR	0286	P5-15	SLUDGE TRANSFER PUMP 1	QL-551D	ENABLED ILL	3170S24	3	4	30	505-4832	Y	766
2	1	6	15	CR	0287	P5-16	SLUDGE TRANSFER PUMP 2	QL-553D	ENABLED ILL	3170S24	3	4	31	505-4832	Y	767
2	1	6	16	CR	0288	P5-01	SCUM PUMP 1	QL-509D	ENABLED ILL	3170S24	3	4	32	505-4832	Y	768

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SIM	R	S	P	T	Addr	EQNUM	EQNAME	DEVICE	FUNCTION	DRAWING	I R	I S	I T	TI Mod	TI	TI Addr
2	1	7	1	CR	0289	P5-2	SCUM PUMP 2	QL-510D	ENABLED ILL	3170S25	3	5	1	505-4832	Y	769
2	1	7	2	CR	0290	P7-05	THICKENED SLUDGE PUMP 1	QL-740B	ENABLED ILL	3170S25	3	5	2	505-4832	Y	770
2	1	7	3	CR	0291	P7-06	THICKENED SLUDGE PUMP 2	QL-741B	ENABLED ILL	3170S25	3	5	3	505-4832	Y	771
2	1	7	4	CR	0292	B2-02	BLOWER 2	QL-204A	RUNNING ILL	3170S25	3	5	4	505-4832	Y	772
2	1	7	5	CR	0293	P5-15	SLUDGE TRANSFER PUMP 1	QL-551A	REMOTE ILL	3170S25	3	5	5	505-4832	Y	773
2	1	7	6	CR	0294	P5-15	SLUDGE TRANSFER PUMP 1	QL-551B	LOCAL ILL	3170S25	3	5	6	505-4832	Y	774
2	1	7	7	CR	0295	P5-16	SLUDGE TRANSFER PUMP 2	QL-553A	REMOTE ILL	3170S25	3	5	7	505-4832	Y	775
2	1	7	8	CR	0296	P5-16	SLUDGE TRANSFER PUMP 2	QL-553B	LOCAL ILL	3170S25	3	5	8	505-4832	Y	776
2	1	7	9	CR	0297	P5-14	SLUDGE TRANSFER PUMP 3	QL-549A	REMOTE ILL	3170S25	3	5	9	505-4832	Y	777
2	1	7	10	CR	0298	P5-14	SLUDGE TRANSFER PUMP 3	QL-549B	LOCAL ILL	3170S25	3	5	10	505-4832	Y	778
2	1	7	11	CR	0299		GRIT CONVEYOR	HS-217B	RUN FWD	3170S25	3	5	11	505-4832	Y	779
2	1	7	12	CR	0300		GRIT CONVEYOR	HS-217C	RUN REV	3170S25	3	5	12	505-4832	Y	780
							SPARE				3	5	13	505-4832	Y	781
							SPARE				3	5	14	505-4832	Y	782
							SPARE				3	5	15	505-4832	Y	783
							SPARE				3	5	16	505-4832	Y	784
							SPARE				3	5	17	505-4832	Y	785
							SPARE				3	5	18	505-4832	Y	786
							SPARE				3	5	19	505-4832	Y	787
							SPARE				3	5	20	505-4832	Y	788
							SPARE				3	5	21	505-4832	Y	789
							SPARE				3	5	22	505-4832	Y	790
							SPARE				3	5	23	505-4832	Y	791
							SPARE				3	5	24	505-4832	Y	792
							SPARE				3	5	25	505-4832	Y	793
							SPARE				3	5	26	505-4832	Y	794
							SPARE				3	5	27	505-4832	Y	795
							SPARE				3	5	28	505-4832	Y	796
							SPARE				3	5	29	505-4832	Y	797
							SPARE				3	5	30	505-4832	Y	798
							SPARE				3	5	31	505-4832	Y	799

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SIM	R	S	P	T	Addr	EQNUM	EQNAME	DEVICE	FUNCTION	DRAWING	I R	I S	I T	TI Mod	TI	TI Addr
							SPARE				3	5	32	505-4832	Y	800
2	1	8	1	CR	0305	SCREEN		LDAH-201A	HIGH DIFF LVL	3170S25	3	6	1	505-4532	Y	801
2	1	8	2	CR	0306	B2-01	BLOWER 1	QA-260A	FAIL	3170S25	3	6	2	505-4532	Y	802
2	1	8	3	CR	0307	B2-02	BLOWER 2	QA-207A	FAIL	3170S25	3	6	3	505-4532	Y	803
2	1	8	4	CR	0308	B2-03	BLOWER 3	QA-208A	FAIL	3170S25	3	6	4	505-4532	Y	804
2	1	8	5	CR	0309	P2-01	GRIT PUMP 1	QA-212A	FAIL	3170S25	3	6	5	505-4532	Y	805
2	1	8	6	CR	0310	P2-02	GRIT PUMP 2	QA-213A	FAIL	3170S25	3	6	6	505-4532	Y	806
2	1	8	7	CR	0311	P5-14	SLUDGE TRANSFER PUMP 3	QA-550	HI DIS PRESS.	3170S25	3	6	7	505-4532	Y	807
2	1	8	8	CR	0312	P5-15	SLUDGE TRANSFER PUMP 1	QA-552	FAIL	3170S25	3	6	8	505-4532	Y	808
2	1	8	9	CR	0313	P5-16	SLUDGE TRANSFER PUMP 2	QA-554	FAIL	3170S25	3	6	9	505-4532	Y	809
2						BSN2-01	BAR SCREEN	LDS-201	HIGH DIFF	3170S23	3	6	10	505-4532	Y	810
2							GRIT CHAMBER	ASH-209	HIGH PH	3170S23	3	6	11	505-4532	Y	811
2							GRIT CHAMBER	ASL-209	LOW PH	3170S23	3	6	12	505-4532	Y	812
2							SLDG STG.TANK 1	LSL-547	LOW	3170S23	3	6	13	505-4532	Y	813
2							SLDG STG.TANK 1	LSH-547	HIGH	3170S23	3	6	14	505-4532	Y	814
2							SLDG STG.TANK 2	LSL-548	LOW	3170S23	3	6	15	505-4532	Y	815
2							SLDG STG.TANK 2	LSH-548	HIGH	3170S23	3	6	16	505-4532	Y	816
									SPARE				17	505-4532	Y	817
									SPARE				18	505-4532	Y	818
									SPARE				19	505-4532	Y	819
									SPARE				20	505-4532	Y	820
									SPARE				21	505-4532	Y	821
									SPARE				22	505-4532	Y	822
									SPARE				23	505-4532	Y	823
									SPARE				24	505-4532	Y	824
									SPARE				25	505-4532	Y	825
									SPARE				26	505-4532	Y	826
									SPARE				27	505-4532	Y	827
									SPARE				28	505-4532	Y	828
									SPARE				29	505-4532	Y	829
									SPARE				30	505-4532	Y	830

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SIM	R	S	P	T	Addr	EQNUM	EQNAME	DEVICE	FUNCTION	DRAWING	I R	I S	I T	TI Mod	TI	TI Addr
									SPARE				31	505-4532	Y	831
									SPARE				32	505-4532	Y	832
3	3	1	1	IR	0033		EQ BASIN	LIT-306	LEVEL	317A306	4	1	1	505-6108A	WX	57
							OXIDATION DITCH 1	AIT-401	PH	3170A401	4	1	2	505-6108A	WX	58
							OXIDATION DITCH 2	AIT-402	PH	3170A402	4	1	3	505-6108A	WX	59
							OXIDATION DITCH 1	AIT-403	DO	3170A403	4	1	4	505-6108A	WX	60
							OXIDATION DITCH 2	AIT-404	DO	3170A404	4	1	5	505-6108A	WX	61
						RA4-01	ROTOR 1	IT-413	CURRENT	3170A413	4	1	6	505-6108A	WX	62
						RA4-02	ROTOR 2	IT-414	CURRENT	3170A413	4	1	7	505-6108A	WX	63
						RA4-03	ROTOR 3	IT-415	CURRENT	3170A413	4	1	8	505-6108A	WX	64
						RA4-04	ROTOR 4	IT-416	CURRENT	3170A413	4	2	1	505-6108A	WX	65
						RA4-05	ROTOR 5	IT-417	CURRENT	3170A417	4	2	2	505-6108A	WX	66
						RA4-06	ROTOR 6	IT-418	CURRENT	3170A417	4	2	3	505-6108A	WX	67
						RA4-07	ROTOR 7	IT-419	CURRENT	3170A417	4	2	4	505-6108A	WX	68
						RA4-08	ROTOR 8	IT-420	CURRENT	3170A417	4	2	5	505-6108A	WX	69
							SCUM PIT 1	LIT-507	LEVEL	3170A507	4	2	6	505-6108A	WX	70
							SCUM PIT 2	LIT-508	LEVEL	3170A508	4	2	7	505-6108A	WX	71
							CLARIFIER 1 RAS	FIT-514	FLOW	3170A514	4	2	8	505-6108A	WX	72
							CLARIFIER 2 RAS	FIT-515	FLOW	3170A515	4	3	1	505-6108A	WX	73
							CLARIFIER 3 RAS	FIT-516	FLOW	3170A516	4	3	2	505-6108A	WX	74
							WAS FLOW RATE 1	FIT-545	FLOW	3170A545	4	3	3	505-6108A	WX	75
							WAS FLOW RATE 2	FIT-546	FLOW	3170A546	4	3	4	505-6108A	WX	76
							WAS FLOW RATE 3	FIT-560	FLOW	3170A560	4	3	5	505-6108A	WX	77
							CLARIFIER 1		SL BL DEPTH (FUT)		4	3	6	505-6108A	WX	78
							CLARIFIER 2		SL BL DEPTH (FUT)		4	3	7	505-6108A	WX	79
							CLARIFIER 3		SL BL DEPTH (FUT)		4	3	8	505-6108A	WX	80
						P5-07	RAS PUMP 1		SPEED CMD	3170A517	4	4	1	505-6208	WY	81
						P5-08	RAS PUMP 2		SPEED CMD	3170A517	4	4	2	505-4232	WY	82
						P5-09	RAS PUMP 3		SPEED CMD	3170A517	4	4	3	505-4232	WY	83
						P5-10	RAS PUMP 4		SPEED CMD	3170A517	4	4	4	505-4232	WY	84
						P5-11	WAS PUMP 1		SPEED CMD	3170A535	4	4	5	505-4232	WY	85

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SIM	R	S	P	T	Addr	EQNUM	EQNAME	DEVICE	FUNCTION	DRAWING	I R	I S	I T	TI Mod	TI	TI Addr
						P5-12	WAS PUMP 2		SPEED CMD	3170A535	4	4	6	505-4232	WY	86
						P5-13	WAS PUMP 3		SPEED CMD	3170A535	4	4	7	505-4232	WY	87
							ALUM FEEDER		PACING SIGNAL	3170A600	4	4	8	505-4232	WY	88
							SODA ASH FEEDER		PACING SIGNAL	3170A600	4	5	1	505-4232	WY	89
									SPARE		4	5	2	505-4232	WY	90
									SPARE		4	5	3	505-4232	WY	91
									SPARE		4	5	4	505-4232	WY	92
									SPARE		4	5	5	505-4232	WY	93
									SPARE		4	5	6	505-4232	WY	94
									SPARE		4	5	7	505-4232	WY	95
									SPARE		4	5	8	505-4232	WY	96
3	4	7	1	CR	0609		CLAR 1	WAH-504A	HIGH TORQUE	3170S49	4	6	1	505-4532	Y	849
3	4	7	2	CR	0610		EQ BASIN	LAH-306A	HIGH LEVEL	3170S49	4	6	2	505-4532	Y	850
3	4	7	3	CR	0611		CLAR 2	WAH-505A	HIGH TORQUE	3170S49	4	6	3	505-4532	Y	851
3	4	7	4	CR	0612		CLAR 3	WAH-506A	HIGH TORQUE	3170S49	4	6	4	505-4532	Y	852
3	4	7	5	CR	0613		SCUM PIT 1	QA-511A	PUMP FAIL	3170S49	4	6	5	505-4532	Y	853
3	4	7	6	CR	0614		JET PUMP 1	TAH-301	HIGH TEMP	3170S49	4	6	6	505-4532	Y	854
3	4	7	7	CR	0615		SCUM PIT 2	QA-512A	PUMP FAIL	3170S49	4	6	7	505-4532	Y	855
3	4	7	8	CR	0616		JET PUMP 2	TAH-302	HIGH TEMP	3170S49	4	6	8	505-4532	Y	856
3	4	7	9	CR	0617	P5-07	RAS PUMP 1	QA-525A	FAIL	3170S49	4	6	9	505-4532	Y	857
3	4	7	10	CR	0618	P5-11	WAS PUMP 1	QA-532A	FAIL	3170S49	4	6	10	505-4532	Y	858
3	4	7	11	CR	0619	MME5-03	SLUDGE GRINDER 1	QA-541A	FAIL	3170S49	4	6	11	505-4532	Y	859
3	4	7	12	CR	0620	P5-08	RAS PUMP 2	QA-526A	FAIL	3170S49	4	6	12	505-4532	Y	860
3	4	7	13	CR	0621	P5-12	WAS PUMP 2	QA-533A	FAIL	3170S49	4	6	13	505-4532	Y	861
3	4	7	14	CR	0622	MME5-04	SLUDGE GRINDER 2	QA-542A	FAIL	3170S49	4	6	14	505-4532	Y	862
3	4	7	15	CR	0623	P5-09	RAS PUMP 3	QA-527A	FAIL	3170S49	4	6	15	505-4532	Y	863
3	4	7	16	CR	0624	P5-13	WAS PUMP 3	QA-534A	FAIL	3170S49	4	6	16	505-4532	Y	864
3	4	8	1	CR	0625	P5-10	RAS PUMP 4	QA-528A	FAIL	3170S49	4	6	17	505-4532	Y	865
						P3-01	JET PUMP 1	QL-301A	RUN ILL	3170S50	4	6	18	505-4532	Y	866
						P3-01	JET PUMP 1	QL-301C	1 ILL	3170S50	4	6	19	505-4532	Y	867
						P3-02	JET PUMP 2	QL-302C	2 ILL	3170S50	4	6	20	505-4532	Y	868

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SIM	R	S	P	T	Addr	EQNUM	EQNAME	DEVICE	FUNCTION	DRAWING	I R	I S	I T	TI Mod	TI	TI Addr
						P3-02	JET PUMP 2	QL-302A	RUN ILL	3170S50	4	6	21	505-4532	Y	869
							MUD VALVE 1	QL-303A	OPEN ILL	3170S50	4	6	22	505-4532	Y	870
							MUD VALVE 1	QL-303B	CLOSED ILL	3170S50	4	6	23	505-4532	Y	871
							MUD VALVE 2	QL-304A	OPEN ILL	3170S50	4	6	24	505-4532	Y	872
							MUD VALVE 2	QL-304B	CLOSED ILL	3170S50	4	6	25	505-4532	Y	873
							MUD VALVE 3	QL-305A	OPEN ILL	3170S50	4	6	26	505-4532	Y	874
							MUD VALVE 3	QL-305B	CLOSED ILL	3170S50	4	6	27	505-4532	Y	875
						RA4-01	ROTOR 1	QL-405AA	WINDING HEAT ILL	3170S50	4	6	28	505-4532	Y	876
						RA4-01	ROTOR 1	QL-405AB	LOW ILL	3170S50	4	6	29	505-4532	Y	877
						RA4-01	ROTOR 1	QL-405AC	HIGH ILL	3170S50	4	6	30	505-4532	Y	878
						RA4-02	ROTOR 2	QL-406AA	WINDING HEAT ILL	3170S50	4	6	31	505-4532	Y	879
						RA4-02	ROTOR 2	QL-406AB	LOW ILL	3170S50	4	6	32	505-4532	Y	880
						RA4-02	ROTOR 2	QL-406AC	HIGH ILL	3170S50	4	7	1	505-4532	Y	881
						RA4-03	ROTOR 3	QL-407AA	WINDING HEAT ILL	3170S51	4	7	2	505-4532	Y	882
						RA4-03	ROTOR 3	QL-407AB	LOW ILL	3170S51	4	7	3	505-4532	Y	883
						RA4-03	ROTOR 3	QL-407AC	HIGH ILL	3170S51	4	7	4	505-4532	Y	884
						RA4-04	ROTOR 4	QL-408AA	WINDING HEAT ILL	3170S51	4	7	5	505-4532	Y	885
						RA4-04	ROTOR 4	QL-408AB	LOW ILL	3170S51	4	7	6	505-4532	Y	886
						RA4-04	ROTOR 4	QL-408AC	HIGH ILL	3170S51	4	7	7	505-4532	Y	887
						RA4-05	ROTOR 5	QL-409AA	WINDING HEAT ILL	3170S51	4	7	8	505-4532	Y	888
						RA4-05	ROTOR 5	QL-409AB	LOW ILL	3170S51	4	7	9	505-4532	Y	889
						RA4-05	ROTOR 5	QL-409AC	HIGH ILL	3170S51	4	7	10	505-4532	Y	890
						RA4-06	ROTOR 6	QL-410AA	WINDING HEAT ILL	3170S51	4	7	11	505-4532	Y	891
						RA4-06	ROTOR 6	QL-410AB	LOW ILL	3170S51	4	7	12	505-4532	Y	892
						RA4-06	ROTOR 6	QL-410AC	HIGH ILL	3170S51	4	7	13	505-4532	Y	893
						RA4-07	ROTOR 7	QL-411AA	WINDING HEAT ILL	3170S51	4	7	14	505-4532	Y	894
						RA4-07	ROTOR 7	QL-411AB	LOW ILL	3170S51	4	7	15	505-4532	Y	895
						RA4-07	ROTOR 7	QL-411AC	HIGH ILL	3170S51	4	7	16	505-4532	Y	896
						RA4-08	ROTOR 8	QL-412AA	WINDING HEAT ILL	3170S51	4	7	17	505-4532	Y	897
						RA4-08	ROTOR 8	QL-412AB	LOW ILL	3170S51	4	7	18	505-4532	Y	898
						RA4-08	ROTOR 8	QL-412AC	HIGH ILL	3170S51	4	7	19	505-4532	Y	899

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SIM	R	S	P	T	Addr	EQNUM	EQNAME	DEVICE	FUNCTION	DRAWING	I R	I S	I T	TI Mod	TI	TI Addr
						CL5-01	CLARIFIER 1	QL-501A	RUN ILL	3170S51	4	7	20	505-4532	Y	900
						CL5-02	CLARIFIER 2	QL-502A	RUN ILL	3170S51	4	7	21	505-4532	Y	901
						CL5-03	CLARIFIER 3	QL-503A	RUN ILL	3170S51	4	7	22	505-4532	Y	902
						P5-01	SCUM PUMP 1	QL-509A	WINDING HEAT ILL	3170S51	4	7	23	505-4532	Y	903
						P5-01	SCUM PUMP 1	QL-509B	RUN ILL	3170S51	4	7	24	505-4532	Y	904
						P5-02	SCUM PUMP 2	QL-510A	WINDING HEAT ILL	3170S51	4	7	25	505-4532	Y	905
						P5-02	SCUM PUMP 2	QL-510B	RUN ILL	3170S51	4	7	26	505-4532	Y	906
						P5-07	RAS PUMP 1	QL-521A	RUN ILL	3170S51	4	7	27	505-4532	Y	907
						P5-08	RAS PUMP 2	QL-522A	RUN ILL	3170S51	4	7	28	505-4532	Y	908
						P5-09	RAS PUMP 3	QL-523A	RUN ILL	3170S51	4	7	29	505-4532	Y	909
						P5-10	RAS PUMP 4	QL-524A	RUN ILL	3170S51	4	7	30	505-4532	Y	910
						P5-11	WAS PUMP 1	QL-529A	RUN ILL	3170S51	4	7	31	505-4532	Y	911
						P5-12	WAS PUMP 2	QL-530A	RUN ILL	3170S51	4	7	32	505-4532	Y	912
						P5-13	WAS PUMP 3	QL-531A	RUN ILL	3170S52	4	8	1	505-4532	Y	913
						CV5-01	WAS VALVE 1	QL-538A	OPEN ILL	3170S52	4	8	2	505-4532	Y	914
						CV5-01	WAS VALVE 1	QL-538B	CLOSED ILL	3170S52	4	8	3	505-4532	Y	915
						CV5-02	WAS VALVE 2	QL-539A	OPEN ILL	3170S52	4	8	4	505-4532	Y	916
						CV5-02	WAS VALVE 2	QL-539B	CLOSED ILL	3170S52	4	8	5	505-4532	Y	917
						CV5-03	WAS VALVE 3	QL-540A	OPEN ILL	3170S52	4	8	6	505-4532	Y	918
						CV5-03	WAS VALVE 3	QL-540B	CLOSED ILL	3170S52	4	8	7	505-4532	Y	919
						MME5-03	SLUDGE GRINDER 1	QL-543A	FWD ILL	3170S52	4	8	8	505-4532	Y	920
						MME5-03	SLUDGE GRINDER 1	QL-543B	REV ILL	3170S52	4	8	9	505-4532	Y	921
						MME5-04	SLUDGE GRINDER 2	QL-544A	FWD ILL	3170S52	4	8	10	505-4532	Y	922
						MME5-04	SLUDGE GRINDER 2	QL-544B	REV ILL	3170S52	4	8	11	505-4532	Y	923
									SPARE		4	8	12	505-4532	Y	924
									SPARE		4	8	13	505-4532	Y	925
									SPARE		4	8	14	505-4532	Y	926
									SPARE		4	8	15	505-4532	Y	927
									SPARE		4	8	16	505-4532	Y	928
									SPARE		4	8	17	505-4532	Y	929
									SPARE		4	8	18	505-4532	Y	930

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SIM	R	S	P	T	Addr	EQNUM	EQNAME	DEVICE	FUNCTION	DRAWING	I R	I S	I T	TI Mod	TI	TI Addr
									SPARE		4	8	19	505-4532	Y	931
									SPARE		4	8	20	505-4532	Y	932
									SPARE		4	8	21	505-4532	Y	933
									SPARE		4	8	22	505-4532	Y	934
									SPARE		4	8	23	505-4532	Y	935
									SPARE		4	8	24	505-4532	Y	936
									SPARE		4	8	25	505-4532	Y	937
									SPARE		4	8	26	505-4532	Y	938
									SPARE		4	8	27	505-4532	Y	939
									SPARE		4	8	28	505-4532	Y	940
									SPARE		4	8	29	505-4532	Y	941
									SPARE		4	8	30	505-4532	Y	942
									SPARE		4	8	31	505-4532	Y	943
									SPARE		4	8	32	505-4532	Y	944
3	1	1	1	IN	0513	P3-01	JET PUMP 1	HS-301	AUTO	3170S42	5	1	1	505-4232	X	945
3	1	1	2	IN	0514	P3-01	JET PUMP 1	QS-301A	RUN	3170S42	5	1	2	505-4232	X	946
3	1	1	3	IN	0515	P3-01	JET PUMP 1	TSH-301	HIGH TEMP	3170S42	5	1	3	505-4232	X	947
3	1	1	4	IN	0516	P3-02	JET PUMP 2	HS-302	AUTO	3170S42	5	1	4	505-4232	X	948
3	1	1	5	IN	0517	P3-02	JET PUMP 2	QS-302A	RUN	3170S42	5	1	5	505-4232	X	949
3	1	1	6	IN	0518	P3-02	JET PUMP 2	TSH-302	HITH TEMP	3170S42	5	1	6	505-4232	X	950
3	1	1	7	IN	0519		MUD VALVE 1	ZS-303	OPEN	3170S42	5	1	7	505-4232	X	951
3	1	1	8	IN	0520		MUD VALVE 1	ZS-303	CLOSED	3170S42	5	1	8	505-4232	X	952
3	1	1	9	IN	0521		MUD VALVE 2	ZS-304	OPEN	3170S42	5	1	9	505-4232	X	953
3	1	1	10	IN	0522		MUD VALVE 2	ZS-304	CLOSED	3170S42	5	1	10	505-4232	X	954
3	1	1	11	IN	0523		MUD VALVE 3	ZS-305	OPEN	3170S42	5	1	11	505-4232	X	955
3	1	1	12	IN	0524		MUD VALVE 3	ZS-305	CLOSED	3170S42	5	1	12	505-4232	X	956
3	1	1	13	IN	0525	LSH-306		CR1	HIGH LEVEL	3170S42	5	1	13	505-4232	X	957
3	1	1	14	IN	0526	LSL-3-6		CR2	LOW LEVEL	3170S42	5	1	14	505-4232	X	958
3	1	1	15	IN	0527		SUM/WINT	HS-307	SUMMER/WINTER	3170S42	5	1	15	505-4232	X	959
3	1	2	6	IN	0534	ASL-404		HS-405A	AUTO	3170S42	5	1	16	505-4232	X	960
3	1	2	7	IN	0535	RA4-01	ROTOR 1	HS-405B	HIGH	3170S42	5	1	17	505-4232	X	961

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SIM	R	S	P	T	Addr	EQNUM	EQNAME	DEVICE	FUNCTION	DRAWING	I R	I S	I T	TI Mod	TI	TI Addr
3	1	2	8	IN	0536	RA4-01	ROTOR 1	QS-405A	RUN LOW	3170S42	5	1	18	505-4232	X	962
3	1	2	9	IN	0537	RA4-01	ROTOR 1	QS-405B	RUN HIGH	3170S42	5	1	19	505-4232	X	963
3	1	2	10	IN	0538	RA4-01	ROTOR 1	QS-405C	HIGH TEMP	3170S42	5	1	20	505-4232	X	964
3	1	2	11	IN	0539	RA4-02	ROTOR 2	HS-406A	AUTO	3170S42	5	1	21	505-4232	X	965
3	1	2	12	IN	0540	RA4-02	ROTOR 2	HS-406B	HIGH	3170S42	5	1	22	505-4232	X	966
3	1	2	13	IN	0541	RA4-02	ROTOR 2	QS-406A	RUN LOW	3170S42	5	1	23	505-4232	X	967
3	1	2	14	IN	0542	RA4-02	ROTOR 2	QS-406B	RUN HIGH	3170S42	5	1	24	505-4232	X	968
3	1	2	15	IN	0543	RA4-02	ROTOR 2	QS-406C	HIGH TEMP	3170S42	5	1	25	505-4232	X	969
3	1	2	16	IN	0544	RA4-03	ROTOR 3	HS-407A	AUTO	3170S42	5	1	26	505-4232	X	970
3	1	3	1	IN	0545	RA4-03	ROTOR 3	HS-407B	HIGH	3170S43	5	1	27	505-4232	X	971
3	1	3	2	IN	0546	RA4-03	ROTOR 3	QS-407A	RUN LOW	3170S43	5	1	28	505-4232	X	972
3	1	3	3	IN	0547	RA4-03	ROTOR 3	QS-407B	RUN HIGH	3170S43	5	1	29	505-4232	X	973
3	1	3	4	IN	0548	RA4-03	ROTOR 3	QS-407C	HIGH TEMP	3170S43	5	1	30	505-4232	X	974
3	1	3	5	IN	0549	RA4-04	ROTOR 4	HS-408A	AUTO	3170S43	5	1	31	505-4232	X	975
3	1	3	6	IN	0550	RA4-04	ROTOR 4	HS-408B	HIGH	3170S43	5	1	32	505-4232	X	976
3	1	3	7	IN	0551	RA4-04	ROTOR 4	QS-408A	RUN LOW	3170S43	5	2	1	505-4232	X	977
3	1	3	8	IN	0552	RA4-04	ROTOR 4	QS-408B	RUN HIGH	3170S43	5	2	2	505-4232	X	978
3	1	3	9	IN	0553	RA4-04	ROTOR 4	QS-408C	HIGH TEMP	3170S43	5	2	3	505-4232	X	979
3	1	3	10	IN	0554	RA4-05	ROTOR 5	HS-409A	AUTO	3170S43	5	2	4	505-4232	X	980
3	1	3	11	IN	0555	RA4-05	ROTOR 5	HS-409B	HIGH	3170S43	5	2	5	505-4232	X	981
3	1	3	12	IN	0556	RA4-05	ROTOR 5	QS-409A	RUN LOW	3170S43	5	2	6	505-4232	X	982
3	1	3	13	IN	0557	RA4-05	ROTOR 5	QS-409B	RUN HIGH	3170S43	5	2	7	505-4232	X	983
3	1	3	14	IN	0558	RA4-05	ROTOR 5	QS-409C	HIGH TEMP	3170S43	5	2	8	505-4232	X	984
3	1	3	15	IN	0559	RA4-06	ROTOR 6	HS-410A	AUTO	3170S43	5	2	9	505-4232	X	985
3	1	3	16	IN	0560	RA4-06	ROTOR 6	HS-410B	HIGH	3170S43	5	2	10	505-4232	X	986
3	1	4	1	IN	0561	RA4-06	ROTOR 6	QS-410A	RUN LOW	3170S43	5	2	11	505-4232	X	987
3	1	4	2	IN	0562	RA4-06	ROTOR 6	QS-410B	RUN HIGH	3170S43	5	2	12	505-4232	X	988
3	1	4	3	IN	0563	RA4-06	ROTOR 6	QS-410C	HIGH TEMP	3170S43	5	2	13	505-4232	X	989
3	1	4	4	IN	0564	RA4-07	ROTOR 7	HS-411A	AUTO	3170S43	5	2	14	505-4232	X	990
3	1	4	5	IN	0565	RA4-07	ROTOR 7	HS-411B	HIGH	3170S43	5	2	15	505-4232	X	991
3	1	4	6	IN	0566	RA4-07	ROTOR 7	QS-411A	RUN LOW	3170S43	5	2	16	505-4232	X	992

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SIM	R	S	P	T	Addr	EQNUM	EQNAME	DEVICE	FUNCTION	DRAWING	I R	I S	I T	TI Mod	TI	TI Addr
3	1	4	7	IN	0567	RA4-07	ROTOR 7	QS-411B	RUN HIGH	3170S43	5	2	17	505-4232	X	993
3	1	4	8	IN	0568	RA4-07	ROTOR 7	QS-411C	HIGH TEMP	3170S43	5	2	18	505-4232	X	994
3	1	4	9	IN	0569	RA4-08	ROTOR 8	HS-412A	AUTO	3170S43	5	2	19	505-4232	X	995
3	1	4	10	IN	0570	RA4-08	ROTOR 8	HS-412B	HIGH	3170S43	5	2	20	505-4232	X	996
3	1	4	11	IN	0571	RA4-08	ROTOR 8	QS-412A	RUN LOW	3170S43	5	2	21	505-4232	X	997
3	1	4	12	IN	0572	RA4-08	ROTOR 8	QS-412B	RUN HIGH	3170S43	5	2	22	505-4232	X	998
3	1	4	13	IN	0573	RA4-08	ROTOR 8	QS-412C	HIGH TEMP	3170S43	5	2	23	505-4232	X	999
3	1	4	14	IN	0574	CL5-01	CLARIFIER 1	HS-501	AUTO	3170S43	5	2	24	505-4232	X	1000
3	1	4	15	IN	0575	CL5-01	CLARIFIER 1	QS-501A	RUN	3170S43	5	2	25	505-4232	X	1001
3	1	4	16	IN	0576	CL5-01	CLARIFIER 1	QS-501B	HIGH TEMP	3170S43	5	2	26	505-4232	X	1002
3	1	5	1	IN	0577	CL5-01	CLARIFIER 1	WSH-504	HIGH TORQUE	3170S44	5	2	27	505-4232	X	1003
3	1	5	2	IN	0578	CL5-02	CLARIFIER 2	HS-502	AUTO	3170S44	5	2	28	505-4232	X	1004
3	1	5	3	IN	0579	CL5-02	CLARIFIER 2	QS-502A	RUN	3170S44	5	2	29	505-4232	X	1005
3	1	5	4	IN	0580	CL5-02	CLARIFIER 2	QS-502B	HIGH TEMP	3170S44	5	2	30	505-4232	X	1006
3	1	5	5	IN	0581	CL5-02	CLARIFIER 2	WSH-505	HIGH TORQUE	3170S44	5	2	31	505-4232	X	1007
3	1	5	6	IN	0582	CL5-03	CLARIFIER 3	HS-503	AUTO	3170S44	5	2	32	505-4232	X	1008
3	1	5	7	IN	0583	CL5-03	CLARIFIER 3	QS-503A	RUN	3170S44	5	3	1	505-4232	X	1009
3	1	5	8	IN	0584	CL5-03	CLARIFIER 3	QS-503B	HIGH TEMP	3170S44	5	3	2	505-4232	X	1010
3	1	5	9	IN	0585	CL5-03	CLARIFIER 3	WSH-506	HIGH TORQUE	3170S44	5	3	3	505-4232	X	1011
3	1	5	10	IN	0586	P5-01	SCUM PUMP 1	HS-509B	AUTO	3170S44	5	3	4	505-4232	X	1012
3	1	5	11	IN	0587	P5-01	SCUM PUMP 1	HS-509C	TO TANK 1	3170S44	5	3	5	505-4232	X	1013
3	1	5	12	IN	0588	P5-01	SCUM PUMP 1	HS-509C	TO TANK 2	3170S44	5	3	6	505-4232	X	1014
3	1	5	13	IN	0589	P5-01	SCUM PUMP 1	QS-509A	RUN	3170S44	5	3	7	505-4232	X	1015
3	1	5	14	IN	0590	P5-01	SCUM PUMP 1	QS-509B	HIGH TEMP	3170S44	5	3	8	505-4232	X	1016
3	1	5	15	IN	0591	P5-01	SCUM PUMP 1	ZS-511	FLOW	3170S44	5	3	9	505-4232	X	1017
3	1	5	16	IN	0592		SCUM PIT 1	LSL-507	LOW LEVEL	3170S44	5	3	10	505-4232	X	1018
3	1	6	1	IN	0593		SCUM PIT 1	LSH-507	HIGH LEVEL	3170S44	5	3	11	505-4232	X	1019
3	1	6	2	IN	0594	P5-02	SCUM PUMP 2	HS-510B	AUTO	3170S44	5	3	12	505-4232	X	1020
3	1	6	3	IN	0595	P5-02	SCUM PUMP 2	HS-510C	TO TANK 1	3170S44	5	3	13	505-4232	X	1021
3	1	6	4	IN	0596	P5-02	SCUM PUMP 2	HS-510C	TO TANK 2	3170S44	5	3	14	505-4232	X	1022
3	1	6	5	IN	0597	P5-02	SCUM PUMP 2	QS-510A	RUN	3170S44	5	3	15	505-4232	X	1023

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SIM	R	S	P	T	Addr	EQNUM	EQNAME	DEVICE	FUNCTION	DRAWING	I R	I S	I T	TI Mod	TI	TI Addr
3	1	6	6	IN	0598	P5-02	SCUM PUMP 2	QS-510B	HIGH TEMP	3170S44	5	3	16	505-4232	X	1024
3	1	6	7	IN	0599	P5-02	SCUM PUMP 2	ZS-512	FLOW	3170S44	5	3	17	505-4232	X	1025
3	1	6	8	IN	0600		SCUM PIT 2	LSL-508	LOW LEVEL	3170S44	5	3	18	505-4232	X	1026
3	1	6	9	IN	0601		SCUM PIT 2	LSH-508	HIGH LEVEL	3170S44	5	3	19	505-4232	X	1027
3	1	6	10	IN	0602		RAS FLOW	HS-517	SWITCHING	3170S44	5	3	20	505-4232	X	1028
3	1	6	11	IN	0603		RAS FLOW	HS-518	SWITCHING	3170S44	5	3	21	505-4232	X	1029
3	1	6	12	IN	0604		RAS FLOW	HS-519	SWITCHING	3170S44	5	3	22	505-4232	X	1030
3	1	6	13	IN	0605		RAS FLOW	HS-520	SWITCHING	3170S44	5	3	23	505-4232	X	1031
3	1	6	14	IN	0606	P5-07	RAS PUMP 1	HS-521	AUTO	3170S44	5	3	24	505-4232	X	1032
3	1	6	15	IN	0607	P5-07	RAS PUMP 1	QS-521	RUN	3170S44	5	3	25	505-4232	X	1033
3	1	6	16	IN	0608	P5-07	RAS PUMP 1	ZS-525A	FLOW	3170S44	5	3	26	505-4232	X	1034
3	1	7	1	IN	0609	P5-07	RAS PUMP 1	ZS-525B	FLOW	3170S45	5	3	27	505-4232	X	1035
3	1	7	2	IN	0610	P5-07	RAS PUMP 1	QS-521B	VFD FAIL	3170S45	5	3	28	505-4232	X	1036
3	1	7	3	IN	0611	P5-08	RAS PUMP 2	HS-522	AUTO	3170S45	5	3	29	505-4232	X	1037
3	1	7	4	IN	0612	P5-08	RAS PUMP 2	QS-522	RUN	3170S45	5	3	30	505-4232	X	1038
3	1	7	5	IN	0613	P5-08	RAS PUMP 2	ZS-526A	FLOW	3170S45	5	3	31	505-4232	X	1039
3	1	7	6	IN	0614	P5-08	RAS PUMP 2	ZS-526B	FLOW	3170S45	5	3	32	505-4232	X	1040
3	1	7	7	IN	0615	P5-08	RAS PUMP 2	QS-522B	VFD FAIL	3170S45	5	4	1	505-4232	X	1041
3	1	7	8	IN	0616	P5-08	RAS PUMP 3	HS-523	AUTO	3170S45	5	4	2	505-4232	X	1042
3	1	7	9	IN	0617	P5-09	RAS PUMP 3	QS-523	RUN	3170S45	5	4	3	505-4232	X	1043
3	1	7	10	IN	0618	P5-09	RAS PUMP 3	ZS-527A	FLOW	3170S45	5	4	4	505-4232	X	1044
3	1	7	11	IN	0619	P5-09	RAS PUMP 3	QS-523	VFD FAIL	3170S45	5	4	5	505-4232	X	1045
3	1	7	12	IN	0620	P5-09	RAS PUMP 4	HS-524B	AUTO	3170S45	5	4	6	505-4232	X	1046
3	1	7	13	IN	0621	P5-10	RAS PUMP 4	QS-524	RUN	3170S45	5	4	7	505-4232	X	1047
3	1	7	14	IN	0622	P5-10	RAS PUMP 4	ZS-528A	FLOW	3170S45	5	4	8	505-4232	X	1048
3	1	7	15	IN	0623	P5-10	RAS PUMP 4	QS-524B	VFD FAIL	3170S45	5	4	9	505-4232	X	1049
3	1	7	16	IN	0624	P5-11	WAS PUMP 1	HS-529A	AUTO	3170S45	5	4	10	505-4232	X	1050
3	1	8	1	IN	0625	P5-11	WAS PUMP 1	HS-529B	LOCAL	3170S45	5	4	11	505-4232	X	1051
3	1	8	2	IN	0626	P5-11	WAS PUMP 1	HS-529C	STORAGE	3170S45	5	4	12	505-4232	X	1052
3	1	8	3	IN	0627	P5-11	WAS PUMP 1	HS-529D	PUMP 1	3170S45	5	4	13	505-4232	X	1053
3	1	8	4	IN	0628	P5-11	WAS PUMP 1	QS-529A	RUN	3170S45	5	4	14	505-4232	X	1054

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SIM	R	S	P	T	Addr	EQNUM	EQNAME	DEVICE	FUNCTION	DRAWING	I R	I S	I T	TI Mod	TI	TI Addr
3	1	8	5	IN	0629	P5-11	WAS PUMP 1	QS-529B	FAIL	3170S45	5	4	15	505-4232	X	1055
3	1	8	6	IN	0630	P5-11	WAS PUMP 1	ZS-532	FLOW	3170S45	5	4	16	505-4232	X	1056
3	1	8	7	IN	0631	P5-11	WAS PUMP 1	SIK-535	AUTO/MAN REQUEST	3170S45	5	4	17	505-4232	X	1057
3	1	8	8	IN	0632	P5-11	WAS PUMP 1	SIK-535	AUTO/MAN STATUS	3170S45	5	4	18	505-4232	X	1058
3	1	8	9	IN	0633	P5-12	WAS PUMP 2	HS-530A	AUTO	3170S45	5	4	19	505-4232	X	1059
3	1	8	10	IN	0634	P5-12	WAS PUMP 2	HS-530B	WCS	3170S45	5	4	20	505-4232	X	1060
3	1	8	11	IN	0635	P5-12	WAS PUMP 2	HS-530B	WAS	3170S45	5	4	21	505-4232	X	1061
3	1	8	12	IN	0636	P5-12	WAS PUMP 2	HS-530C	LOCAL	3170S45	5	4	22	505-4232	X	1062
3	1	8	13	IN	0637	P5-12	WAS PUMP 2	HS-530D	STORAGE	3170S45	5	4	23	505-4232	X	1063
3	1	8	14	IN	0638	P5-12	WAS PUMP 2	HS-530E	1	3170S45	5	4	24	505-4232	X	1064
3	1	8	15	IN	0639	P5-12	WAS PUMP 2	QS-530A	RUN	3170S45	5	4	25	505-4232	X	1065
3	1	8	16	IN	0640	P5-12	WAS PUMP 2	QS-530B	FAIL	3170S45	5	4	26	505-4232	X	1066
3	2	1	1	IN	0641	P5-12	WAS PUMP 2	ZS-533	FLOW	3170S46	5	4	27	505-4232	X	1067
3	2	1	2	IN	0642	P5-12	WAS PUMP 2	SIK-536	AUTO/MAN REQUEST	3170S46	5	4	28	505-4232	X	1068
3	2	1	3	IN	0643	P5-12	WAS PUMP 2	SIK-536	AUTO/MAN STATUS	3170S46	5	4	29	505-4232	X	1069
3	2	1	4	IN	0644	P5-13	WAS PUMP 3	HS-531A	AUTO	3170S46	5	4	30	505-4232	X	1070
3	2	1	5	IN	0645	P5-13	WAS PUMP 3	HS-531B	WCS	3170S46	5	4	31	505-4232	X	1071
3	2	1	6	IN	0646	P5-13	WAS PUMP 3	HS-531B	WAS	3170S46	5	4	32	505-4232	X	1072
3	2	1	7	IN	0647	P5-13	WAS PUMP 3	HS-531C	LOCAL	3170S46	5	5	1	505-4232	X	1073
3	2	1	8	IN	0648	P5-13	WAS PUMP 3	HS-531D	STORAGE	3170S46	5	5	2	505-4232	X	1074
3	2	1	9	IN	0649	P5-13	WAS PUMP 3	HS-531E	1	3170S46	5	5	3	505-4232	X	1075
3	2	1	10	IN	0650	P5-13	WAS PUMP 3	QS-531A	RUN	3170S46	5	5	4	505-4232	X	1076
3	2	1	11	IN	0651	P5-13	WAS PUMP 3	QS-531B	FAIL	3170S46	5	5	5	505-4232	X	1077
3	2	1	12	IN	0652	P5-13	WAS PUMP 3	ZS-534	FLOW	3170S46	5	5	6	505-4232	X	1078
3	2	1	13	IN	0653	P5-13	WAS PUMP 3	SIK-537	AUTO/MAN REQUEST	3170S46	5	5	7	505-4232	X	1079
3	2	1	14	IN	0654	P5-13	WAS PUMP 3	SIK-537	AUTO/MAN STATUS	3170S46	5	5	8	505-4232	X	1080
3	2	1	15	IN	0655	CV5-01	WAS VALVE 1	HS-538	AUTO	3170S46	5	5	9	505-4232	X	1081
3	2	1	16	IN	0656	CV5-02	WAS VALVE 2	HS-539	AUTO	3170S46	5	5	10	505-4232	X	1082
3	2	2	1	IN	0657	CV5-03	WAS VALVE 3	HS-540	AUTO	3170S46	5	5	11	505-4232	X	1083
3	2	2	4	IN	0660	MME5-03	SLUDGE GRINDER 1	HS-543	AUTO	3170S46	5	5	12	505-4232	X	1084
3	2	2	5	IN	0661	MME5-03	SLUDGE GRINDER 1	ISH-541	GRINDER JAMMED	3170S46	5	5	13	505-4232	X	1085

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SIM	R	S	P	T	Addr	EQNUM	EQNAME	DEVICE	FUNCTION	DRAWING	I R	I S	I T	TI Mod	TI	TI Addr
3	2	2	6	IN	0662	MME5-04	SLUDGE GRINDER 2	HS-544	AUTO	3170S46	5	5	14	505-4232	X	1086
3	2	2	7	IN	0663	MME5-04	SLUDGE GRINDER 2	MCC	GRINDER JAMED	3170S46	5	5	15	505-4232	X	1087
3	2	2	12	IN	0668	CV5-01	WAS VALVE 1	ZS-538A	STATUS OPEN	3170S46	5	5	16	505-4232	X	1088
3	2	2	13	IN	0669	CV5-01	WAS VALVE 1	ZS-538B	STATUS CLOSED	3170S46	5	5	17	505-4232	X	1089
3	2	2	14	IN	0670	CV5-02	WAS VALVE 2	ZS-539A	STATUS OPEN	3170S46	5	5	18	505-4232	X	1090
3	2	2	15	IN	0671	CV5-02	WAS VALVE 2	ZS-539B	STATUS CLOSED	3170S46	5	5	19	505-4232	X	1091
3	2	2	16	IN	0672	CV5-03	WAS VALVE 3	ZS-540A	STATUS OPEN	3170S46	5	5	20	505-4232	X	1092
3	2	3	1	IN	0673	CV5-03	WAS VALVE 3	ZS-540B	CLOSED	3170S46A	5	5	21	505-4232	X	1093
3	2	3	2	IN	0674	MME5-03	GRINDER 1	MCC	REVERSE	3170S46A	5	5	22	505-4232	X	1094
3	2	3	3	IN	0675	MME5-04	GRINDER 2	MCC	REVERSE	3170S46A	5	5	23	505-4232	X	1095
									SPARE		5	5	24	505-4232	X	1096
									SPARE		5	5	25	505-4232	X	1097
									SPARE		5	5	26	505-4232	X	1098
									SPARE		5	5	27	505-4232	X	1099
									SPARE		5	5	28	505-4232	X	1100
									SPARE		5	5	29	505-4232	X	1101
									SPARE		5	5	30	505-4232	X	1102
									SPARE		5	5	31	505-4232	X	1103
									SPARE		5	5	32	505-4232	X	1104
3	2	5	1	CR	0513	P3-01	WET WELL 1	HS-301	RUN	3170S47	5	6	1	505-4832	Y	1105
3	2	5	2	CR	0514	P3-02	WET WELL 2	HS-302	RUN	3170S47	5	6	2	505-4832	Y	1106
3	2	5	3	CR	0515	OP3-01	SLUDGE VALVE 1	HS-303B	OPEN	3170S47	5	6	3	505-4832	Y	1107
3	2	5	4	CR	0516	OP3-01	SLUDGE VALVE 1	HS-303B	CLOSED	3170S47	5	6	4	505-4832	Y	1108
3	2	5	5	CR	0517	OP3-02	SLUDGE VALVE 2	HS-304B	OPEN	3170S47	5	6	5	505-4832	Y	1109
3	2	5	6	CR	0518	OP3-02	SLUDGE VALVE 2	HS-304B	CLOSED	3170S47	5	6	6	505-4832	Y	1110
3	2	5	7	CR	0519	OP3-03	SLUDGE VALVE 3	HS-305B	OPEN	3170S47	5	6	7	505-4832	Y	1111
3	2	5	8	CR	0520	OP3-03	SLUDGE VALVE 3	HS-305B	CLOSED	3170S47	5	6	8	505-4832	Y	1112
3	2	5	9	CR	0521	RA4-01	ROTOR 1	HS-405A	RUN LOW	3170S47	5	6	9	505-4832	Y	1113
3	2	5	10	CR	0522	RA4-01	ROTOR 1	HS-405A	RUN HIGH	3170S47	5	6	10	505-4832	Y	1114
3	2	5	11	CR	0523	RA4-02	ROTOR 2	HS-406A	RUN LOW	3170S47	5	6	11	505-4832	Y	1115
3	2	5	12	CR	0524	RA4-02	ROTOR 2	HS-406A	RUN HIGH	3170S47	5	6	12	505-4832	Y	1116

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SIM	R	S	P	T	Addr	EQNUM	EQNAME	DEVICE	FUNCTION	DRAWING	I R	I S	I T	TI Mod	TI	TI Addr
3	2	5	13	CR	0525	RA4-03	ROTOR 3	HS-407A	RUN LOW	3170S47	5	6	13	505-4832	Y	1117
3	2	5	14	CR	0526	RA4-03	ROTOR 3	HS-407A	RUN HIGH	3170S47	5	6	14	505-4832	Y	1118
3	2	5	15	CR	0527	RA4-04	ROTOR 4	HS-408A	RUN LOW	3170S47	5	6	15	505-4832	Y	1119
3	2	5	16	CR	0528	RA4-04	ROTOR 4	HS-408A	RUN HIGH	3170S47	5	6	16	505-4832	Y	1120
3	2	6	1	CR	0529	RA4-05	ROTOR 5	HS-409A	RUN LOW	3170S47	5	6	17	505-4832	Y	1121
3	2	6	2	CR	0530	RA4-05	ROTOR 5	HS-409A	RUN HIGH	3170S47	5	6	18	505-4832	Y	1122
3	2	6	3	CR	0531	RA4-06	ROTOR 6	HS-410A	RUN LOW	3170S47	5	6	19	505-4832	Y	1123
3	2	6	4	CR	0532	RA4-06	ROTOR 6	HS-410A	RUN HIGH	3170S47	5	6	20	505-4832	Y	1124
3	2	6	5	CR	0533	RA4-07	ROTOR 7	HS-411A	RUN LOW	3170S47	5	6	21	505-4832	Y	1125
3	2	6	6	CR	0534	RA4-07	ROTOR 7	HS-411A	RUN HIGH	3170S47	5	6	22	505-4832	Y	1126
3	2	6	7	CR	0535	RA4-08	ROTOR 8	HS-412A	RUN LOW	3170S47	5	6	23	505-4832	Y	1127
3	2	6	8	CR	0536	RA4-08	ROTOR 8	HS-412A	RUN HIGH	3170S47	5	6	24	505-4832	Y	1128
3	2	6	9	CR	0537	CL5-01	CLARIFIER 1	HS-501	RUN	3170S47	5	6	25	505-4832	Y	1129
3	2	6	10	CR	0538	CL5-02	CLARIFIER 2	HS-502	RUN	3170S47	5	6	26	505-4832	Y	1130
3	2	6	11	CR	0539	CL5-03	CLARIFIER 3	HS-503	RUN	3170S47	5	6	27	505-4832	Y	1131
3	2	6	12	CR	0540	P5-01	SCUM PUMP 1	HS-509B	RUN	3170S47	5	6	28	505-4832	Y	1132
3	2	6	13	CR	0541	P5-02	SCUM PUMP 2	HS-510B	RUN	3170S47	5	6	29	505-4832	Y	1133
3	2	6	14	CR	0542	P5-07	RAS PUMP 1	HS-521B	RUN	3170S47	5	6	30	505-4832	Y	1134
3	2	6	15	CR	0543	P5-08	RAS PUMP 2	HS-522B	RUN	3170S47	5	6	31	505-4832	Y	1135
3	2	6	16	CR	0544	P5-09	RAS PUMP 3	HS-523B	RUN	3170S47	5	6	32	505-4832	Y	1136
3	2	7	1	CR	0545	P5-10	RAS PUMP 4	HS-524B	RUN	3170S48	5	7	1	505-4832	Y	1137
3	2	7	2	CR	0546	P5-11	WAS PUMP 1	HS-529A	RUN	3170S48	5	7	2	505-4832	Y	1138
3	2	7	3	CR	0547	P5-12	WAS PUMP 2	HS-530A	RUN	3170S48	5	7	3	505-4832	Y	1139
3	2	7	4	CR	0548	P5-13	WAS PUMP 3	HS-531A	RUN	3170S48	5	7	4	505-4832	Y	1140
3	2	7	5	CR	0549	P5-11	WAS PUMP 1	SIK-535	AUTO/MANUAL	3170S48	5	7	5	505-4832	Y	1141
3	2	7	6	CR	0550	P5-11	WAS PUMP 1	SIK-535	LOCK OUT	3170S48	5	7	6	505-4832	Y	1142
3	2	7	7	CR	0551	P5-12	WAS PUMP 2	SIK-536	AUTO/MANUAL	3170S48	5	7	7	505-4832	Y	1143
3	2	7	8	CR	0552	P5-12	WAS PUMP 2	SIK-536	LOCK OUT	3170S48	5	7	8	505-4832	Y	1144
3	2	7	9	CR	0553	P5-13	WAS PUMP 3	SIK-537	AUTO/MANUAL	3170S48	5	7	9	505-4832	Y	1145
3	2	7	10	CR	0554	P5-13	WAS PUMP 3	SIK-537	LOCK OUT	3170S48	5	7	10	505-4832	Y	1146
3	2	7	11	CR	0555	CV5-01	WAS VALVE 1	HS-536	OPEN	3170S48	5	7	11	505-4832	Y	1147

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SIM	R	S	P	T	Addr	EQNUM	EQNAME	DEVICE	FUNCTION	DRAWING	I R	I S	I T	TI Mod	TI	TI Addr
3	2	7	12	CR	0556	CV5-01	WAS VALVE 1	HS-536	CLOSE	3170S48	5	7	12	505-4832	Y	1148
3	2	7	13	CR	0557	CV5-02	WAS VALVE 2	HS-539	OPEN	3170S48	5	7	13	505-4832	Y	1149
3	2	7	14	CR	0558	CV5-02	WAS VALVE 2	HS-539	CLOSE	3170S48	5	7	14	505-4832	Y	1150
3	2	7	15	CR	0559	CV5-03	WAS VALVE 3	HS-540	OPEN	3170S48	5	7	15	505-4832	Y	1151
3	2	7	16	CR	0560	CV5-03	WAS VALVE 3	HS-540	CLOSE	3170S48	5	7	16	505-4832	Y	1152
3	2	8	1	CR	0561	MME5-03	GRINDER 1	HS-543	RUN	3170S48	5	7	17	505-4832	Y	1153
3	2	8	2	CR	0562	MME5-04	GRINDER 2	HS-544	RUN	3170S48	5	7	18	505-4832	Y	1154
									SPARE		5	7	19	505-4832	Y	1155
									SPARE		5	7	20	505-4832	Y	1156
									SPARE		5	7	21	505-4832	Y	1157
									SPARE		5	7	22	505-4832	Y	1158
									SPARE		5	7	23	505-4832	Y	1159
									SPARE		5	7	24	505-4832	Y	1160
									SPARE		5	7	25	505-4832	Y	1161
									SPARE		5	7	26	505-4832	Y	1162
									SPARE		5	7	27	505-4832	Y	1163
									SPARE		5	7	28	505-4832	Y	1164
									SPARE		5	7	29	505-4832	Y	1165
									SPARE		5	7	30	505-4832	Y	1166
									SPARE		5	7	31	505-4832	Y	1167
									SPARE		5	7	32	505-4832	Y	1168
							PROPELLOR FLOW METER	FQT-601	FLOW	3170A599	6	1	1	505-6108A	WX	113
							PARSHALL FLUME	FIT-601A	FLOW	3170A599	6	1	2	505-6108A	WX	114
							PARSHALL FLUME	FIT-601B	FLOW	3170A599	6	1	3	505-6108A	WX	115
							PLANT EFFLUENT FLUME	FIT-602	FLOW	3170A602	6	1	4	505-6108A	WX	116
									SPARE		6	1	5	505-6108A	WX	117
									SPARE		6	1	6	505-6108A	WX	118
									SPARE		6	1	7	505-6108A	WX	119
									SPARE		6	1	8	505-6108A	WX	120
							CHLORINATOR 1		PACING SIGNAL	3170A599	6	2	1	505-6208	WY	121
							CHLORINATOR 2		PACING SIGNAL	3170A599	6	2	2	505-6208	WY	122

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SIM	R	S	P	T	Addr	EQNUM	EQNAME	DEVICE	FUNCTION	DRAWING	I R	I S	I T	TI Mod	TI	TI Addr
									SPARE		6	2	3	505-6208	WY	123
									SPARE		6	2	4	505-6208	WY	124
									SPARE		6	2	5	505-6208	WY	125
									SPARE		6	2	6	505-6208	WY	126
									SPARE		6	2	7	505-6208	WY	127
									SPARE		6	2	8	505-6208	WY	128
4	1	1	1	IN	0769		RECL. WET WELL	LSL-603	LOW LEVEL	3170S62	6	3	1	505-4232	X	1201
4	1	1	2	IN	0770	P6-01	RECLAIM PUMP 1	HS-605	AUTO	3170S62	6	3	2	505-4232	X	1202
4	1	1	3	IN	0771	P6-01	RECLAIM PUMP 1	QS-605	RUN	3170S62	6	3	3	505-4232	X	1203
4	1	1	4	IN	0772	P6-01	RECLAIM PUMP 1	ZS-609	FLOW	3170S62	6	3	4	505-4232	X	1204
4	1	1	5	IN	0773	P6-02	RECLAIM PUMP 2	HS-606	AUTO	3170S62	6	3	5	505-4232	X	1205
4	1	1	6	IN	0774	P6-02	RECLAIM PUMP 2	QS-606	RUN	3170S62	6	3	6	505-4232	X	1206
4	1	1	7	IN	0775	P6-02	RECLAIM PUMP 2	ZS-610	FLOW	3170S62	6	3	7	505-4232	X	1207
4	1	1	8	IN	0776	P6-03	RECLAIM PUMP 3	HS-607	AUTO	3170S62	6	3	8	505-4232	X	1208
4	1	1	9	IN	0777	P6-03	RECLAIM PUMP 3	QS-607	RUN	3170S62	6	3	9	505-4232	X	1209
4	1	1	10	IN	0778	P6-03	RECLAIM PUMP 3	ZS-611	FLOW	3170S62	6	3	10	505-4232	X	1210
4	1	1	11	IN	0779	P6-04	RECLAIM PUMP 4	HS-608	AUTO	3170S62	6	3	11	505-4232	X	1211
4	1	1	12	IN	0780	P6-04	RECLAIM PUMP 4	QS-608	RUN	3170S62	6	3	12	505-4232	X	1212
4	1	1	13	IN	0781	P6-04	RECLAIM PUMP 4	ZS-612	FLOW	3170S62	6	3	13	505-4232	X	1213
4	1	1	14	IN	0782		RECL WATER	PSL-604	LOW PRES	3170S62	6	3	14	505-4232	X	1214
4	1	1	15	IN	0783		RECL WATER	PSH-604	HIGH PRES	3170S62	6	3	15	505-4232	X	1215
4	1	2	1	IN	0785		CHLORINATOR 1	PSL-613	LOW VAC	3170S62	6	3	16	505-4232	X	1216
4	1	2	2	IN	0786		CHLORINATOR 1	PSH-613	HIGH VAC	3170S62	6	3	17	505-4232	X	1217
4	1	2	3	IN	0787		CHLORINATOR 2	PSL-614	LOW VAC	3170S62	6	3	18	505-4232	X	1218
4	1	2	4	IN	0788		CHLORINATOR 2	PSH-614	HIGH VAC	3170S62	6	3	19	505-4232	X	1219
4	1	2	5	IN	0789		CHLORINE LEAK	QS-615A	LEAK	3170S62	6	3	20	505-4232	X	1220
4	1	2	6	IN	0790		CHLORINE LEAK	QS-615B	LEAK	3170S62	6	3	21	505-4232	X	1221
									SPARE		6	3	22	505-4232	X	1222
									SPARE		6	3	23	505-4232	X	1223
									SPARE		6	3	24	505-4232	X	1224
									SPARE		6	3	25	505-4232	X	1225

Newberg WWTP I/C Enhancements

SIM	R	S	P	T	Addr	EQNUM	EQNAME	DEVICE	FUNCTION	DRAWING	I R	I S	I T	TI Mod	TI	TI Addr
									SPARE		6	3	26	505-4232	X	1226
									SPARE		6	3	27	505-4232	X	1227
									SPARE		6	3	28	505-4232	X	1228
									SPARE		6	3	29	505-4232	X	1229
									SPARE		6	3	30	505-4232	X	1230
									SPARE		6	3	31	505-4232	X	1231
									SPARE		6	3	32	505-4232	X	1232
4	1	3	1	CR	0801	P6-01	RECLAIM PUMP	HS-605	RUN	3170S63	6	4	1	505-4832	Y	1233
4	1	3	2	CR	0802	P6-01	RECLAIM PUMP	YL-605	RUNNING ILL	3170S63	6	4	2	505-4832	Y	1234
4	1	3	3	CR	0803	P6-02	RECLAIM PUMP	HS-606	RUN	3170S63	6	4	3	505-4832	Y	1235
4	1	3	4	CR	0804	P6-02	RECLAIM PUMP	YL-606	RUNNING ILL	3170S63	6	4	4	505-4832	Y	1236
4	1	3	5	CR	0805	P6-03	RECLAIM PUMP	HS-607	RUN	3170S63	6	4	5	505-4832	Y	1237
4	1	3	6	CR	0806	P6-03	RECLAIM PUMP	YL-607	RUNNING ILL	3170S63	6	4	6	505-4832	Y	1238
4	1	3	7	CR	0807	P6-04	RECLAIM PUMP	HS-608	RUN	3170S63	6	4	7	505-4832	Y	1239
4	1	3	8	CR	0808	P6-04	RECLAIM PUMP	YL-608	RUNNING ILL	3170S63	6	4	8	505-4832	Y	1240
4	1	3	9	CR	0809	CV6-01		SV	OPEN	3170S63	6	4	9	505-4832	Y	1241
									SPARE		6	4	10	505-4832	Y	1242
									SPARE		6	4	11	505-4832	Y	1243
									SPARE		6	4	12	505-4832	Y	1244
									SPARE		6	4	13	505-4832	Y	1245
									SPARE		6	4	14	505-4832	Y	1246
									SPARE		6	4	15	505-4832	Y	1247
									SPARE		6	4	16	505-4832	Y	1248
									SPARE		6	4	17	505-4832	Y	1249
									SPARE		6	4	18	505-4832	Y	1250
									SPARE		6	4	19	505-4832	Y	1251
									SPARE		6	4	20	505-4832	Y	1252
									SPARE		6	4	21	505-4832	Y	1253
									SPARE		6	4	22	505-4832	Y	1254
									SPARE		6	4	23	505-4832	Y	1255
									SPARE		6	4	24	505-4832	Y	1256

Newberg WWTP I/C Enhancements

SIM	R	S	P	T	Addr	EQNUM	EQNAME	DEVICE	FUNCTION	DRAWING	I R	I S	I T	TI Mod	TI	TI Addr
									SPARE		6	4	25	505-4832	Y	1257
									SPARE		6	4	26	505-4832	Y	1258
									SPARE		6	4	27	505-4832	Y	1259
									SPARE		6	4	28	505-4832	Y	1260
									SPARE		6	4	29	505-4832	Y	1261
									SPARE		6	4	30	505-4832	Y	1262
									SPARE		6	4	31	505-4832	Y	1263
									SPARE		6	4	32	505-4832	Y	1264
4	1	4	1	CR	0817		RECL. WET WELL	LAL-603	LOW LEVEL	3170S63	6	5	1	505-4532	Y	1265
4	1	4	2	CR	0818		RECL. WATER LOW P	PAL-604	LOW PRESSURE	3170S63	6	5	2	505-4532	Y	1266
4	1	4	3	CR	0819		RECL. PUMP 1 FAIL	QA-609A	FAIL	3170S63	6	5	3	505-4532	Y	1267
4	1	4	4	CR	0820		RECL. PUMP 2 FAIL	QA-610A	FAIL	3170S63	6	5	4	505-4532	Y	1268
4	1	4	5	CR	0821		RECL. PUMP 3 FAIL	QA-611A	FAIL	3170S63	6	5	5	505-4532	Y	1269
4	1	4	6	CR	0822		RECL. PUMP 4 FAIL	QA-612A	FAIL	3170S63	6	5	6	505-4532	Y	1270
4	1	4	7	CR	0823		CHLORINATOR 1	PAL-613A	LOW VACUUM	3170S63	6	5	7	505-4532	Y	1271
4	1	4	8	CR	0824		CHLORINATOR 1	PAH-613A	HI VACUUM	3170S63	6	5	8	505-4532	Y	1272
4	1	4	9	CR	0825		CHLORINATOR 2	PAL-614A	LOW VACUUM	3170S63	6	5	9	505-4532	Y	1273
4	1	4	10	CR	0826		CHLORINATOR 2	PAH-614A	HI VACUUM	3170S63	6	5	10	505-4532	Y	1274
4	1	4	11	CR	0827		CHLORINE LEAK	QA-615	LEAK	3170S63	6	5	11	505-4532	Y	1275
									SPARE		6	5	12	505-4532	Y	1276
									SPARE		6	5	13	505-4532	Y	1277
									SPARE		6	5	14	505-4532	Y	1278
									SPARE		6	5	15	505-4532	Y	1279
									SPARE		6	5	16	505-4532	Y	1280
									SPARE		6	5	17	505-4532	Y	1281
									SPARE		6	5	18	505-4532	Y	1282
									SPARE		6	5	19	505-4532	Y	1283
									SPARE		6	5	20	505-4532	Y	1284
									SPARE		6	5	21	505-4532	Y	1285
									SPARE		6	5	22	505-4532	Y	1286
									SPARE		6	5	23	505-4532	Y	1287

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SIM	R	S	P	T	Addr	EQNUM	EQNAME	DEVICE	FUNCTION	DRAWING	I R	I S	I T	TI Mod	TI	TI Addr
									SPARE		6	5	24	505-4532	Y	1288
									SPARE		6	5	25	505-4532	Y	1289
									SPARE		6	5	26	505-4532	Y	1290
									SPARE		6	5	27	505-4532	Y	1291
									SPARE		6	5	28	505-4532	Y	1292
									SPARE		6	5	29	505-4532	Y	1293
									SPARE		6	5	30	505-4532	Y	1294
									SPARE		6	5	31	505-4532	Y	1295
									SPARE		6	5	32	505-4532	Y	1296
						P5-14	SLUDGE TRANSFER PUMP 3		SPEED CMD	3170A556	7	1	1	505-6108A	WX	161
						P5-15	SLUDGE TRANSFER PUMP 1		SPEED CMD	3170A557	7	1	2	505-6108A	WX	162
						P5-16	SLUDGE TRANSFER PUMP 2		SPEED CMD	3170A558	7	1	3	505-6108A	WX	163
						MME7-12	BELT FILTER PRESS 1	FIT-752	INFLUENT FLOW	3170A752	7	1	4	505-6108A	WX	164
									SPARE		7	1	5	505-6108A	WX	165
									SPARE		7	1	6	505-6108A	WX	166
									SPARE		7	1	7	505-6108A	WX	167
									SPARE		7	1	8	505-6108A	WX	168
						MME7-13	BELT FILTER PRESS 2		INFLUENT FLOW	3170A753	7	2	1	505-6108A	WX	169
						P5-14	SLUDGE TRANSFER PUMP 3		SPEED CMD	3170A556	7	2	2	505-6208	WY	170
						P5-15	SLUDGE TRANSFER PUMP 1		SPEED CMD	3170A557	7	2	3	505-6208	WY	171
						P5-16	SLUDGE TRANSFER PUMP 2		SPEED CMD	3170A558	7	2	4	505-6208	WY	172
						P7-05	THICKENED SLUDGE PUMP 1		SPEED CMD	3170A742	7	2	5	505-6208	WY	173
						P7-05	THICKENED SLUDGE PUMP 2		SPEED CMD	3170A742	7	2	6	505-6208	WY	174
						P7-13	BELT PRESS 1 PUMP		SPEED CMD	3170A752	7	2	7	505-6208	WY	175
						P7-14	BELT PRESS 2 PUMP		SPEED CMD	3170A753	7	2	8	505-6208	WY	176
						P7-15	STDBY POLYMER FEED PUMP		SPEED CMD	3170A799	7	3	1	505-6208	WY	177
									SPARE		7	3	2	505-6208	WY	178
									SPARE		7	3	3	505-6208	WY	179
									SPARE		7	3	4	505-6208	WY	180
									SPARE		7	3	5	505-6208	WY	181
									SPARE		7	3	6	505-6208	WY	182

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SIM	R	S	P	T	Addr	EQNUM	EQNAME	DEVICE	FUNCTION	DRAWING	I R	I S	I T	TI Mod	TI	TI Addr
									SPARE		7	3	7	505-6208	WY	183
									SPARE		7	3	8	505-6208	WY	184
5	2	8	3	CR	1075	P7-05	THICKENED SLUDGE PUMP 1	QA-726	FAIL	3170S88	7	5	1	505-4532	Y	1361
5	2	8	4	CR	1076	P7-06	THICKENED SLUDGE PUMP 2	QA-727	FAIL	3170S88	7	5	2	505-4532		

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SIM	R	S	P	T	Addr	EQNUM	EQNAME	DEVICE	FUNCTION	DRAWING	I R	I S	I T	TI Mod	TI	TI Addr
1	2	5	1	IR	0001	P01-3	INF. PUMP 3	SIK-106	SPEED FDBK	3170A106	2	1	1	505-6108A	WX	1
1	2	5	2	IR	0002	P01-4	INF. PUMP 4	SIK-107	SPEED FDBK	3170A107	2	1	2	505-6108A	WX	2
							WETWELL SIDE A	LIT-101A	LEVEL	3170A003	2	1	3	505-6108A	WX	3
							WETWELL SIDE B	LIT-101B	LEVEL	3170A004	2	1	4	505-6108A	WX	4
							EQ BASIN RETURN	FIT-116	FLOW	3170A116	2	1	5	505-6108A	WX	5
									SPARE		2	1	6	505-6108A	WX	6
									SPARE		2	1	7	505-6108A	WX	7
									SPARE		2	1	8	505-6108A	WX	8
1	2	1	1	O	0001	P01-3	INF. PUMP 3	SIK-106	SPEED CMD	3170A106	2	2	1	505-6208	WY	9
1	2	1	2	O	0002	P01-4	INF. PUMP 4	SIK-107	SPEED CMD	3170A107	2	2	2	505-6208	WY	10
									SPARE		2	2	3	505-6208	WY	11
									SPARE		2	2	4	505-6208	WY	12
									SPARE		2	2	5	505-6208	WY	13
									SPARE		2	2	6	505-6208	WY	14
									SPARE		2	2	7	505-6208	WY	15
									SPARE		2	2	8	505-6208	WY	16
1	1	1	1	IN	0001	G-1	DIVERSION GATE	TEL-R1	OPEN	3170S3	2	3	1	505-4232	X	513
1	1	1	2	IN	0002	G-1	DIVERSION GATE	TEL-R2	75%	3170S3	2	3	2	505-4232	X	514
1	1	1	3	IN	0003	G-1	DIVERSION GATE	TEL-R3	50%	3170S3	2	3	3	505-4232	X	515
1	1	1	4	IN	0004	G-1	DIVERSION GATE	TEL-R4	25%	3170S3	2	3	4	505-4232	X	516
1	1	1	5	IN	0005	G-1	DIVERSION GATE	TEL-R5	CLOSED	3170S3	2	3	5	505-4232	X	517
1	1	1	6	IN	0006	G-1	G1 AND G2	TEL-R6	LOCAL	3170S3	2	3	6	505-4232	X	518
1	1	1	7	IN	0007	TEL-1	BYPASS GATE	TEL-R7	CLOSED	3170S3	2	3	7	505-4232	X	519
1	1	1	8	IN	0008	TEL-1	BYPASS GATE	TEL-R8	OPEN	3170S3	2	3	8	505-4232	X	520
1	1	1	9	IN	0009	TEL-1	CP1	TEL-R9	POWER	3170S3	2	3	9	505-4232	X	521
1	1	1	10	IN	0010	TEL-1	8TH	TEL-R10	POWER	3170S3	2	3	10	505-4232	X	522
1	1	1	11	IN	0011	TEL-1	8TH	TEL-R11	HIGH	3170S3	2	3	11	505-4232	X	523
1	1	1	12	IN	0012	TEL-1	CHARLES	TEL-R12	POWER	3170S3	2	3	12	505-4232	X	524
1	1	1	13	IN	0013	TEL-1	CHARLES	TEL-R13	HIGH	3170S3	2	3	13	505-4232	X	525
1	1	1	14	IN	0014	TEL-1	ANDREW	TEL-R14	POWER	3170S3	2	3	14	505-4232	X	526
1	1	1	15	IN	0015	TEL-1	ANDREW	TEL-R15	HIGH	3170S3	2	3	15	505-4232	X	527

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SIM	R	S	P	T	Addr	EQNUM	EQNAME	DEVICE	FUNCTION	DRAWING	I R	I S	I T	TI Mod	TI	TI Addr
1	1	1	16	IN	0016	TEL-1		TEL-R16	SPARE	3170S3	2	3	16	505-4232	X	528
1	1	2	1	IN	0017	G-2	BYPASS GATE	HS-007	AUTO	3170S3	2	3	17	505-4232	X	529
1	1	2	2	IN	0018	G-1	DIVERSION GATE	HS-005A	AUTO	3170S3	2	3	18	505-4232	X	530
1	1	2	3	IN	0019	G-1	DIVERSION GATE	HS-005B	OPEN	3170S3	2	3	19	505-4232	X	531
1	1	2	4	IN	0020	G-1	DIVERSION GATE	HS-005C	CLOSE	3170S3	2	3	20	505-4232	X	532
1	1	2	5	IN	0021	P01-1	INF. PUMP 1	HS-108	AUTO	3170S3	2	3	21	505-4232	X	533
1	1	2	6	IN	0022	P01-2	INF. PUMP 2	HS-109	AUTO	3170S3	2	3	22	505-4232	X	534
1	1	2	7	IN	0023	P01-3	INF. PUMP 3	HS-110	AUTO	3170S3	2	3	23	505-4232	X	535
1	1	2	8	IN	0024	P01-4	INF. PUMP 4	HS-111	AUTO	3170S3	2	3	24	505-4232	X	536
1	1	2	9	IN	0025	P01-1	INF. PUMP 1	ZS-102	FLOW	3170S3	2	3	25	505-4232	X	537
1	1	2	10	IN	0026	P01-2	INF. PUMP 2	ZS-103	FLOW	3170S3	2	3	26	505-4232	X	538
1	1	2	11	IN	0027	P01-3	INF. PUMP 3	ZS-104	FLOW	3170S3	2	3	27	505-4232	X	539
1	1	2	12	IN	0028	P01-4	INF. PUMP 4	ZS-105	FLOW	3170S3	2	3	28	505-4232	X	540
1	1	2	13	IN	0029	P01-1	INF. PUMP 1	QS-108	RUN	3170S3	2	3	29	505-4232	X	541
1	1	2	14	IN	0030	P01-1	INF. PUMP 1	TSH-108	HIGH TEMP	3170S3	2	3	30	505-4232	X	542
1	1	2	15	IN	0031	P01-2	INF. PUMP 2	QS-109	RUN	3170S3	2	3	31	505-4232	X	543
1	1	2	16	IN	0032	P01-2	INF. PUMP 2	TSH-109	HIGH TEMP	3170S3	2	3	32	505-4232	X	544
1	1	3	1	IN	0033	P01-3	INF. PUMP 3	QS-110A	RUN	3170S4	2	4	1	505-4232	X	545
1	1	3	2	IN	0034	P01-3	INF. PUMP 3	TSH-110	HIGH TEMP	3170S4	2	4	2	505-4232	X	546
1	1	3	3	IN	0035	P01-3	INF. PUMP 3	QS-110B	VFD VAULT	3170S4	2	4	3	505-4232	X	547
1	1	3	4	IN	0036	P01-4	INF. PUMP 4	QS-111A	RUN	3170S4	2	4	4	505-4232	X	548
1	1	3	5	IN	0037	P01-4	INF. PUMP 4	TSH-111	HIGH TEMP	3170S4	2	4	5	505-4232	X	549
1	1	3	6	IN	0038	P01-4	INF. PUMP 4	QS-111B	VFD FAULT	3170S4	2	4	6	505-4232	X	550
1	1	3	7	IN	0039	P01-1	INF. WETWELL A	LSH-112A	WETWELL A HIGH LVL	3170S4	2	4	7	505-4232	X	551
1	1	3	8	IN	0040	P01-1	INF. WETWELL A	LSH-112B	WETWELL A LOW LVL	3170S4	2	4	8	505-4232	X	552
1	1	3	9	IN	0041	P01-1	INF. WETWELL B	LSH-112C	WETWELL B HIGH LVL	3170S4	2	4	9	505-4232	X	553
1	1	3	10	IN	0042	P01-1	INF. WETWELL B	LSH-112D	WETWELL B LOW LVL	3170S4	2	4	10	505-4232	X	554
1	1	3	13	IN	0045	P01-3	INF. PUMP 3	SIK-106	AUTO/MAN REQUEST	3170S4	2	4	11	505-4232	X	555
1	1	3	14	IN	0046	P01-3	INF. PUMP 3	SIK-106	AUTO/MAN STATUS	3170S4	2	4	12	505-4232	X	556
1	1	3	15	IN	0047	P01-4	INF. PUMP 4	SIK-107	AUTO/MAN REQUEST	3170S4	2	4	13	505-4232	X	557
1	1	3	16	IN	0048	P01-4	INF. PUMP 4	SIK-107	AUTO/MAN STATUS	3170S4	2	4	14	505-4232	X	558

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SIM	R	S	P	T	Addr	EQNUM	EQNAME	DEVICE	FUNCTION	DRAWING	I R	I S	I T	TI Mod	TI	TI Addr
1	1	4	1	IN	0049	PCP	PLANT CONTROL PANEL		CLAR. MODE SEQ ADV.	3170S5	2	4	15	505-4232	X	559
1	1	4	2	IN	0050	PCP	PLANT CONTROL PANEL		DIALER STATUS	3170S5	2	4	16	505-4232	X	560
1	1	4	3	IN	0051	PCP	PLANT CONTROL PANEL		LAMP TEST	3170S5	2	4	17	505-4232	X	561
1	1	4	5	IN	0053	PCP	PLANT CONTROL PANEL		ACKNOWLEDGE	3170S5	2	4	18	505-4232	X	562
									SPARE		2	4	19	505-4232	X	563
									SPARE		2	4	20	505-4232	X	564
									SPARE		2	4	21	505-4232	X	565
									SPARE		2	4	22	505-4232	X	566
									SPARE		2	4	23	505-4232	X	567
									SPARE		2	4	24	505-4232	X	568
									SPARE		2	4	25	505-4232	X	569
									SPARE		2	4	26	505-4232	X	570
									SPARE		2	4	27	505-4232	X	571
									SPARE		2	4	28	505-4232	X	572
									SPARE		2	4	29	505-4232	X	573
									SPARE		2	4	30	505-4232	X	574
									SPARE		2	4	31	505-4232	X	575
									SPARE		2	4	32	505-4232	X	576
1	1	5	1	CR	0001	G-1	DIVERSION GATE	CR7	OPEN	3170S5	2	5	1	505-4832	Y	577
1	1	5	2	CR	0002	G-1	DIVERSION GATE	CR8	75%	3170S5	2	5	2	505-4832	Y	578
1	1	5	3	CR	0003	G-1	DIVERSION GATE	CR9	50%	3170S5	2	5	3	505-4832	Y	579
1	1	5	4	CR	0004	G-1	DIVERSION GATE	CR10	25%	3170S5	2	5	4	505-4832	Y	580
1	1	5	5	CR	0005	G-1	DIVERSION GATE	HS-007	CLOSE	3170S5	2	5	5	505-4832	Y	581
1	1	5	6	CR	0006	G-2	BYPASS GATE	HS-007	OPEN	3170S5	2	5	6	505-4832	Y	582
1	1	5	7	CR	0007	G-2	BYPASS GATE	HS-007	CLOSE	3170S5	2	5	7	505-4832	Y	583
1	1	5	9	CR	0009	P01-1	INF. PUMP 1	HS-108	TO IN0021	3170S5	2	5	8	505-4832	Y	584
1	1	5	10	CR	0010	P01-2	INF. PUMP 2	HS-109	TO IN0022	3170S5	2	5	9	505-4832	Y	585
1	1	5	11	CR	0011	P01-3	INF. PUMP 3	HS-110	TO IN0023	3170S5	2	5	10	505-4832	Y	586
1	1	5	12	CR	0012	P01-4	INF. PUMP 4	HS-111	TO IN0024	3170S5	2	5	11	505-4832	Y	587
1	1	5	13	CR	0013	P01-3	INF. PUMP 3	SIK-106	AUTO/MANUAL	3170S5	2	5	12	505-4832	Y	588
1	1	5	14	CR	0014	P01-3	INF. PUMP 3	SIK-106	LOCKOUT	3170S5	2	5	13	505-4832	Y	589

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SIM	R	S	P	T	Addr	EQNUM	EQNAME	DEVICE	FUNCTION	DRAWING	I R	I S	I T	TI Mod	TI	TI Addr
1	1	5	15	CR	0015	P01-4	INF. PUMP 4	SIK-107	AUTO/MANUAL	3170S5	2	5	14	505-4832	Y	590
1	1	5	16	CR	0016	P01-4	INF. PUMP 4	SIK-107	LOCKOUT	3170S5	2	5	15	505-4832	Y	591
1	2	2	9	CR	0089	P0-3	INF. PUMP 3		VFD #3 RESET	3170S13	2	5	16	505-4832	Y	592
1	2	2	10	CR	0090	P0-4	INF. PUMP 4		VFD #4 RESET	3170S13	2	5	17	505-4832	Y	593
1									SPARE		2	5	18	505-4832	Y	594
1									SPARE		2	5	19	505-4832	Y	595
1									SPARE		2	5	20	505-4832	Y	596
1									SPARE		2	5	21	505-4832	Y	597
1									SPARE		2	5	22	505-4832	Y	598
1									SPARE		2	5	23	505-4832	Y	599
1									SPARE		2	5	24	505-4832	Y	600
1									SPARE		2	5	25	505-4832	Y	601
									SPARE		2	5	26	505-4832	Y	602
									SPARE		2	5	27	505-4832	Y	603
									SPARE		2	5	28	505-4832	Y	604
									SPARE		2	5	29	505-4832	Y	605
									SPARE		2	5	30	505-4832	Y	606
									SPARE		2	5	31	505-4832	Y	607
									SPARE		2	5	32	505-4832	Y	608
						FIT-113	PLANT INFLUENT PUMPS 2, 3		FLOW	3170A115	3	1	1	505-6108A	WX	33
						FIT-114	PLANT INFLUENT PUMPS 1, 4		FLOW	3170A115	3	1	2	505-6108A	WX	34
						BSN2-01	BAR SCREEN	LDT-201	DIFF. LEVEL	3170A201	3	1	3	505-6108A	WX	35
							GRIT CHAMBER	AIT-209	PH	3170A209	3	1	4	505-6108A	WX	36
							SLUDGE STORAGE 1	LIT-547	LEVEL	3170A547	3	1	5	505-6108A	WX	37
							SLUDGE STORAGE 2	LIT-548	LEVEL	3170A548	3	1	6	505-6108A	WX	38
									SPARE		3	1	7	505-6108A	WX	39
									SPARE		3	1	8	505-6108A	WX	40
2	1	1	1	IN	0257	BSN2-01	BAR SCREEN	ZS-202A	UP	3170S22	3	2	1	505-4232	X	673
2	1	1	2	IN	0258	BSN2-01	BAR SCREEN	ZS-202B	DOWN	3170S22	3	2	2	505-4232	X	674
2	1	1	3	IN	0259	BSN2-01	BAR SCREEN	HS-202	AUTO	3170S22	3	2	3	505-4232	X	675

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SIM	R	S	P	T	Addr	EQNUM	EQNAME	DEVICE	FUNCTION	DRAWING	I R	I S	I T	TI Mod	TI	TI Addr
2	1	1	4	IN	0260	BSN2-01	BAR SCREEN	QS-302	RUN	3170S22	3	2	4	505-4232	X	676
2	1	1	5	IN	0261	B2-01	BLOWER 1	HS-203	AUTO	3170S22	3	2	5	505-4232	X	677
2	1	1	6	IN	0262	B2-01	BLOWER 1	QS-203	RUN	3170S22	3	2	6	505-4232	X	678
2	1	1	7	IN	0263	B2-01	BLOWER 1	FS-206	CLOSED	3170S22	3	2	7	505-4232	X	679
2	1	1	8	IN	0264	B2-02	BLOWER 2	HS-204	AUTO	3170S22	3	2	8	505-4232	X	680
2	1	1	9	IN	0265	B2-02	BLOWER 2	QS-204	RUN	3170S22	3	2	9	505-4232	X	681
2	1	1	10	IN	0266	B2-02	BLOWER 2	FS-207	CLOSED	3170S22	3	2	10	505-4232	X	682
2	1	1	11	IN	0267	B2-03	BLOWER 3	HS-205	AUTO	3170S22	3	2	11	505-4232	X	683
2	1	1	12	IN	0268	B2-03	BLOWER 3	QS-205	RUN	3170S22	3	2	12	505-4232	X	684
2	1	1	13	IN	0269	B2-03	BLOWER 3	FS-208	CLOSED	3170S22	3	2	13	505-4232	X	685
2	1	1	14	IN	0270	P2-01	GRIT PUMP 1	HS-210	CLOSED	3170S22	3	2	14	505-4232	X	686
2	1	1	15	IN	0271	P2-01	GRIT PUMP 1	ZS-212	AUTO	3170S22	3	2	15	505-4232	X	687
2	1	1	16	IN	0272	P2-02	GRIT PUMP 2	HS-211	CLOSED	3170S22	3	2	16	505-4232	X	688
2	1	2	1	IN	0273	P2-02	GRIT PUMP 2	ZS-213	AUTO	3170S22	3	2	17	505-4232	X	689
2	1	2	2	IN	0274	MME2-01	CLASSIFIER	HS-214	AUTO	3170S22	3	2	18	505-4232	X	690
2	1	2	3	IN	0275	CV2-02	GRIT CHAMBER AIR VALVE	HS-216A	AUTO	3170S22	3	2	19	505-4232	X	691
2	1	2	4	IN	0276	CV2-03	GRIT CHAMBER AIR VALVE	HS-216B	AUTO	3170S22	3	2	20	505-4232	X	692
2	1	2	5	IN	0277	MME2-04	CLASSIFIER	HS-217B	AUTO	3170S22	3	2	21	505-4232	X	693
2	1	2	6	IN	0278	MME2-04	CLASSIFIER	HS-217C	FORWARD	3170S22	3	2	22	505-4232	X	694
2	1	2	7	IN	0279	P5-15	SLUDGE TRANSFER PUMP 1	HS-551B	AUTO	3170S22	3	2	23	505-4232	X	695
2	1	2	8	IN	0280	P5-15	SLUDGE TRANSFER PUMP 1	HS-551D	#1	3170S22	3	2	24	505-4232	X	696
2	1	2	9	IN	0281	P5-15	SLUDGE TRANSFER PUMP 1	HS-551D	#2	3170S22	3	2	25	505-4232	X	697
2	1	2	10	IN	0282	P5-15	SLUDGE TRANSFER PUMP 1	HS-557	REMOTE	3170S22	3	2	26	505-4232	X	698
2	1	2	11	IN	0283	P5-15	SLUDGE TRANSFER PUMP 1		RUN	3170S22	3	2	27	505-4232	X	699
2	1	2	12	IN	0284	P5-15	SLUDGE TRANSFER PUMP 1		FAIL	3170S22	3	2	28	505-4232	X	700
2	1	2	13	IN	0285	P5-15	SLUDGE TRANSFER PUMP 1	ZS-552	CLOSED	3170S22	3	2	29	505-4232	X	701
2	1	2	14	IN	0286	P5-16	SLUDGE TRANSFER PUMP 2	HS-553B	AUTO	3170S22	3	2	30	505-4232	X	702
2	1	2	15	IN	0287	P5-16	SLUDGE TRANSFER PUMP 2	HS-553D	#1	3170S22	3	2	31	505-4232	X	703
2	1	2	16	IN	0288	P5-16	SLUDGE TRANSFER PUMP 2	HS-553D	#2	3170S22	3	2	32	505-4232	X	704
2	1	3	1	IN	0289	P5-16	SLUDGE TRANSFER PUMP 2	HS-558	REMOTE	3170S23	3	3	1	505-4232	X	705
2	1	3	2	IN	0290	P5-16	SLUDGE TRANSFER PUMP 2		FAIL	3170S23	3	3	2	505-4232	X	706

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SIM	R	S	P	T	Addr	EQNUM	EQNAME	DEVICE	FUNCTION	DRAWING	I R	I S	I T	TI Mod	TI	TI Addr
2	1	3	3	IN	0291	P5-16	SLUDGE TRANSFER PUMP 2		RUN	3170S23	3	3	3	505-4232	X	707
2	1	3	4	IN	0292	P5-16	SLUDGE TRANSFER PUMP 2	ZS-554	CLOSED	3170S23	3	3	4	505-4232	X	708
2	1	3	5	IN	0293	P5-14	SLUDGE TRANSFER PUMP 3	HS-549B	AUTO	3170S23	3	3	5	505-4232	X	709
2	1	3	6	IN	0294	P5-14	SLUDGE TRANSFER PUMP 3	HS-549C	#1	3170S23	3	3	6	505-4232	X	710
2	1	3	7	IN	0295	P5-14	SLUDGE TRANSFER PUMP 3	HS-549D	PUMP TO TANK #1	3170S23	3	3	7	505-4232	X	711
2	1	3	8	IN	0296	P5-14	SLUDGE TRANSFER PUMP 3	HS-549D	PUMP TO TANK #2	3170S23	3	3	8	505-4232	X	712
2	1	3	9	IN	0297	P5-14	SLUDGE TRANSFER PUMP 3	HS-556	REMOTE	3170S23	3	3	9	505-4232	X	713
2	1	3	10	IN	0298	P5-14	SLUDGE TRANSFER PUMP 3		RUN	3170S23	3	3	10	505-4232	X	714
2	1	3	11	IN	0299	P5-14	SLUDGE TRANSFER PUMP 3		FAIL	3170S23	3	3	11	505-4232	X	715
2	1	3	12	IN	0300	P5-14	SLUDGE TRANSFER PUMP 3	PSH-550	HIGH	3170S23	3	3	12	505-4232	X	716
2	1	3	13	IN	0301		TRUCK	LSH-555	HIGH LEVEL	3170S23	3	3	13	505-4232	X	717
2	1	3	14	IN	0302	P5-01	SCUM PUMP 1	HS-509D	START	3170S23	3	3	14	505-4232	X	718
2	1	3	15	IN	0303	P5-02	SCUM PUMP 2	HS-510D	START	3170S23	3	3	15	505-4232	X	719
2	1	3	16	IN	0304	P5-14	SLUDGE TRANFER PUMP 3	HS-549F	START	3170S23	3	3	16	505-4232	X	720
2	1	4	1	IN	0305	P5-15	SLUDGE TRANSFER PUMP 1	HS-551F	START	3170S23	3	3	17	505-4232	X	721
2	1	4	2	IN	0306	P5-16	SLUDGE TRANSFER PUMP 2	HS-553F	START	3170S23	3	3	18	505-4232	X	722
2	1	4	3	IN	0307	P5-15	SLUDGE TRANSFER PUMP 1	HS-555	EMERG. STOP	3170S23	3	3	19	505-4232	X	723
2	1	4	4	IN	0308	P7-05	THICKENED SLUDGE PUMP 1	HS-740	START	3170S23	3	3	20	505-4232	X	724
2	1	4	5	IN	0309	P7-06	THICKENED SLUDGE PUMP 2	HS-741F	START	3170S23	3	3	21	505-4232	X	725
2	1	4	13	IN	0317	P5-15	SLUDGE TRANSFER PUMP 1	HS-551C	SLUDGE PUMP	3170S23	3	3	22	505-4232	X	726
2	1	4	14	IN	0318	P5-16	SLUDGE TRANSFER PUMP 2	HS-553C	SLUDGE PUMP	3170S23	3	3	23	505-4232	X	727
2	2	5	1	IN	0385	B2-01	BLOWER 1		HIGH TEMP	3170S27	3	3	24	505-4232	X	728
2	2	5	2	IN	0386	B2-02	BLOWER 2		HIGH TEMP	3170S27	3	3	25	505-4232	X	729
2	2	5	3	IN	0387	B2-03	BLOWER 3		HIGH TEMP	3170S27	3	3	26	505-4232	X	730
									SPARE		3	3	27	505-4232	X	731
									SPARE		3	3	28	505-4232	X	732
									SPARE		3	3	29	505-4232	X	733
									SPARE		3	3	30	505-4232	X	734
									SPARE		3	3	31	505-4232	X	735
									SPARE		3	3	32	505-4232	X	736
2	1	5	1	CR	0257	BSN2-01	BAR SCREEN	HS-202	RUN	3170S24	3	4	1	505-4832	Y	737

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SIM	R	S	P	T	Addr	EQNUM	EQNAME	DEVICE	FUNCTION	DRAWING	I R	I S	I T	TI Mod	TI	TI Addr
2	1	5	2	CR	0258	CV2-02	GRIT CHAMBER AIR VALVE	HS-216A	OPEN	3170S24	3	4	2	505-4832	Y	738
2	1	5	3	CR	0259	CV2-03	GRIT CHAMBER AIR VALVE	HS-216B	OPEN	3170S24	3	4	3	505-4832	Y	739
2	1	5	4	CR	0260	B2-01	BLOWER 1	HS-203	RUN	3170S24	3	4	4	505-4832	Y	740
2	1	5	5	CR	0261	B2-02	BLOWER 2	HS-204	RUN	3170S24	3	4	5	505-4832	Y	741
2	1	5	6	CR	0262	B2-03	BLOWER 3	HS-205	RUN	3170S24	3	4	6	505-4832	Y	742
2	1	5	7	CR	0263	P2-01	GRIT PUMP 1	HS-210	RUN	3170S24	3	4	7	505-4832	Y	743
2	1	5	8	CR	0264	P2-02	GRIT PUMP 2	HS-211	RUN	3170S24	3	4	8	505-4832	Y	744
2	1	5	9	CR	0265	MME2-01	CLASSIFIER	HS-214	RUN	3170S24	3	4	9	505-4832	Y	745
2	1	5	10	CR	0266	CV2-01	GRIT WASHER	HS-215B	OPEN	3170S24	3	4	10	505-4832	Y	746
2	1	5	11	CR	0267	MME2-04	CLASSIFIER	HS-217B	RUN	3170S24	3	4	11	505-4832	Y	747
2	1	5	12	CR	0268	P5-14	SLUDGE TRANSFER PUMP 3	HS-549B	RUN	3170S24	3	4	12	505-4832	Y	748
2	1	5	13	CR	0269	P5-15	SLUDGE TRANSFER PUMP 1	HS-551B	RUN	3170S24	3	4	13	505-4832	Y	749
2	1	5	14	CR	0270	P5-16	SLUDGE TRANSFER PUMP 2	HS-553B	RUN	3170S24	3	4	14	505-4832	Y	750
2	1	5	15	CR	0271	BSN2-01	BAR SCREEN	QL-202A	RUNNING ILL	3170S24	3	4	15	505-4832	Y	751
2	1	5	16	CR	0272	B2-01	BLOWER 1	QL-203A	RUNNING ILL	3170S24	3	4	16	505-4832	Y	752
2	1	6	1	CR	0273	B2-03	BLOWER 3	QL-205A	RUNNING ILL	3170S24	3	4	17	505-4832	Y	753
2	1	6	2	CR	0274	P2-01	GRIT PUMP 1	QL-210A	RUNNING ILL	3170S24	3	4	18	505-4832	Y	754
2	1	6	3	CR	0275	P2-02	GRIT PUMP 2	QL-211A	RUNNING ILL	3170S24	3	4	19	505-4832	Y	755
2	1	6	4	CR	0276	MME2-01	CLASSIFIER	QL-214A	RUNNING ILL	3170S24	3	4	20	505-4832	Y	756
2	1	6	5	CR	0277	CV2-01	GRIT WASHER	QL-215	RUNNING ILL	3170S24	3	4	21	505-4832	Y	757
2	1	6	6	CR	0278	CV2-02	GRIT CHAMBER AIR VALVE	QL-216A	RUNNING ILL	3170S24	3	4	22	505-4832	Y	758
2	1	6	7	CR	0279	CV2-03	GRIT CHAMBER AIR VALVE	QL-216B	RUNNING ILL	3170S24	3	4	23	505-4832	Y	759
2	1	6	8	CR	0280	MME2-04	CLASSIFIER	QL-217A	RUNNING FWD ILL	3170S24	3	4	24	505-4832	Y	760
2	1	6	9	CR	0281	MME2-04	CLASSIFIER	QL-217B	RUNNING REV ILL	3170S24	3	4	25	505-4832	Y	761
2	1	6	10	CR	0282	P5-14	SLUDGE TRANSFER PUMP 3	QL-549A	RUNNING ILL	3170S24	3	4	26	505-4832	Y	762
2	1	6	11	CR	0283	P5-15	SLUDGE TRANSFER PUMP 1	QL-551A	RUNNING ILL	3170S24	3	4	27	505-4832	Y	763
2	1	6	12	CR	0284	P5-16	SLUDGE TRANSFER PUMP 2	QL-553A	RUNNING ILL	3170S24	3	4	28	505-4832	Y	764
2	1	6	13	CR	0285	P5-14	SLUDGE TRANSFER PUMP 3	QL-549D	ENABLED ILL	3170S24	3	4	29	505-4832	Y	765
2	1	6	14	CR	0286	P5-15	SLUDGE TRANSFER PUMP 1	QL-551D	ENABLED ILL	3170S24	3	4	30	505-4832	Y	766
2	1	6	15	CR	0287	P5-16	SLUDGE TRANSFER PUMP 2	QL-553D	ENABLED ILL	3170S24	3	4	31	505-4832	Y	767
2	1	6	16	CR	0288	P5-01	SCUM PUMP 1	QL-509D	ENABLED ILL	3170S24	3	4	32	505-4832	Y	768

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SIM	R	S	P	T	Addr	EQNUM	EQNAME	DEVICE	FUNCTION	DRAWING	I R	I S	I T	TI Mod	TI	TI Addr
2	1	7	1	CR	0289	P5-2	SCUM PUMP 2	QL-510D	ENABLED ILL	3170S25	3	5	1	505-4832	Y	769
2	1	7	2	CR	0290	P7-05	THICKENED SLUDGE PUMP 1	QL-740B	ENABLED ILL	3170S25	3	5	2	505-4832	Y	770
2	1	7	3	CR	0291	P7-06	THICKENED SLUDGE PUMP 2	QL-741B	ENABLED ILL	3170S25	3	5	3	505-4832	Y	771
2	1	7	4	CR	0292	B2-02	BLOWER 2	QL-204A	RUNNING ILL	3170S25	3	5	4	505-4832	Y	772
2	1	7	5	CR	0293	P5-15	SLUDGE TRANSFER PUMP 1	QL-551A	REMOTE ILL	3170S25	3	5	5	505-4832	Y	773
2	1	7	6	CR	0294	P5-15	SLUDGE TRANSFER PUMP 1	QL-551B	LOCAL ILL	3170S25	3	5	6	505-4832	Y	774
2	1	7	7	CR	0295	P5-16	SLUDGE TRANSFER PUMP 2	QL-553A	REMOTE ILL	3170S25	3	5	7	505-4832	Y	775
2	1	7	8	CR	0296	P5-16	SLUDGE TRANSFER PUMP 2	QL-553B	LOCAL ILL	3170S25	3	5	8	505-4832	Y	776
2	1	7	9	CR	0297	P5-14	SLUDGE TRANSFER PUMP 3	QL-549A	REMOTE ILL	3170S25	3	5	9	505-4832	Y	777
2	1	7	10	CR	0298	P5-14	SLUDGE TRANSFER PUMP 3	QL-549B	LOCAL ILL	3170S25	3	5	10	505-4832	Y	778
2	1	7	11	CR	0299		GRIT CONVEYOR	HS-217B	RUN FWD	3170S25	3	5	11	505-4832	Y	779
2	1	7	12	CR	0300		GRIT CONVEYOR	HS-217C	RUN REV	3170S25	3	5	12	505-4832	Y	780
							SPARE				3	5	13	505-4832	Y	781
							SPARE				3	5	14	505-4832	Y	782
							SPARE				3	5	15	505-4832	Y	783
							SPARE				3	5	16	505-4832	Y	784
							SPARE				3	5	17	505-4832	Y	785
							SPARE				3	5	18	505-4832	Y	786
							SPARE				3	5	19	505-4832	Y	787
							SPARE				3	5	20	505-4832	Y	788
							SPARE				3	5	21	505-4832	Y	789
							SPARE				3	5	22	505-4832	Y	790
							SPARE				3	5	23	505-4832	Y	791
							SPARE				3	5	24	505-4832	Y	792
							SPARE				3	5	25	505-4832	Y	793
							SPARE				3	5	26	505-4832	Y	794
							SPARE				3	5	27	505-4832	Y	795
							SPARE				3	5	28	505-4832	Y	796
							SPARE				3	5	29	505-4832	Y	797
							SPARE				3	5	30	505-4832	Y	798
							SPARE				3	5	31	505-4832	Y	799

Newberg WWTP Instrumentation and Control System Improvements

SIM	R	S	P	T	Addr	EQNUM	EQNAME	DEVICE	FUNCTION	DRAWING	I R	I S	I T	TI Mod	TI	TI Addr
							SPARE				3	5	32	505-4832	Y	800
2	1	8	1	CR	0305	SCREEN		LDAH-201A	HIGH DIFF LVL	3170S25	3	6	1	505-4532	Y	801
2	1	8	2	CR	0306	B2-01	BLOWER 1	QA-260A	FAIL	3170S25	3	6	2	505-4532	Y	802
2	1	8	3	CR	0307	B2-02	BLOWER 2	QA-207A	FAIL	3170S25	3	6	3	505-4532	Y	803
2	1	8	4	CR	0308	B2-03	BLOWER 3	QA-208A	FAIL	3170S25	3	6	4	505-4532	Y	804
2	1	8	5	CR	0309	P2-01	GRIT PUMP 1	QA-212A	FAIL	3170S25	3	6	5	505-4532	Y	805
2	1	8	6	CR	0310	P2-02	GRIT PUMP 2	QA-213A	FAIL	3170S25	3	6	6	505-4532	Y	806
2	1	8	7	CR	0311	P5-14	SLUDGE TRANSFER PUMP 3	QA-550	HI DIS PRESS.	3170S25	3	6	7	505-4532	Y	807
2	1	8	8	CR	0312	P5-15	SLUDGE TRANSFER PUMP 1	QA-552	FAIL	3170S25	3	6	8	505-4532	Y	808
2	1	8	9	CR	0313	P5-16	SLUDGE TRANSFER PUMP 2	QA-554	FAIL	3170S25	3	6	9	505-4532	Y	809
2						BSN2-01	BAR SCREEN	LDS-201	HIGH DIFF	3170S23	3	6	10	505-4532	Y	810
2							GRIT CHAMBER	ASH-209	HIGH PH	3170S23	3	6	11	505-4532	Y	811
2							GRIT CHAMBER	ASL-209	LOW PH	3170S23	3	6	12	505-4532	Y	812
2							SLDG STG.TANK 1	LSL-547	LOW	3170S23	3	6	13	505-4532	Y	813
2							SLDG STG.TANK 1	LSH-547	HIGH	3170S23	3	6	14	505-4532	Y	814
2							SLDG STG.TANK 2	LSL-548	LOW	3170S23	3	6	15	505-4532	Y	815
2							SLDG STG.TANK 2	LSH-548	HIGH	3170S23	3	6	16	505-4532	Y	816
									SPARE				17	505-4532	Y	817
									SPARE				18	505-4532	Y	818
									SPARE				19	505-4532	Y	819
									SPARE				20	505-4532	Y	820
									SPARE				21	505-4532	Y	821
									SPARE				22	505-4532	Y	822
									SPARE				23	505-4532	Y	823
									SPARE				24	505-4532	Y	824
									SPARE				25	505-4532	Y	825
									SPARE				26	505-4532	Y	826
									SPARE				27	505-4532	Y	827
									SPARE				28	505-4532	Y	828
									SPARE				29	505-4532	Y	829
									SPARE				30	505-4532	Y	830

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SIM	R	S	P	T	Addr	EQNUM	EQNAME	DEVICE	FUNCTION	DRAWING	I R	I S	I T	TI Mod	TI	TI Addr
									SPARE				31	505-4532	Y	831
									SPARE				32	505-4532	Y	832
3	3	1	1	IR	0033		EQ BASIN	LIT-306	LEVEL	317A306	4	1	1	505-6108A	WX	57
							OXIDATION DITCH 1	AIT-401	PH	3170A401	4	1	2	505-6108A	WX	58
							OXIDATION DITCH 2	AIT-402	PH	3170A402	4	1	3	505-6108A	WX	59
							OXIDATION DITCH 1	AIT-403	DO	3170A403	4	1	4	505-6108A	WX	60
							OXIDATION DITCH 2	AIT-404	DO	3170A404	4	1	5	505-6108A	WX	61
						RA4-01	ROTOR 1	IT-413	CURRENT	3170A413	4	1	6	505-6108A	WX	62
						RA4-02	ROTOR 2	IT-414	CURRENT	3170A413	4	1	7	505-6108A	WX	63
						RA4-03	ROTOR 3	IT-415	CURRENT	3170A413	4	1	8	505-6108A	WX	64
						RA4-04	ROTOR 4	IT-416	CURRENT	3170A413	4	2	1	505-6108A	WX	65
						RA4-05	ROTOR 5	IT-417	CURRENT	3170A417	4	2	2	505-6108A	WX	66
						RA4-06	ROTOR 6	IT-418	CURRENT	3170A417	4	2	3	505-6108A	WX	67
						RA4-07	ROTOR 7	IT-419	CURRENT	3170A417	4	2	4	505-6108A	WX	68
						RA4-08	ROTOR 8	IT-420	CURRENT	3170A417	4	2	5	505-6108A	WX	69
							SCUM PIT 1	LIT-507	LEVEL	3170A507	4	2	6	505-6108A	WX	70
							SCUM PIT 2	LIT-508	LEVEL	3170A508	4	2	7	505-6108A	WX	71
							CLARIFIER 1 RAS	FIT-514	FLOW	3170A514	4	2	8	505-6108A	WX	72
							CLARIFIER 2 RAS	FIT-515	FLOW	3170A515	4	3	1	505-6108A	WX	73
							CLARIFIER 3 RAS	FIT-516	FLOW	3170A516	4	3	2	505-6108A	WX	74
							WAS FLOW RATE 1	FIT-545	FLOW	3170A545	4	3	3	505-6108A	WX	75
							WAS FLOW RATE 2	FIT-546	FLOW	3170A546	4	3	4	505-6108A	WX	76
							WAS FLOW RATE 3	FIT-560	FLOW	3170A560	4	3	5	505-6108A	WX	77
							CLARIFIER 1		SL BL DEPTH (FUT)		4	3	6	505-6108A	WX	78
							CLARIFIER 2		SL BL DEPTH (FUT)		4	3	7	505-6108A	WX	79
							CLARIFIER 3		SL BL DEPTH (FUT)		4	3	8	505-6108A	WX	80
						P5-07	RAS PUMP 1		SPEED CMD	3170A517	4	4	1	505-6208	WY	81
						P5-08	RAS PUMP 2		SPEED CMD	3170A517	4	4	2	505-4232	WY	82
						P5-09	RAS PUMP 3		SPEED CMD	3170A517	4	4	3	505-4232	WY	83
						P5-10	RAS PUMP 4		SPEED CMD	3170A517	4	4	4	505-4232	WY	84
						P5-11	WAS PUMP 1		SPEED CMD	3170A535	4	4	5	505-4232	WY	85

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SIM	R	S	P	T	Addr	EQNUM	EQNAME	DEVICE	FUNCTION	DRAWING	I R	I S	I T	TI Mod	TI	TI Addr
						P5-12	WAS PUMP 2		SPEED CMD	3170A535	4	4	6	505-4232	WY	86
						P5-13	WAS PUMP 3		SPEED CMD	3170A535	4	4	7	505-4232	WY	87
							ALUM FEEDER		PACING SIGNAL	3170A600	4	4	8	505-4232	WY	88
							SODA ASH FEEDER		PACING SIGNAL	3170A600	4	5	1	505-4232	WY	89
									SPARE		4	5	2	505-4232	WY	90
									SPARE		4	5	3	505-4232	WY	91
									SPARE		4	5	4	505-4232	WY	92
									SPARE		4	5	5	505-4232	WY	93
									SPARE		4	5	6	505-4232	WY	94
									SPARE		4	5	7	505-4232	WY	95
									SPARE		4	5	8	505-4232	WY	96
3	4	7	1	CR	0609		CLAR 1	WAH-504A	HIGH TORQUE	3170S49	4	6	1	505-4532	Y	849
3	4	7	2	CR	0610		EQ BASIN	LAH-306A	HIGH LEVEL	3170S49	4	6	2	505-4532	Y	850
3	4	7	3	CR	0611		CLAR 2	WAH-505A	HIGH TORQUE	3170S49	4	6	3	505-4532	Y	851
3	4	7	4	CR	0612		CLAR 3	WAH-506A	HIGH TORQUE	3170S49	4	6	4	505-4532	Y	852
3	4	7	5	CR	0613		SCUM PIT 1	QA-511A	PUMP FAIL	3170S49	4	6	5	505-4532	Y	853
3	4	7	6	CR	0614		JET PUMP 1	TAH-301	HIGH TEMP	3170S49	4	6	6	505-4532	Y	854
3	4	7	7	CR	0615		SCUM PIT 2	QA-512A	PUMP FAIL	3170S49	4	6	7	505-4532	Y	855
3	4	7	8	CR	0616		JET PUMP 2	TAH-302	HIGH TEMP	3170S49	4	6	8	505-4532	Y	856
3	4	7	9	CR	0617	P5-07	RAS PUMP 1	QA-525A	FAIL	3170S49	4	6	9	505-4532	Y	857
3	4	7	10	CR	0618	P5-11	WAS PUMP 1	QA-532A	FAIL	3170S49	4	6	10	505-4532	Y	858
3	4	7	11	CR	0619	MME5-03	SLUDGE GRINDER 1	QA-541A	FAIL	3170S49	4	6	11	505-4532	Y	859
3	4	7	12	CR	0620	P5-08	RAS PUMP 2	QA-526A	FAIL	3170S49	4	6	12	505-4532	Y	860
3	4	7	13	CR	0621	P5-12	WAS PUMP 2	QA-533A	FAIL	3170S49	4	6	13	505-4532	Y	861
3	4	7	14	CR	0622	MME5-04	SLUDGE GRINDER 2	QA-542A	FAIL	3170S49	4	6	14	505-4532	Y	862
3	4	7	15	CR	0623	P5-09	RAS PUMP 3	QA-527A	FAIL	3170S49	4	6	15	505-4532	Y	863
3	4	7	16	CR	0624	P5-13	WAS PUMP 3	QA-534A	FAIL	3170S49	4	6	16	505-4532	Y	864
3	4	8	1	CR	0625	P5-10	RAS PUMP 4	QA-528A	FAIL	3170S49	4	6	17	505-4532	Y	865
						P3-01	JET PUMP 1	QL-301A	RUN ILL	3170S50	4	6	18	505-4532	Y	866
						P3-01	JET PUMP 1	QL-301C	1 ILL	3170S50	4	6	19	505-4532	Y	867
						P3-02	JET PUMP 2	QL-302C	2 ILL	3170S50	4	6	20	505-4532	Y	868

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SIM	R	S	P	T	Addr	EQNUM	EQNAME	DEVICE	FUNCTION	DRAWING	I R	I S	I T	TI Mod	TI	TI Addr
						P3-02	JET PUMP 2	QL-302A	RUN ILL	3170S50	4	6	21	505-4532	Y	869
							MUD VALVE 1	QL-303A	OPEN ILL	3170S50	4	6	22	505-4532	Y	870
							MUD VALVE 1	QL-303B	CLOSED ILL	3170S50	4	6	23	505-4532	Y	871
							MUD VALVE 2	QL-304A	OPEN ILL	3170S50	4	6	24	505-4532	Y	872
							MUD VALVE 2	QL-304B	CLOSED ILL	3170S50	4	6	25	505-4532	Y	873
							MUD VALVE 3	QL-305A	OPEN ILL	3170S50	4	6	26	505-4532	Y	874
							MUD VALVE 3	QL-305B	CLOSED ILL	3170S50	4	6	27	505-4532	Y	875
						RA4-01	ROTOR 1	QL-405AA	WINDING HEAT ILL	3170S50	4	6	28	505-4532	Y	876
						RA4-01	ROTOR 1	QL-405AB	LOW ILL	3170S50	4	6	29	505-4532	Y	877
						RA4-01	ROTOR 1	QL-405AC	HIGH ILL	3170S50	4	6	30	505-4532	Y	878
						RA4-02	ROTOR 2	QL-406AA	WINDING HEAT ILL	3170S50	4	6	31	505-4532	Y	879
						RA4-02	ROTOR 2	QL-406AB	LOW ILL	3170S50	4	6	32	505-4532	Y	880
						RA4-02	ROTOR 2	QL-406AC	HIGH ILL	3170S50	4	7	1	505-4532	Y	881
						RA4-03	ROTOR 3	QL-407AA	WINDING HEAT ILL	3170S51	4	7	2	505-4532	Y	882
						RA4-03	ROTOR 3	QL-407AB	LOW ILL	3170S51	4	7	3	505-4532	Y	883
						RA4-03	ROTOR 3	QL-407AC	HIGH ILL	3170S51	4	7	4	505-4532	Y	884
						RA4-04	ROTOR 4	QL-408AA	WINDING HEAT ILL	3170S51	4	7	5	505-4532	Y	885
						RA4-04	ROTOR 4	QL-408AB	LOW ILL	3170S51	4	7	6	505-4532	Y	886
						RA4-04	ROTOR 4	QL-408AC	HIGH ILL	3170S51	4	7	7	505-4532	Y	887
						RA4-05	ROTOR 5	QL-409AA	WINDING HEAT ILL	3170S51	4	7	8	505-4532	Y	888
						RA4-05	ROTOR 5	QL-409AB	LOW ILL	3170S51	4	7	9	505-4532	Y	889
						RA4-05	ROTOR 5	QL-409AC	HIGH ILL	3170S51	4	7	10	505-4532	Y	890
						RA4-06	ROTOR 6	QL-410AA	WINDING HEAT ILL	3170S51	4	7	11	505-4532	Y	891
						RA4-06	ROTOR 6	QL-410AB	LOW ILL	3170S51	4	7	12	505-4532	Y	892
						RA4-06	ROTOR 6	QL-410AC	HIGH ILL	3170S51	4	7	13	505-4532	Y	893
						RA4-07	ROTOR 7	QL-411AA	WINDING HEAT ILL	3170S51	4	7	14	505-4532	Y	894
						RA4-07	ROTOR 7	QL-411AB	LOW ILL	3170S51	4	7	15	505-4532	Y	895
						RA4-07	ROTOR 7	QL-411AC	HIGH ILL	3170S51	4	7	16	505-4532	Y	896
						RA4-08	ROTOR 8	QL-412AA	WINDING HEAT ILL	3170S51	4	7	17	505-4532	Y	897
						RA4-08	ROTOR 8	QL-412AB	LOW ILL	3170S51	4	7	18	505-4532	Y	898
						RA4-08	ROTOR 8	QL-412AC	HIGH ILL	3170S51	4	7	19	505-4532	Y	899

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SIM	R	S	P	T	Addr	EQNUM	EQNAME	DEVICE	FUNCTION	DRAWING	I R	I S	I T	TI Mod	TI	TI Addr
						CL5-01	CLARIFIER 1	QL-501A	RUN ILL	3170S51	4	7	20	505-4532	Y	900
						CL5-02	CLARIFIER 2	QL-502A	RUN ILL	3170S51	4	7	21	505-4532	Y	901
						CL5-03	CLARIFIER 3	QL-503A	RUN ILL	3170S51	4	7	22	505-4532	Y	902
						P5-01	SCUM PUMP 1	QL-509A	WINDING HEAT ILL	3170S51	4	7	23	505-4532	Y	903
						P5-01	SCUM PUMP 1	QL-509B	RUN ILL	3170S51	4	7	24	505-4532	Y	904
						P5-02	SCUM PUMP 2	QL-510A	WINDING HEAT ILL	3170S51	4	7	25	505-4532	Y	905
						P5-02	SCUM PUMP 2	QL-510B	RUN ILL	3170S51	4	7	26	505-4532	Y	906
						P5-07	RAS PUMP 1	QL-521A	RUN ILL	3170S51	4	7	27	505-4532	Y	907
						P5-08	RAS PUMP 2	QL-522A	RUN ILL	3170S51	4	7	28	505-4532	Y	908
						P5-09	RAS PUMP 3	QL-523A	RUN ILL	3170S51	4	7	29	505-4532	Y	909
						P5-10	RAS PUMP 4	QL-524A	RUN ILL	3170S51	4	7	30	505-4532	Y	910
						P5-11	WAS PUMP 1	QL-529A	RUN ILL	3170S51	4	7	31	505-4532	Y	911
						P5-12	WAS PUMP 2	QL-530A	RUN ILL	3170S51	4	7	32	505-4532	Y	912
						P5-13	WAS PUMP 3	QL-531A	RUN ILL	3170S52	4	8	1	505-4532	Y	913
						CV5-01	WAS VALVE 1	QL-538A	OPEN ILL	3170S52	4	8	2	505-4532	Y	914
						CV5-01	WAS VALVE 1	QL-538B	CLOSED ILL	3170S52	4	8	3	505-4532	Y	915
						CV5-02	WAS VALVE 2	QL-539A	OPEN ILL	3170S52	4	8	4	505-4532	Y	916
						CV5-02	WAS VALVE 2	QL-539B	CLOSED ILL	3170S52	4	8	5	505-4532	Y	917
						CV5-03	WAS VALVE 3	QL-540A	OPEN ILL	3170S52	4	8	6	505-4532	Y	918
						CV5-03	WAS VALVE 3	QL-540B	CLOSED ILL	3170S52	4	8	7	505-4532	Y	919
						MME5-03	SLUDGE GRINDER 1	QL-543A	FWD ILL	3170S52	4	8	8	505-4532	Y	920
						MME5-03	SLUDGE GRINDER 1	QL-543B	REV ILL	3170S52	4	8	9	505-4532	Y	921
						MME5-04	SLUDGE GRINDER 2	QL-544A	FWD ILL	3170S52	4	8	10	505-4532	Y	922
						MME5-04	SLUDGE GRINDER 2	QL-544B	REV ILL	3170S52	4	8	11	505-4532	Y	923
									SPARE		4	8	12	505-4532	Y	924
									SPARE		4	8	13	505-4532	Y	925
									SPARE		4	8	14	505-4532	Y	926
									SPARE		4	8	15	505-4532	Y	927
									SPARE		4	8	16	505-4532	Y	928
									SPARE		4	8	17	505-4532	Y	929
									SPARE		4	8	18	505-4532	Y	930

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SIM	R	S	P	T	Addr	EQNUM	EQNAME	DEVICE	FUNCTION	DRAWING	I R	I S	I T	TI Mod	TI	TI Addr
									SPARE		4	8	19	505-4532	Y	931
									SPARE		4	8	20	505-4532	Y	932
									SPARE		4	8	21	505-4532	Y	933
									SPARE		4	8	22	505-4532	Y	934
									SPARE		4	8	23	505-4532	Y	935
									SPARE		4	8	24	505-4532	Y	936
									SPARE		4	8	25	505-4532	Y	937
									SPARE		4	8	26	505-4532	Y	938
									SPARE		4	8	27	505-4532	Y	939
									SPARE		4	8	28	505-4532	Y	940
									SPARE		4	8	29	505-4532	Y	941
									SPARE		4	8	30	505-4532	Y	942
									SPARE		4	8	31	505-4532	Y	943
									SPARE		4	8	32	505-4532	Y	944
3	1	1	1	IN	0513	P3-01	JET PUMP 1	HS-301	AUTO	3170S42	5	1	1	505-4232	X	945
3	1	1	2	IN	0514	P3-01	JET PUMP 1	QS-301A	RUN	3170S42	5	1	2	505-4232	X	946
3	1	1	3	IN	0515	P3-01	JET PUMP 1	TSH-301	HIGH TEMP	3170S42	5	1	3	505-4232	X	947
3	1	1	4	IN	0516	P3-02	JET PUMP 2	HS-302	AUTO	3170S42	5	1	4	505-4232	X	948
3	1	1	5	IN	0517	P3-02	JET PUMP 2	QS-302A	RUN	3170S42	5	1	5	505-4232	X	949
3	1	1	6	IN	0518	P3-02	JET PUMP 2	TSH-302	HITH TEMP	3170S42	5	1	6	505-4232	X	950
3	1	1	7	IN	0519		MUD VALVE 1	ZS-303	OPEN	3170S42	5	1	7	505-4232	X	951
3	1	1	8	IN	0520		MUD VALVE 1	ZS-303	CLOSED	3170S42	5	1	8	505-4232	X	952
3	1	1	9	IN	0521		MUD VALVE 2	ZS-304	OPEN	3170S42	5	1	9	505-4232	X	953
3	1	1	10	IN	0522		MUD VALVE 2	ZS-304	CLOSED	3170S42	5	1	10	505-4232	X	954
3	1	1	11	IN	0523		MUD VALVE 3	ZS-305	OPEN	3170S42	5	1	11	505-4232	X	955
3	1	1	12	IN	0524		MUD VALVE 3	ZS-305	CLOSED	3170S42	5	1	12	505-4232	X	956
3	1	1	13	IN	0525	LSH-306		CR1	HIGH LEVEL	3170S42	5	1	13	505-4232	X	957
3	1	1	14	IN	0526	LSL-3-6		CR2	LOW LEVEL	3170S42	5	1	14	505-4232	X	958
3	1	1	15	IN	0527		SUM/WINT	HS-307	SUMMER/WINTER	3170S42	5	1	15	505-4232	X	959
3	1	2	6	IN	0534	ASL-404		HS-405A	AUTO	3170S42	5	1	16	505-4232	X	960
3	1	2	7	IN	0535	RA4-01	ROTOR 1	HS-405B	HIGH	3170S42	5	1	17	505-4232	X	961

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SIM	R	S	P	T	Addr	EQNUM	EQNAME	DEVICE	FUNCTION	DRAWING	I R	I S	I T	TI Mod	TI	TI Addr
3	1	2	8	IN	0536	RA4-01	ROTOR 1	QS-405A	RUN LOW	3170S42	5	1	18	505-4232	X	962
3	1	2	9	IN	0537	RA4-01	ROTOR 1	QS-405B	RUN HIGH	3170S42	5	1	19	505-4232	X	963
3	1	2	10	IN	0538	RA4-01	ROTOR 1	QS-405C	HIGH TEMP	3170S42	5	1	20	505-4232	X	964
3	1	2	11	IN	0539	RA4-02	ROTOR 2	HS-406A	AUTO	3170S42	5	1	21	505-4232	X	965
3	1	2	12	IN	0540	RA4-02	ROTOR 2	HS-406B	HIGH	3170S42	5	1	22	505-4232	X	966
3	1	2	13	IN	0541	RA4-02	ROTOR 2	QS-406A	RUN LOW	3170S42	5	1	23	505-4232	X	967
3	1	2	14	IN	0542	RA4-02	ROTOR 2	QS-406B	RUN HIGH	3170S42	5	1	24	505-4232	X	968
3	1	2	15	IN	0543	RA4-02	ROTOR 2	QS-406C	HIGH TEMP	3170S42	5	1	25	505-4232	X	969
3	1	2	16	IN	0544	RA4-03	ROTOR 3	HS-407A	AUTO	3170S42	5	1	26	505-4232	X	970
3	1	3	1	IN	0545	RA4-03	ROTOR 3	HS-407B	HIGH	3170S43	5	1	27	505-4232	X	971
3	1	3	2	IN	0546	RA4-03	ROTOR 3	QS-407A	RUN LOW	3170S43	5	1	28	505-4232	X	972
3	1	3	3	IN	0547	RA4-03	ROTOR 3	QS-407B	RUN HIGH	3170S43	5	1	29	505-4232	X	973
3	1	3	4	IN	0548	RA4-03	ROTOR 3	QS-407C	HIGH TEMP	3170S43	5	1	30	505-4232	X	974
3	1	3	5	IN	0549	RA4-04	ROTOR 4	HS-408A	AUTO	3170S43	5	1	31	505-4232	X	975
3	1	3	6	IN	0550	RA4-04	ROTOR 4	HS-408B	HIGH	3170S43	5	1	32	505-4232	X	976
3	1	3	7	IN	0551	RA4-04	ROTOR 4	QS-408A	RUN LOW	3170S43	5	2	1	505-4232	X	977
3	1	3	8	IN	0552	RA4-04	ROTOR 4	QS-408B	RUN HIGH	3170S43	5	2	2	505-4232	X	978
3	1	3	9	IN	0553	RA4-04	ROTOR 4	QS-408C	HIGH TEMP	3170S43	5	2	3	505-4232	X	979
3	1	3	10	IN	0554	RA4-05	ROTOR 5	HS-409A	AUTO	3170S43	5	2	4	505-4232	X	980
3	1	3	11	IN	0555	RA4-05	ROTOR 5	HS-409B	HIGH	3170S43	5	2	5	505-4232	X	981
3	1	3	12	IN	0556	RA4-05	ROTOR 5	QS-409A	RUN LOW	3170S43	5	2	6	505-4232	X	982
3	1	3	13	IN	0557	RA4-05	ROTOR 5	QS-409B	RUN HIGH	3170S43	5	2	7	505-4232	X	983
3	1	3	14	IN	0558	RA4-05	ROTOR 5	QS-409C	HIGH TEMP	3170S43	5	2	8	505-4232	X	984
3	1	3	15	IN	0559	RA4-06	ROTOR 6	HS-410A	AUTO	3170S43	5	2	9	505-4232	X	985
3	1	3	16	IN	0560	RA4-06	ROTOR 6	HS-410B	HIGH	3170S43	5	2	10	505-4232	X	986
3	1	4	1	IN	0561	RA4-06	ROTOR 6	QS-410A	RUN LOW	3170S43	5	2	11	505-4232	X	987
3	1	4	2	IN	0562	RA4-06	ROTOR 6	QS-410B	RUN HIGH	3170S43	5	2	12	505-4232	X	988
3	1	4	3	IN	0563	RA4-06	ROTOR 6	QS-410C	HIGH TEMP	3170S43	5	2	13	505-4232	X	989
3	1	4	4	IN	0564	RA4-07	ROTOR 7	HS-411A	AUTO	3170S43	5	2	14	505-4232	X	990
3	1	4	5	IN	0565	RA4-07	ROTOR 7	HS-411B	HIGH	3170S43	5	2	15	505-4232	X	991
3	1	4	6	IN	0566	RA4-07	ROTOR 7	QS-411A	RUN LOW	3170S43	5	2	16	505-4232	X	992

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SIM	R	S	P	T	Addr	EQNUM	EQNAME	DEVICE	FUNCTION	DRAWING	I R	I S	I T	TI Mod	TI	TI Addr
3	1	4	7	IN	0567	RA4-07	ROTOR 7	QS-411B	RUN HIGH	3170S43	5	2	17	505-4232	X	993
3	1	4	8	IN	0568	RA4-07	ROTOR 7	QS-411C	HIGH TEMP	3170S43	5	2	18	505-4232	X	994
3	1	4	9	IN	0569	RA4-08	ROTOR 8	HS-412A	AUTO	3170S43	5	2	19	505-4232	X	995
3	1	4	10	IN	0570	RA4-08	ROTOR 8	HS-412B	HIGH	3170S43	5	2	20	505-4232	X	996
3	1	4	11	IN	0571	RA4-08	ROTOR 8	QS-412A	RUN LOW	3170S43	5	2	21	505-4232	X	997
3	1	4	12	IN	0572	RA4-08	ROTOR 8	QS-412B	RUN HIGH	3170S43	5	2	22	505-4232	X	998
3	1	4	13	IN	0573	RA4-08	ROTOR 8	QS-412C	HIGH TEMP	3170S43	5	2	23	505-4232	X	999
3	1	4	14	IN	0574	CL5-01	CLARIFIER 1	HS-501	AUTO	3170S43	5	2	24	505-4232	X	1000
3	1	4	15	IN	0575	CL5-01	CLARIFIER 1	QS-501A	RUN	3170S43	5	2	25	505-4232	X	1001
3	1	4	16	IN	0576	CL5-01	CLARIFIER 1	QS-501B	HIGH TEMP	3170S43	5	2	26	505-4232	X	1002
3	1	5	1	IN	0577	CL5-01	CLARIFIER 1	WSH-504	HIGH TORQUE	3170S44	5	2	27	505-4232	X	1003
3	1	5	2	IN	0578	CL5-02	CLARIFIER 2	HS-502	AUTO	3170S44	5	2	28	505-4232	X	1004
3	1	5	3	IN	0579	CL5-02	CLARIFIER 2	QS-502A	RUN	3170S44	5	2	29	505-4232	X	1005
3	1	5	4	IN	0580	CL5-02	CLARIFIER 2	QS-502B	HIGH TEMP	3170S44	5	2	30	505-4232	X	1006
3	1	5	5	IN	0581	CL5-02	CLARIFIER 2	WSH-505	HIGH TORQUE	3170S44	5	2	31	505-4232	X	1007
3	1	5	6	IN	0582	CL5-03	CLARIFIER 3	HS-503	AUTO	3170S44	5	2	32	505-4232	X	1008
3	1	5	7	IN	0583	CL5-03	CLARIFIER 3	QS-503A	RUN	3170S44	5	3	1	505-4232	X	1009
3	1	5	8	IN	0584	CL5-03	CLARIFIER 3	QS-503B	HIGH TEMP	3170S44	5	3	2	505-4232	X	1010
3	1	5	9	IN	0585	CL5-03	CLARIFIER 3	WSH-506	HIGH TORQUE	3170S44	5	3	3	505-4232	X	1011
3	1	5	10	IN	0586	P5-01	SCUM PUMP 1	HS-509B	AUTO	3170S44	5	3	4	505-4232	X	1012
3	1	5	11	IN	0587	P5-01	SCUM PUMP 1	HS-509C	TO TANK 1	3170S44	5	3	5	505-4232	X	1013
3	1	5	12	IN	0588	P5-01	SCUM PUMP 1	HS-509C	TO TANK 2	3170S44	5	3	6	505-4232	X	1014
3	1	5	13	IN	0589	P5-01	SCUM PUMP 1	QS-509A	RUN	3170S44	5	3	7	505-4232	X	1015
3	1	5	14	IN	0590	P5-01	SCUM PUMP 1	QS-509B	HIGH TEMP	3170S44	5	3	8	505-4232	X	1016
3	1	5	15	IN	0591	P5-01	SCUM PUMP 1	ZS-511	FLOW	3170S44	5	3	9	505-4232	X	1017
3	1	5	16	IN	0592		SCUM PIT 1	LSL-507	LOW LEVEL	3170S44	5	3	10	505-4232	X	1018
3	1	6	1	IN	0593		SCUM PIT 1	LSH-507	HIGH LEVEL	3170S44	5	3	11	505-4232	X	1019
3	1	6	2	IN	0594	P5-02	SCUM PUMP 2	HS-510B	AUTO	3170S44	5	3	12	505-4232	X	1020
3	1	6	3	IN	0595	P5-02	SCUM PUMP 2	HS-510C	TO TANK 1	3170S44	5	3	13	505-4232	X	1021
3	1	6	4	IN	0596	P5-02	SCUM PUMP 2	HS-510C	TO TANK 2	3170S44	5	3	14	505-4232	X	1022
3	1	6	5	IN	0597	P5-02	SCUM PUMP 2	QS-510A	RUN	3170S44	5	3	15	505-4232	X	1023

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SIM	R	S	P	T	Addr	EQNUM	EQNAME	DEVICE	FUNCTION	DRAWING	I R	I S	I T	TI Mod	TI	TI Addr
3	1	6	6	IN	0598	P5-02	SCUM PUMP 2	QS-510B	HIGH TEMP	3170S44	5	3	16	505-4232	X	1024
3	1	6	7	IN	0599	P5-02	SCUM PUMP 2	ZS-512	FLOW	3170S44	5	3	17	505-4232	X	1025
3	1	6	8	IN	0600		SCUM PIT 2	LSL-508	LOW LEVEL	3170S44	5	3	18	505-4232	X	1026
3	1	6	9	IN	0601		SCUM PIT 2	LSH-508	HIGH LEVEL	3170S44	5	3	19	505-4232	X	1027
3	1	6	10	IN	0602		RAS FLOW	HS-517	SWITCHING	3170S44	5	3	20	505-4232	X	1028
3	1	6	11	IN	0603		RAS FLOW	HS-518	SWITCHING	3170S44	5	3	21	505-4232	X	1029
3	1	6	12	IN	0604		RAS FLOW	HS-519	SWITCHING	3170S44	5	3	22	505-4232	X	1030
3	1	6	13	IN	0605		RAS FLOW	HS-520	SWITCHING	3170S44	5	3	23	505-4232	X	1031
3	1	6	14	IN	0606	P5-07	RAS PUMP 1	HS-521	AUTO	3170S44	5	3	24	505-4232	X	1032
3	1	6	15	IN	0607	P5-07	RAS PUMP 1	QS-521	RUN	3170S44	5	3	25	505-4232	X	1033
3	1	6	16	IN	0608	P5-07	RAS PUMP 1	ZS-525A	FLOW	3170S44	5	3	26	505-4232	X	1034
3	1	7	1	IN	0609	P5-07	RAS PUMP 1	ZS-525B	FLOW	3170S45	5	3	27	505-4232	X	1035
3	1	7	2	IN	0610	P5-07	RAS PUMP 1	QS-521B	VFD FAIL	3170S45	5	3	28	505-4232	X	1036
3	1	7	3	IN	0611	P5-08	RAS PUMP 2	HS-522	AUTO	3170S45	5	3	29	505-4232	X	1037
3	1	7	4	IN	0612	P5-08	RAS PUMP 2	QS-522	RUN	3170S45	5	3	30	505-4232	X	1038
3	1	7	5	IN	0613	P5-08	RAS PUMP 2	ZS-526A	FLOW	3170S45	5	3	31	505-4232	X	1039
3	1	7	6	IN	0614	P5-08	RAS PUMP 2	ZS-526B	FLOW	3170S45	5	3	32	505-4232	X	1040
3	1	7	7	IN	0615	P5-08	RAS PUMP 2	QS-522B	VFD FAIL	3170S45	5	4	1	505-4232	X	1041
3	1	7	8	IN	0616	P5-08	RAS PUMP 3	HS-523	AUTO	3170S45	5	4	2	505-4232	X	1042
3	1	7	9	IN	0617	P5-09	RAS PUMP 3	QS-523	RUN	3170S45	5	4	3	505-4232	X	1043
3	1	7	10	IN	0618	P5-09	RAS PUMP 3	ZS-527A	FLOW	3170S45	5	4	4	505-4232	X	1044
3	1	7	11	IN	0619	P5-09	RAS PUMP 3	QS-523	VFD FAIL	3170S45	5	4	5	505-4232	X	1045
3	1	7	12	IN	0620	P5-09	RAS PUMP 4	HS-524B	AUTO	3170S45	5	4	6	505-4232	X	1046
3	1	7	13	IN	0621	P5-10	RAS PUMP 4	QS-524	RUN	3170S45	5	4	7	505-4232	X	1047
3	1	7	14	IN	0622	P5-10	RAS PUMP 4	ZS-528A	FLOW	3170S45	5	4	8	505-4232	X	1048
3	1	7	15	IN	0623	P5-10	RAS PUMP 4	QS-524B	VFD FAIL	3170S45	5	4	9	505-4232	X	1049
3	1	7	16	IN	0624	P5-11	WAS PUMP 1	HS-529A	AUTO	3170S45	5	4	10	505-4232	X	1050
3	1	8	1	IN	0625	P5-11	WAS PUMP 1	HS-529B	LOCAL	3170S45	5	4	11	505-4232	X	1051
3	1	8	2	IN	0626	P5-11	WAS PUMP 1	HS-529C	STORAGE	3170S45	5	4	12	505-4232	X	1052
3	1	8	3	IN	0627	P5-11	WAS PUMP 1	HS-529D	PUMP 1	3170S45	5	4	13	505-4232	X	1053
3	1	8	4	IN	0628	P5-11	WAS PUMP 1	QS-529A	RUN	3170S45	5	4	14	505-4232	X	1054

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SIM	R	S	P	T	Addr	EQNUM	EQNAME	DEVICE	FUNCTION	DRAWING	I R	I S	I T	TI Mod	TI	TI Addr
3	1	8	5	IN	0629	P5-11	WAS PUMP 1	QS-529B	FAIL	3170S45	5	4	15	505-4232	X	1055
3	1	8	6	IN	0630	P5-11	WAS PUMP 1	ZS-532	FLOW	3170S45	5	4	16	505-4232	X	1056
3	1	8	7	IN	0631	P5-11	WAS PUMP 1	SIK-535	AUTO/MAN REQUEST	3170S45	5	4	17	505-4232	X	1057
3	1	8	8	IN	0632	P5-11	WAS PUMP 1	SIK-535	AUTO/MAN STATUS	3170S45	5	4	18	505-4232	X	1058
3	1	8	9	IN	0633	P5-12	WAS PUMP 2	HS-530A	AUTO	3170S45	5	4	19	505-4232	X	1059
3	1	8	10	IN	0634	P5-12	WAS PUMP 2	HS-530B	WCS	3170S45	5	4	20	505-4232	X	1060
3	1	8	11	IN	0635	P5-12	WAS PUMP 2	HS-530B	WAS	3170S45	5	4	21	505-4232	X	1061
3	1	8	12	IN	0636	P5-12	WAS PUMP 2	HS-530C	LOCAL	3170S45	5	4	22	505-4232	X	1062
3	1	8	13	IN	0637	P5-12	WAS PUMP 2	HS-530D	STORAGE	3170S45	5	4	23	505-4232	X	1063
3	1	8	14	IN	0638	P5-12	WAS PUMP 2	HS-530E	1	3170S45	5	4	24	505-4232	X	1064
3	1	8	15	IN	0639	P5-12	WAS PUMP 2	QS-530A	RUN	3170S45	5	4	25	505-4232	X	1065
3	1	8	16	IN	0640	P5-12	WAS PUMP 2	QS-530B	FAIL	3170S45	5	4	26	505-4232	X	1066
3	2	1	1	IN	0641	P5-12	WAS PUMP 2	ZS-533	FLOW	3170S46	5	4	27	505-4232	X	1067
3	2	1	2	IN	0642	P5-12	WAS PUMP 2	SIK-536	AUTO/MAN REQUEST	3170S46	5	4	28	505-4232	X	1068
3	2	1	3	IN	0643	P5-12	WAS PUMP 2	SIK-536	AUTO/MAN STATUS	3170S46	5	4	29	505-4232	X	1069
3	2	1	4	IN	0644	P5-13	WAS PUMP 3	HS-531A	AUTO	3170S46	5	4	30	505-4232	X	1070
3	2	1	5	IN	0645	P5-13	WAS PUMP 3	HS-531B	WCS	3170S46	5	4	31	505-4232	X	1071
3	2	1	6	IN	0646	P5-13	WAS PUMP 3	HS-531B	WAS	3170S46	5	4	32	505-4232	X	1072
3	2	1	7	IN	0647	P5-13	WAS PUMP 3	HS-531C	LOCAL	3170S46	5	5	1	505-4232	X	1073
3	2	1	8	IN	0648	P5-13	WAS PUMP 3	HS-531D	STORAGE	3170S46	5	5	2	505-4232	X	1074
3	2	1	9	IN	0649	P5-13	WAS PUMP 3	HS-531E	1	3170S46	5	5	3	505-4232	X	1075
3	2	1	10	IN	0650	P5-13	WAS PUMP 3	QS-531A	RUN	3170S46	5	5	4	505-4232	X	1076
3	2	1	11	IN	0651	P5-13	WAS PUMP 3	QS-531B	FAIL	3170S46	5	5	5	505-4232	X	1077
3	2	1	12	IN	0652	P5-13	WAS PUMP 3	ZS-534	FLOW	3170S46	5	5	6	505-4232	X	1078
3	2	1	13	IN	0653	P5-13	WAS PUMP 3	SIK-537	AUTO/MAN REQUEST	3170S46	5	5	7	505-4232	X	1079
3	2	1	14	IN	0654	P5-13	WAS PUMP 3	SIK-537	AUTO/MAN STATUS	3170S46	5	5	8	505-4232	X	1080
3	2	1	15	IN	0655	CV5-01	WAS VALVE 1	HS-538	AUTO	3170S46	5	5	9	505-4232	X	1081
3	2	1	16	IN	0656	CV5-02	WAS VALVE 2	HS-539	AUTO	3170S46	5	5	10	505-4232	X	1082
3	2	2	1	IN	0657	CV5-03	WAS VALVE 3	HS-540	AUTO	3170S46	5	5	11	505-4232	X	1083
3	2	2	4	IN	0660	MME5-03	SLUDGE GRINDER 1	HS-543	AUTO	3170S46	5	5	12	505-4232	X	1084
3	2	2	5	IN	0661	MME5-03	SLUDGE GRINDER 1	ISH-541	GRINDER JAMMED	3170S46	5	5	13	505-4232	X	1085

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SIM	R	S	P	T	Addr	EQNUM	EQNAME	DEVICE	FUNCTION	DRAWING	I R	I S	I T	TI Mod	TI	TI Addr
3	2	2	6	IN	0662	MME5-04	SLUDGE GRINDER 2	HS-544	AUTO	3170S46	5	5	14	505-4232	X	1086
3	2	2	7	IN	0663	MME5-04	SLUDGE GRINDER 2	MCC	GRINDER JAMED	3170S46	5	5	15	505-4232	X	1087
3	2	2	12	IN	0668	CV5-01	WAS VALVE 1	ZS-538A	STATUS OPEN	3170S46	5	5	16	505-4232	X	1088
3	2	2	13	IN	0669	CV5-01	WAS VALVE 1	ZS-538B	STATUS CLOSED	3170S46	5	5	17	505-4232	X	1089
3	2	2	14	IN	0670	CV5-02	WAS VALVE 2	ZS-539A	STATUS OPEN	3170S46	5	5	18	505-4232	X	1090
3	2	2	15	IN	0671	CV5-02	WAS VALVE 2	ZS-539B	STATUS CLOSED	3170S46	5	5	19	505-4232	X	1091
3	2	2	16	IN	0672	CV5-03	WAS VALVE 3	ZS-540A	STATUS OPEN	3170S46	5	5	20	505-4232	X	1092
3	2	3	1	IN	0673	CV5-03	WAS VALVE 3	ZS-540B	CLOSED	3170S46A	5	5	21	505-4232	X	1093
3	2	3	2	IN	0674	MME5-03	GRINDER 1	MCC	REVERSE	3170S46A	5	5	22	505-4232	X	1094
3	2	3	3	IN	0675	MME5-04	GRINDER 2	MCC	REVERSE	3170S46A	5	5	23	505-4232	X	1095
									SPARE		5	5	24	505-4232	X	1096
									SPARE		5	5	25	505-4232	X	1097
									SPARE		5	5	26	505-4232	X	1098
									SPARE		5	5	27	505-4232	X	1099
									SPARE		5	5	28	505-4232	X	1100
									SPARE		5	5	29	505-4232	X	1101
									SPARE		5	5	30	505-4232	X	1102
									SPARE		5	5	31	505-4232	X	1103
									SPARE		5	5	32	505-4232	X	1104
3	2	5	1	CR	0513	P3-01	WET WELL 1	HS-301	RUN	3170S47	5	6	1	505-4832	Y	1105
3	2	5	2	CR	0514	P3-02	WET WELL 2	HS-302	RUN	3170S47	5	6	2	505-4832	Y	1106
3	2	5	3	CR	0515	OP3-01	SLUDGE VALVE 1	HS-303B	OPEN	3170S47	5	6	3	505-4832	Y	1107
3	2	5	4	CR	0516	OP3-01	SLUDGE VALVE 1	HS-303B	CLOSED	3170S47	5	6	4	505-4832	Y	1108
3	2	5	5	CR	0517	OP3-02	SLUDGE VALVE 2	HS-304B	OPEN	3170S47	5	6	5	505-4832	Y	1109
3	2	5	6	CR	0518	OP3-02	SLUDGE VALVE 2	HS-304B	CLOSED	3170S47	5	6	6	505-4832	Y	1110
3	2	5	7	CR	0519	OP3-03	SLUDGE VALVE 3	HS-305B	OPEN	3170S47	5	6	7	505-4832	Y	1111
3	2	5	8	CR	0520	OP3-03	SLUDGE VALVE 3	HS-305B	CLOSED	3170S47	5	6	8	505-4832	Y	1112
3	2	5	9	CR	0521	RA4-01	ROTOR 1	HS-405A	RUN LOW	3170S47	5	6	9	505-4832	Y	1113
3	2	5	10	CR	0522	RA4-01	ROTOR 1	HS-405A	RUN HIGH	3170S47	5	6	10	505-4832	Y	1114
3	2	5	11	CR	0523	RA4-02	ROTOR 2	HS-406A	RUN LOW	3170S47	5	6	11	505-4832	Y	1115
3	2	5	12	CR	0524	RA4-02	ROTOR 2	HS-406A	RUN HIGH	3170S47	5	6	12	505-4832	Y	1116

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SIM	R	S	P	T	Addr	EQNUM	EQNAME	DEVICE	FUNCTION	DRAWING	I R	I S	I T	TI Mod	TI	TI Addr
3	2	5	13	CR	0525	RA4-03	ROTOR 3	HS-407A	RUN LOW	3170S47	5	6	13	505-4832	Y	1117
3	2	5	14	CR	0526	RA4-03	ROTOR 3	HS-407A	RUN HIGH	3170S47	5	6	14	505-4832	Y	1118
3	2	5	15	CR	0527	RA4-04	ROTOR 4	HS-408A	RUN LOW	3170S47	5	6	15	505-4832	Y	1119
3	2	5	16	CR	0528	RA4-04	ROTOR 4	HS-408A	RUN HIGH	3170S47	5	6	16	505-4832	Y	1120
3	2	6	1	CR	0529	RA4-05	ROTOR 5	HS-409A	RUN LOW	3170S47	5	6	17	505-4832	Y	1121
3	2	6	2	CR	0530	RA4-05	ROTOR 5	HS-409A	RUN HIGH	3170S47	5	6	18	505-4832	Y	1122
3	2	6	3	CR	0531	RA4-06	ROTOR 6	HS-410A	RUN LOW	3170S47	5	6	19	505-4832	Y	1123
3	2	6	4	CR	0532	RA4-06	ROTOR 6	HS-410A	RUN HIGH	3170S47	5	6	20	505-4832	Y	1124
3	2	6	5	CR	0533	RA4-07	ROTOR 7	HS-411A	RUN LOW	3170S47	5	6	21	505-4832	Y	1125
3	2	6	6	CR	0534	RA4-07	ROTOR 7	HS-411A	RUN HIGH	3170S47	5	6	22	505-4832	Y	1126
3	2	6	7	CR	0535	RA4-08	ROTOR 8	HS-412A	RUN LOW	3170S47	5	6	23	505-4832	Y	1127
3	2	6	8	CR	0536	RA4-08	ROTOR 8	HS-412A	RUN HIGH	3170S47	5	6	24	505-4832	Y	1128
3	2	6	9	CR	0537	CL5-01	CLARIFIER 1	HS-501	RUN	3170S47	5	6	25	505-4832	Y	1129
3	2	6	10	CR	0538	CL5-02	CLARIFIER 2	HS-502	RUN	3170S47	5	6	26	505-4832	Y	1130
3	2	6	11	CR	0539	CL5-03	CLARIFIER 3	HS-503	RUN	3170S47	5	6	27	505-4832	Y	1131
3	2	6	12	CR	0540	P5-01	SCUM PUMP 1	HS-509B	RUN	3170S47	5	6	28	505-4832	Y	1132
3	2	6	13	CR	0541	P5-02	SCUM PUMP 2	HS-510B	RUN	3170S47	5	6	29	505-4832	Y	1133
3	2	6	14	CR	0542	P5-07	RAS PUMP 1	HS-521B	RUN	3170S47	5	6	30	505-4832	Y	1134
3	2	6	15	CR	0543	P5-08	RAS PUMP 2	HS-522B	RUN	3170S47	5	6	31	505-4832	Y	1135
3	2	6	16	CR	0544	P5-09	RAS PUMP 3	HS-523B	RUN	3170S47	5	6	32	505-4832	Y	1136
3	2	7	1	CR	0545	P5-10	RAS PUMP 4	HS-524B	RUN	3170S48	5	7	1	505-4832	Y	1137
3	2	7	2	CR	0546	P5-11	WAS PUMP 1	HS-529A	RUN	3170S48	5	7	2	505-4832	Y	1138
3	2	7	3	CR	0547	P5-12	WAS PUMP 2	HS-530A	RUN	3170S48	5	7	3	505-4832	Y	1139
3	2	7	4	CR	0548	P5-13	WAS PUMP 3	HS-531A	RUN	3170S48	5	7	4	505-4832	Y	1140
3	2	7	5	CR	0549	P5-11	WAS PUMP 1	SIK-535	AUTO/MANUAL	3170S48	5	7	5	505-4832	Y	1141
3	2	7	6	CR	0550	P5-11	WAS PUMP 1	SIK-535	LOCK OUT	3170S48	5	7	6	505-4832	Y	1142
3	2	7	7	CR	0551	P5-12	WAS PUMP 2	SIK-536	AUTO/MANUAL	3170S48	5	7	7	505-4832	Y	1143
3	2	7	8	CR	0552	P5-12	WAS PUMP 2	SIK-536	LOCK OUT	3170S48	5	7	8	505-4832	Y	1144
3	2	7	9	CR	0553	P5-13	WAS PUMP 3	SIK-537	AUTO/MANUAL	3170S48	5	7	9	505-4832	Y	1145
3	2	7	10	CR	0554	P5-13	WAS PUMP 3	SIK-537	LOCK OUT	3170S48	5	7	10	505-4832	Y	1146
3	2	7	11	CR	0555	CV5-01	WAS VALVE 1	HS-536	OPEN	3170S48	5	7	11	505-4832	Y	1147

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SIM	R	S	P	T	Addr	EQNUM	EQNAME	DEVICE	FUNCTION	DRAWING	I R	I S	I T	TI Mod	TI	TI Addr
3	2	7	12	CR	0556	CV5-01	WAS VALVE 1	HS-536	CLOSE	3170S48	5	7	12	505-4832	Y	1148
3	2	7	13	CR	0557	CV5-02	WAS VALVE 2	HS-539	OPEN	3170S48	5	7	13	505-4832	Y	1149
3	2	7	14	CR	0558	CV5-02	WAS VALVE 2	HS-539	CLOSE	3170S48	5	7	14	505-4832	Y	1150
3	2	7	15	CR	0559	CV5-03	WAS VALVE 3	HS-540	OPEN	3170S48	5	7	15	505-4832	Y	1151
3	2	7	16	CR	0560	CV5-03	WAS VALVE 3	HS-540	CLOSE	3170S48	5	7	16	505-4832	Y	1152
3	2	8	1	CR	0561	MME5-03	GRINDER 1	HS-543	RUN	3170S48	5	7	17	505-4832	Y	1153
3	2	8	2	CR	0562	MME5-04	GRINDER 2	HS-544	RUN	3170S48	5	7	18	505-4832	Y	1154
									SPARE		5	7	19	505-4832	Y	1155
									SPARE		5	7	20	505-4832	Y	1156
									SPARE		5	7	21	505-4832	Y	1157
									SPARE		5	7	22	505-4832	Y	1158
									SPARE		5	7	23	505-4832	Y	1159
									SPARE		5	7	24	505-4832	Y	1160
									SPARE		5	7	25	505-4832	Y	1161
									SPARE		5	7	26	505-4832	Y	1162
									SPARE		5	7	27	505-4832	Y	1163
									SPARE		5	7	28	505-4832	Y	1164
									SPARE		5	7	29	505-4832	Y	1165
									SPARE		5	7	30	505-4832	Y	1166
									SPARE		5	7	31	505-4832	Y	1167
									SPARE		5	7	32	505-4832	Y	1168
							PROPELLOR FLOW METER	FQT-601	FLOW	3170A599	6	1	1	505-6108A	WX	113
							PARSHALL FLUME	FIT-601A	FLOW	3170A599	6	1	2	505-6108A	WX	114
							PARSHALL FLUME	FIT-601B	FLOW	3170A599	6	1	3	505-6108A	WX	115
							PLANT EFFLUENT FLUME	FIT-602	FLOW	3170A602	6	1	4	505-6108A	WX	116
									SPARE		6	1	5	505-6108A	WX	117
									SPARE		6	1	6	505-6108A	WX	118
									SPARE		6	1	7	505-6108A	WX	119
									SPARE		6	1	8	505-6108A	WX	120
							CHLORINATOR 1		PACING SIGNAL	3170A599	6	2	1	505-6208	WY	121
							CHLORINATOR 2		PACING SIGNAL	3170A599	6	2	2	505-6208	WY	122

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SIM	R	S	P	T	Addr	EQNUM	EQNAME	DEVICE	FUNCTION	DRAWING	I R	I S	I T	TI Mod	TI	TI Addr
									SPARE		6	2	3	505-6208	WY	123
									SPARE		6	2	4	505-6208	WY	124
									SPARE		6	2	5	505-6208	WY	125
									SPARE		6	2	6	505-6208	WY	126
									SPARE		6	2	7	505-6208	WY	127
									SPARE		6	2	8	505-6208	WY	128
4	1	1	1	IN	0769		RECL. WET WELL	LSL-603	LOW LEVEL	3170S62	6	3	1	505-4232	X	1201
4	1	1	2	IN	0770	P6-01	RECLAIM PUMP 1	HS-605	AUTO	3170S62	6	3	2	505-4232	X	1202
4	1	1	3	IN	0771	P6-01	RECLAIM PUMP 1	QS-605	RUN	3170S62	6	3	3	505-4232	X	1203
4	1	1	4	IN	0772	P6-01	RECLAIM PUMP 1	ZS-609	FLOW	3170S62	6	3	4	505-4232	X	1204
4	1	1	5	IN	0773	P6-02	RECLAIM PUMP 2	HS-606	AUTO	3170S62	6	3	5	505-4232	X	1205
4	1	1	6	IN	0774	P6-02	RECLAIM PUMP 2	QS-606	RUN	3170S62	6	3	6	505-4232	X	1206
4	1	1	7	IN	0775	P6-02	RECLAIM PUMP 2	ZS-610	FLOW	3170S62	6	3	7	505-4232	X	1207
4	1	1	8	IN	0776	P6-03	RECLAIM PUMP 3	HS-607	AUTO	3170S62	6	3	8	505-4232	X	1208
4	1	1	9	IN	0777	P6-03	RECLAIM PUMP 3	QS-607	RUN	3170S62	6	3	9	505-4232	X	1209
4	1	1	10	IN	0778	P6-03	RECLAIM PUMP 3	ZS-611	FLOW	3170S62	6	3	10	505-4232	X	1210
4	1	1	11	IN	0779	P6-04	RECLAIM PUMP 4	HS-608	AUTO	3170S62	6	3	11	505-4232	X	1211
4	1	1	12	IN	0780	P6-04	RECLAIM PUMP 4	QS-608	RUN	3170S62	6	3	12	505-4232	X	1212
4	1	1	13	IN	0781	P6-04	RECLAIM PUMP 4	ZS-612	FLOW	3170S62	6	3	13	505-4232	X	1213
4	1	1	14	IN	0782		RECL WATER	PSL-604	LOW PRES	3170S62	6	3	14	505-4232	X	1214
4	1	1	15	IN	0783		RECL WATER	PSH-604	HIGH PRES	3170S62	6	3	15	505-4232	X	1215
4	1	2	1	IN	0785		CHLORINATOR 1	PSL-613	LOW VAC	3170S62	6	3	16	505-4232	X	1216
4	1	2	2	IN	0786		CHLORINATOR 1	PSH-613	HIGH VAC	3170S62	6	3	17	505-4232	X	1217
4	1	2	3	IN	0787		CHLORINATOR 2	PSL-614	LOW VAC	3170S62	6	3	18	505-4232	X	1218
4	1	2	4	IN	0788		CHLORINATOR 2	PSH-614	HIGH VAC	3170S62	6	3	19	505-4232	X	1219
4	1	2	5	IN	0789		CHLORINE LEAK	QS-615A	LEAK	3170S62	6	3	20	505-4232	X	1220
4	1	2	6	IN	0790		CHLORINE LEAK	QS-615B	LEAK	3170S62	6	3	21	505-4232	X	1221
									SPARE		6	3	22	505-4232	X	1222
									SPARE		6	3	23	505-4232	X	1223
									SPARE		6	3	24	505-4232	X	1224
									SPARE		6	3	25	505-4232	X	1225

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SIM	R	S	P	T	Addr	EQNUM	EQNAME	DEVICE	FUNCTION	DRAWING	I R	I S	I T	TI Mod	TI	TI Addr
									SPARE		6	3	26	505-4232	X	1226
									SPARE		6	3	27	505-4232	X	1227
									SPARE		6	3	28	505-4232	X	1228
									SPARE		6	3	29	505-4232	X	1229
									SPARE		6	3	30	505-4232	X	1230
									SPARE		6	3	31	505-4232	X	1231
									SPARE		6	3	32	505-4232	X	1232
4	1	3	1	CR	0801	P6-01	RECLAIM PUMP	HS-605	RUN	3170S63	6	4	1	505-4832	Y	1233
4	1	3	2	CR	0802	P6-01	RECLAIM PUMP	YL-605	RUNNING ILL	3170S63	6	4	2	505-4832	Y	1234
4	1	3	3	CR	0803	P6-02	RECLAIM PUMP	HS-606	RUN	3170S63	6	4	3	505-4832	Y	1235
4	1	3	4	CR	0804	P6-02	RECLAIM PUMP	YL-606	RUNNING ILL	3170S63	6	4	4	505-4832	Y	1236
4	1	3	5	CR	0805	P6-03	RECLAIM PUMP	HS-607	RUN	3170S63	6	4	5	505-4832	Y	1237
4	1	3	6	CR	0806	P6-03	RECLAIM PUMP	YL-607	RUNNING ILL	3170S63	6	4	6	505-4832	Y	1238
4	1	3	7	CR	0807	P6-04	RECLAIM PUMP	HS-608	RUN	3170S63	6	4	7	505-4832	Y	1239
4	1	3	8	CR	0808	P6-04	RECLAIM PUMP	YL-608	RUNNING ILL	3170S63	6	4	8	505-4832	Y	1240
4	1	3	9	CR	0809	CV6-01		SV	OPEN	3170S63	6	4	9	505-4832	Y	1241
									SPARE		6	4	10	505-4832	Y	1242
									SPARE		6	4	11	505-4832	Y	1243
									SPARE		6	4	12	505-4832	Y	1244
									SPARE		6	4	13	505-4832	Y	1245
									SPARE		6	4	14	505-4832	Y	1246
									SPARE		6	4	15	505-4832	Y	1247
									SPARE		6	4	16	505-4832	Y	1248
									SPARE		6	4	17	505-4832	Y	1249
									SPARE		6	4	18	505-4832	Y	1250
									SPARE		6	4	19	505-4832	Y	1251
									SPARE		6	4	20	505-4832	Y	1252
									SPARE		6	4	21	505-4832	Y	1253
									SPARE		6	4	22	505-4832	Y	1254
									SPARE		6	4	23	505-4832	Y	1255
									SPARE		6	4	24	505-4832	Y	1256

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SIM	R	S	P	T	Addr	EQNUM	EQNAME	DEVICE	FUNCTION	DRAWING	I R	I S	I T	TI Mod	TI	TI Addr
									SPARE		6	4	25	505-4832	Y	1257
									SPARE		6	4	26	505-4832	Y	1258
									SPARE		6	4	27	505-4832	Y	1259
									SPARE		6	4	28	505-4832	Y	1260
									SPARE		6	4	29	505-4832	Y	1261
									SPARE		6	4	30	505-4832	Y	1262
									SPARE		6	4	31	505-4832	Y	1263
									SPARE		6	4	32	505-4832	Y	1264
4	1	4	1	CR	0817		RECL. WET WELL	LAL-603	LOW LEVEL	3170S63	6	5	1	505-4532	Y	1265
4	1	4	2	CR	0818		RECL. WATER LOW P	PAL-604	LOW PRESSURE	3170S63	6	5	2	505-4532	Y	1266
4	1	4	3	CR	0819		RECL. PUMP 1 FAIL	QA-609A	FAIL	3170S63	6	5	3	505-4532	Y	1267
4	1	4	4	CR	0820		RECL. PUMP 2 FAIL	QA-610A	FAIL	3170S63	6	5	4	505-4532	Y	1268
4	1	4	5	CR	0821		RECL. PUMP 3 FAIL	QA-611A	FAIL	3170S63	6	5	5	505-4532	Y	1269
4	1	4	6	CR	0822		RECL. PUMP 4 FAIL	QA-612A	FAIL	3170S63	6	5	6	505-4532	Y	1270
4	1	4	7	CR	0823		CHLORINATOR 1	PAL-613A	LOW VACUUM	3170S63	6	5	7	505-4532	Y	1271
4	1	4	8	CR	0824		CHLORINATOR 1	PAH-613A	HI VACUUM	3170S63	6	5	8	505-4532	Y	1272
4	1	4	9	CR	0825		CHLORINATOR 2	PAL-614A	LOW VACUUM	3170S63	6	5	9	505-4532	Y	1273
4	1	4	10	CR	0826		CHLORINATOR 2	PAH-614A	HI VACUUM	3170S63	6	5	10	505-4532	Y	1274
4	1	4	11	CR	0827		CHLORINE LEAK	QA-615	LEAK	3170S63	6	5	11	505-4532	Y	1275
									SPARE		6	5	12	505-4532	Y	1276
									SPARE		6	5	13	505-4532	Y	1277
									SPARE		6	5	14	505-4532	Y	1278
									SPARE		6	5	15	505-4532	Y	1279
									SPARE		6	5	16	505-4532	Y	1280
									SPARE		6	5	17	505-4532	Y	1281
									SPARE		6	5	18	505-4532	Y	1282
									SPARE		6	5	19	505-4532	Y	1283
									SPARE		6	5	20	505-4532	Y	1284
									SPARE		6	5	21	505-4532	Y	1285
									SPARE		6	5	22	505-4532	Y	1286
									SPARE		6	5	23	505-4532	Y	1287

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SIM	R	S	P	T	Addr	EQNUM	EQNAME	DEVICE	FUNCTION	DRAWING	I R	I S	I T	TI Mod	TI	TI Addr
									SPARE		6	5	24	505-4532	Y	1288
									SPARE		6	5	25	505-4532	Y	1289
									SPARE		6	5	26	505-4532	Y	1290
									SPARE		6	5	27	505-4532	Y	1291
									SPARE		6	5	28	505-4532	Y	1292
									SPARE		6	5	29	505-4532	Y	1293
									SPARE		6	5	30	505-4532	Y	1294
									SPARE		6	5	31	505-4532	Y	1295
									SPARE		6	5	32	505-4532	Y	1296
						P5-14	SLUDGE TRANSFER PUMP 3		SPEED CMD	3170A556	7	1	1	505-6108A	WX	161
						P5-15	SLUDGE TRANSFER PUMP 1		SPEED CMD	3170A557	7	1	2	505-6108A	WX	162
						P5-16	SLUDGE TRANSFER PUMP 2		SPEED CMD	3170A558	7	1	3	505-6108A	WX	163
						MME7-12	BELT FILTER PRESS 1	FIT-752	INFLUENT FLOW	3170A752	7	1	4	505-6108A	WX	164
									SPARE		7	1	5	505-6108A	WX	165
									SPARE		7	1	6	505-6108A	WX	166
									SPARE		7	1	7	505-6108A	WX	167
									SPARE		7	1	8	505-6108A	WX	168
						MME7-13	BELT FILTER PRESS 2		INFLUENT FLOW	3170A753	7	2	1	505-6108A	WX	169
						P5-14	SLUDGE TRANSFER PUMP 3		SPEED CMD	3170A556	7	2	2	505-6208	WY	170
						P5-15	SLUDGE TRANSFER PUMP 1		SPEED CMD	3170A557	7	2	3	505-6208	WY	171
						P5-16	SLUDGE TRANSFER PUMP 2		SPEED CMD	3170A558	7	2	4	505-6208	WY	172
						P7-05	THICKENED SLUDGE PUMP 1		SPEED CMD	3170A742	7	2	5	505-6208	WY	173
						P7-05	THICKENED SLUDGE PUMP 2		SPEED CMD	3170A742	7	2	6	505-6208	WY	174
						P7-13	BELT PRESS 1 PUMP		SPEED CMD	3170A752	7	2	7	505-6208	WY	175
						P7-14	BELT PRESS 2 PUMP		SPEED CMD	3170A753	7	2	8	505-6208	WY	176
						P7-15	STDBY POLYMER FEED PUMP		SPEED CMD	3170A799	7	3	1	505-6208	WY	177
									SPARE		7	3	2	505-6208	WY	178
									SPARE		7	3	3	505-6208	WY	179
									SPARE		7	3	4	505-6208	WY	180
									SPARE		7	3	5	505-6208	WY	181
									SPARE		7	3	6	505-6208	WY	182

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SIM	R	S	P	T	Addr	EQNUM	EQNAME	DEVICE	FUNCTION	DRAWING	I R	I S	I T	TI Mod	TI	TI Addr
									SPARE		7	3	7	505-6208	WY	183
									SPARE		7	3	8	505-6208	WY	184
5	2	8	3	CR	1075	P7-05	THICKENED SLUDGE PUMP 1	QA-726	FAIL	3170S88	7	5	1	505-4532	Y	1361
5	2	8	4	CR	1076	P7-06	THICKENED SLUDGE PUMP 2	QA-727	FAIL	3170S88	7	5	2	505-4532	Y	1362
5	2	8	5	CR	1077	CON7-01	CONVEYOR 1	SA-763	FAIL	3170S88	7	5	3	505-4532	Y	1363
5	2	8	6	CR	1078	CON7-02	CONVEYOR 2	SA-765	FAIL	3170S88	7	5	4	505-4532	Y	1364
5	2	8	9	CR	1081	P7-01	WASH WATER PUMP 1	QA-768	FAIL	3170S88	7	5	5	505-4532	Y	1365
5	2	8	10	CR	1082	P7-02	WASH WATER PUMP 2	QA-770	FAIL	3170S88	7	5	6	505-4532	Y	1366
5	2	8	11	CR	1083	P7-11	POLY PUMP 1	QA-795	FAIL	3170S88	7	5	7	505-4532	Y	1367
5	2	8	12	CR	1084	P7-12	POLY PUMP 2	QA-796	FAIL	3170S88	7	5	8	505-4532	Y	1368
5	2	8	13	CR	1085	P7-13	POLY XFER PUMP 1	QA-797	FAIL	3170S88	7	5	9	505-4532	Y	1369
5	2	8	14	CR	1086	P7-14	POLY XFER PUMP 2	QA-798	FAIL	3170S88	7	5	10	505-4532	Y	1370
5	2	2	3	CR	1171		SET 1		LOW LVL	3170S88	7	5	11	505-4532	Y	1371
5	2	2	4	CR	1172		SET 1		HIGH LVL	3170S88	7	5	12	505-4532	Y	1372
5	2	2	5	CR	1173		SET 2		LOW LVL	3170S88	7	5	13	505-4532	Y	1373
5	2	2	6	CR	1174		SET 2		HIGH LVL	3170S88	7	5	14	505-4532	Y	1374
5	2	2	7	CR	1175	CON8-01	CONVEYOR		FAIL	3170S88	7	5	15	505-4532	Y	1375
5	2	2	8	CR	1176		COMPOST SYSTEM		ALARM	3170S88	7	5	16	505-4532	Y	1376
						P5-11	WAS PUMP 1	QL-529B	LOCAL	3170S90	7	5	17	505-4532	Y	1377
						P5-11	WAS PUMP 1	QL-529B	REMOTE	3170S90	7	5	18	505-4532	Y	1378
						P5-12	WAS PUMP 2	QL-530B	LOCAL	3170S90	7	5	19	505-4532	Y	1379
						P5-12	WAS PUMP 2	QL-530B	REMOTE	3170S90	7	5	20	505-4532	Y	1380
						P5-13	WAS PUMP 3	QL-531B	LOCAL	3170S90	7	5	21	505-4532	Y	1381
						P5-13	WAS PUMP 3	QL-531B	REMOTE	3170S90	7	5	22	505-4532	Y	1382
						P5-14	SLUDGE TRANSFER PUMP 3	QL-549B	LOCAL	3170S90	7	5	23	505-4532	Y	1383
						P5-14	SLUDGE TRANSFER PUMP 3	QL-549B	REMOTE	3170S90	7	5	24	505-4532	Y	1384
						P5-15	SLUDGE TRANSFER PUMP 1	QL-551B	LOCAL	3170S90	7	5	25	505-4532	Y	1385
						P5-15	SLUDGE TRANSFER PUMP 1	QL-551B	REMOTE	3170S90	7	5	26	505-4532	Y	1386
						P5-16	SLUDGE TRANSFER PUMP 2	QL-553B	LOCAL	3170S90	7	5	27	505-4532	Y	1387
						P5-16	SLUDGE TRANSFER PUMP 2	QL-553B	REMOTE	3170S90	7	5	28	505-4532	Y	1388
						P7-12	POLYMER PUMP 2	QL-796	RUN	3170S90	7	5	29	505-4532	Y	1389

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SIM	R	S	P	T	Addr	EQNUM	EQNAME	DEVICE	FUNCTION	DRAWING	I R	I S	I T	TI Mod	TI	TI Addr
						P7-15	POLYMER PUMP 5	QL-799	RUN	3170S91	7	5	30	505-4532	Y	1390
								QL-746	WASH ON	3170S91	7	5	31	505-4532	Y	1391
									SPARE		7	5	32	505-4532	Y	1392
5	1	3	1	IN	1057	P7-05	THICKENED SLUDGE PUMP 1	HS-740B	AUTO	3170S83	8	1	1	505-4232	X	1457
5	1	3	2	IN	1058	P7-05	THICKENED SLUDGE PUMP 1	HS-740C	LOCAL	3170S83	8	1	2	505-4232	X	1458
5	1	3	3	IN	1059	P7-05	THICKENED SLUDGE PUMP 1	HS-740D	TO TANK 1	3170S83	8	1	3	505-4232	X	1459
5	1	3	4	IN	1060	P7-05	THICKENED SLUDGE PUMP 1	HS-740E	TO TANK 1	3170S83	8	1	4	505-4232	X	1460
5	1	3	5	IN	1061	P7-05	THICKENED SLUDGE PUMP 1	HS-740E	TO TANK 2	3170S83	8	1	5	505-4232	X	1461
5	1	3	6	IN	1062	P7-05	THICKENED SLUDGE PUMP 1	HS-742	TO DAFT 1	3170S83	8	1	6	505-4232	X	1462
5	1	3	7	IN	1063	P7-05	THICKENED SLUDGE PUMP 1	QS-740	RUNNING	3170S83	8	1	7	505-4232	X	1463
5	1	3	8	IN	1064	P7-05	THICKENED SLUDGE PUMP 1	ZS-746	CVLS FLOW	3170S83	8	1	8	505-4232	X	1464
5	1	3	9	IN	1065	SK-742		CR28	AUTO/MAN REQUEST	3170S83	8	1	9	505-4232	X	1465
5	1	3	10	IN	1066	SK-742		CR28	AUTO/MAN STATUS	3170S83	8	1	10	505-4232	X	1466
5	1	3	11	IN	1067	P7-06	THICKENED SLUDGE PUMP 2	HS-741B	AUTO	3170S83	8	1	11	505-4232	X	1467
5	1	3	12	IN	1068	P7-06	THICKENED SLUDGE PUMP 2	HS-741C	LOCAL	3170S83	8	1	12	505-4232	X	1468
5	1	3	13	IN	1069	P7-06	THICKENED SLUDGE PUMP 2	HS-741D	1	3170S83	8	1	13	505-4232	X	1469
5	1	3	14	IN	1070	P7-06	THICKENED SLUDGE PUMP 2	HS-741E	TO TANK 1	3170S83	8	1	14	505-4232	X	1470
5	1	3	15	IN	1071	P7-06	THICKENED SLUDGE PUMP 2	HS-741E	TO TANK 2	3170S83	8	1	15	505-4232	X	1471
5	1	3	16	IN	1072	P7-06	THICKENED SLUDGE PUMP 2	HS-743	TO DAFT 1	3170S83	8	1	16	505-4232	X	1472
5	1	4	1	IN	1073	P7-06	THICKENED SLUDGE PUMP 2	QS-741	RUNNING	3170S83	8	1	17	505-4232	X	1473
5	1	4	2	IN	1074	P7-06	THICKENED SLUDGE PUMP 2	ZS-747	CVLS FLOW	3170S83	8	1	18	505-4232	X	1474
5	1	4	3	IN	1075	SK-743		CR29	AUTO/MAN REQUEST	3170S83	8	1	19	505-4232	X	1475
5	1	4	4	IN	1076	SK-743		CR29	AUTO/MAN STATUS	3170S83	8	1	20	505-4232	X	1476
5	1	4	5	IN	1077			WWR-1		3170S83	8	1	21	505-4232	X	1477
5	1	4	6	IN	1078			BDR-1		3170S83	8	1	22	505-4232	X	1478
5	1	4	7	IN	1079			WWR-2		3170S83	8	1	23	505-4232	X	1479
5	1	4	8	IN	1080			BDR-2		3170S83	8	1	24	505-4232	X	1480
5	1	4	9	IN	1081	BFP-1	BFP 1 VALVE	HS-756	AUTO	3170S83	8	1	25	505-4232	X	1481
5	1	4	10	IN	1082	BFP-1	BFP 1 VALVE	ZS-756A	OPEN	3170S83	8	1	26	505-4232	X	1482
5	1	4	11	IN	1083	BFP-1	BFP 1 VALVE	ZS-756B	CLOSED	3170S83	8	1	27	505-4232	X	1483
5	1	4	12	IN	1084	BFP-2	BFP 2 VALVE	HS-757	AUTO	3170S83	8	1	28	505-4232	X	1484

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SIM	R	S	P	T	Addr	EQNUM	EQNAME	DEVICE	FUNCTION	DRAWING	I R	I S	I T	TI Mod	TI	TI Addr
5	1	4	13	IN	1085	BFP-2	BFP 2 VALVE	ZS-757A	OPEN	3170S83	8	1	29	505-4232	X	1485
5	1	4	14	IN	1086	BFP-2	BFP 2 VALVE	ZS-757B	CLOSED	3170S83	8	1	30	505-4232	X	1486
5	1	4	15	IN	1087	BFP-1	BELT FILTER PRESS 1	HS-758	AUTO	3170S83	8	1	31	505-4232	X	1487
5	1	4	16	IN	1088	BFP-1	BELT FILTER PRESS 1	QS-758	RUNNING	3170S83	8	1	32	505-4232	X	1488
5	1	5	1	IN	1089	BFP-2	BELT FILTER PRESS 2	HS-759	AUTO	3170S84	8	2	1	505-4232	X	1489
5	1	5	2	IN	1090	BFP-2	BELT FILTER PRESS 2	QS-759	RUNNING	3170S84	8	2	2	505-4232	X	1490
5	1	5	3	IN	1091		COMPOST CONVEYOR	QS-760	RUNNING	3170S84	8	2	3	505-4232	X	1491
5	1	5	4	IN	1092	CON7-01	CONVEYOR 1	HS-762B	AUTO	3170S84	8	2	4	505-4232	X	1492
5	1	5	5	IN	1093	CON7-01	CONVEYOR 1	HS-762C	FORWARD	3170S84	8	2	5	505-4232	X	1493
5	1	5	6	IN	1094	CON7-01	CONVEYOR 1	QS-762A	FORWARD RUN	3170S84	8	2	6	505-4232	X	1494
5	1	5	7	IN	1095	CON7-01	CONVEYOR 1	QS-762B	REVERSE RUN	3170S84	8	2	7	505-4232	X	1495
5	1	5	8	IN	1096	CON7-01	CONVEYOR 1	SS-763	SPEED SWITCH	3170S84	8	2	8	505-4232	X	1496
5	1	5	9	IN	1097	CON7-02	CONVEYOR 2	HS-764B	AUTO	3170S84	8	2	9	505-4232	X	1497
5	1	5	10	IN	1098	CON7-02	CONVEYOR 2	QS-764	RUN	3170S84	8	2	10	505-4232	X	1498
5	1	5	11	IN	1099	CON7-02	CONVEYOR 2	SS-765	SPEED	3170S84	8	2	11	505-4232	X	1499
5	1	5	12	IN	1100	P7-01	WASH WATER PUMP 1	HS-767B	AUTO	3170S84	8	2	12	505-4232	X	1500
5	1	5	13	IN	1101	P7-01	WASH WATER PUMP 1	QS-767	RUNNING	3170S84	8	2	13	505-4232	X	1501
5	1	5	14	IN	1102	P7-01	WASH WATER PUMP 1	ZS-768	CVLS FLOW	3170S84	8	2	14	505-4232	X	1502
5	1	5	15	IN	1103	P7-02	WASH WATER PUMP 2	HS-769B	AUTO	3170S84	8	2	15	505-4232	X	1503
5	1	5	16	IN	1104	P7-02	WASH WATER PUMP 2	QS-769	RUNNING	3170S84	8	2	16	505-4232	X	1504
5	1	6	1	IN	1105	P7-02	WASH WATER PUMP 2	ZS-770	CVLS FLOW	3170S84	8	2	17	505-4232	X	1505
5	1	6	2	IN	1106		WASH WATER PUMPS	HS-766	1	3170S84	8	2	18	505-4232	X	1506
5	1	6	3	IN	1107		WASH WATER PUMPS	PSD-766	DIFFERENTIAL	3170S84	8	2	19	505-4232	X	1507
5	1	6	4	IN	1108		WASH WATER PUMPS	PSL-766	LOW PRESSURE	3170S84	8	2	20	505-4232	X	1508
5	1	6	5	IN	1109		WASH WATER PUMPS	PSH-766	HIGH PRESSURE	3170S84	8	2	21	505-4232	X	1509
5	1	6	6	IN	1110	CP7-01	COMPRESSOR 1	HS-772B	AUTO	3170S84	8	2	22	505-4232	X	1510
5	1	6	7	IN	1111	CP7-01	COMPRESSOR 1	QS-772	RUNNING	3170S84	8	2	23	505-4232	X	1511
5	1	6	8	IN	1112	CP7-02	COMPRESSOR 2	HS-773B	AUTO	3170S84	8	2	24	505-4232	X	1512
5	1	6	9	IN	1113	CP7-01	COMPRESSOR 1	HS-771	AIR COMPRESSOR 1 LEA	3170S84	8	2	25	505-4232	X	1513
5	1	6	12	IN	1116		SERVICE AIR	PSD-771A	STATUS	3170S84	8	2	26	505-4232	X	1514
5	1	6	13	IN	1117		SERVICE AIR	PSD-771B	STATUS	3170S84	8	2	27	505-4232	X	1515

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SIM	R	S	P	T	Addr	EQNUM	EQNAME	DEVICE	FUNCTION	DRAWING	I R	I S	I T	TI Mod	TI	TI Addr
5	1	6	14	IN	1118		SERVICE AIR	PSL-771	LOW PRESSURE	3170S84	8	2	28	505-4232	X	1516
5	1	6	15	IN	1119		POLY STOR TANK 1	LSL-780	LOW LVL	3170S84	8	2	29	505-4232	X	1517
5	1	6	16	IN	1120		POLY STOR TANK 2	LSL-781	LOW LVL	3170S84	8	2	30	505-4232	X	1518
5	1	7	1	IN	1121		POLY MIX TANK 1	LSH-782	HIGH LVL	3170S85	8	2	31	505-4232	X	1519
5	1	7	2	IN	1122		POLY MIX TANK 1	LSH-783	HIGH LVL	3170S85	8	2	32	505-4232	X	1520
5	1	7	3	IN	1123	P7-11	POLY PUMP 1	QS-784	RUNNING	3170S85	8	3	1	505-4232	X	1521
5	1	7	4	IN	1124	P7-12	POLY PUMP 2	QS-785	RUNNING	3170S85	8	3	2	505-4232	X	1522
5	1	7	5	IN	1125	P7-13	POLY XFER PUMP 1	QS-786	RUNNING	3170S85	8	3	3	505-4232	X	1523
5	1	7	6	IN	1126	P7-14	POLY XFER PUMP 2	QS-787	RUNNING	3170S85	8	3	4	505-4232	X	1524
5	1	7	7	IN	1127	P7-11	POLY PUMP 1	QS-788	FAIL	3170S85	8	3	5	505-4232	X	1525
5	1	7	8	IN	1128	P7-12	POLY PUMP 2	QS-789	FAIL	3170S85	8	3	6	505-4232	X	1526
5	1	7	9	IN	1129	P7-13	POLY XFER PUMP 1	QS-790	FAIL	3170S85	8	3	7	505-4232	X	1527
5	1	7	10	IN	1130	P7-14	POLY XFER PUMP 2	QS-791	FAIL	3170S85	8	3	8	505-4232	X	1528
5	1	7	11	IN	1131		POLY METERING TANK 1	LSL-792	LOW LVL	3170S85	8	3	9	505-4232	X	1529
5	1	7	12	IN	1132		POLY METERING TANK 2	LSL-793	LOW LVL	3170S85	8	3	10	505-4232	X	1530
5	1	7	13	IN	1133		POLYMER SYSTEM	HS-794	DAFT 1	3170S85	8	3	11	505-4232	X	1531
5	1	7	14	IN	1134		POLYMER SYSTEM	HS-794	DAFT 2	3170S85	8	3	12	505-4232	X	1532
5	1	7	15	IN	1135		POLYMER SYSTEM	HS-794	BFP-1	3170S85	8	3	13	505-4232	X	1533
5	1	7	16	IN	1136	P7-11	POLY PUMP 1	HS-795	AUTO	3170S85	8	3	14	505-4232	X	1534
5	1	8	1	IN	1137	P7-11	POLY PUMP 1	QS-795	RUNNING	3170S85	8	3	15	505-4232	X	1535
5	1	8	2	IN	1138	P7-12	POLY PUMP 2	HS-796	AUTO	3170S85	8	3	16	505-4232	X	1536
5	1	8	3	IN	1139	P7-12	POLY PUMP 2	QS-796	RUNNING	3170S85	8	3	17	505-4232	X	1537
5	1	8	4	IN	1140	P7-13	POLY XFER PUMP 1	HS-797	AUTO	3170S85	8	3	18	505-4232	X	1538
5	1	8	5	IN	1141	P7-13	POLY XFER PUMP 1	QS-797	RUNNING	3170S85	8	3	19	505-4232	X	1539
5	1	8	6	IN	1142	P7-14	POLY XFER PUMP 2	HS-798	AUTO	3170S85	8	3	20	505-4232	X	1540
5	1	8	7	IN	1143	P7-14	POLY XFER PUMP 2	QS-798	RUNNING	3170S85	8	3	21	505-4232	X	1541
5	1	8	8	IN	1144	P7-15	POLY PUMP 5	HS-799	AUTO	3170S85	8	3	22	505-4232	X	1542
5	1	8	9	IN	1145	P7-15	POLY PUMP 5	QS-799	RUNNING	3170S85	8	3	23	505-4232	X	1543
5	1	8	10	IN	1146	P5-11	WAS PUMP 1	HS-529E	START	3170S85	8	3	24	505-4232	X	1544
5	1	8	11	IN	1147	P5-11	WAS PUMP 1	HS-529E	STOP	3170S85	8	3	25	505-4232	X	1545
5	1	8	12	IN	1148	P5-12	WAS PUMP 2	HS-530F	START	3170S85	8	3	26	505-4232	X	1546

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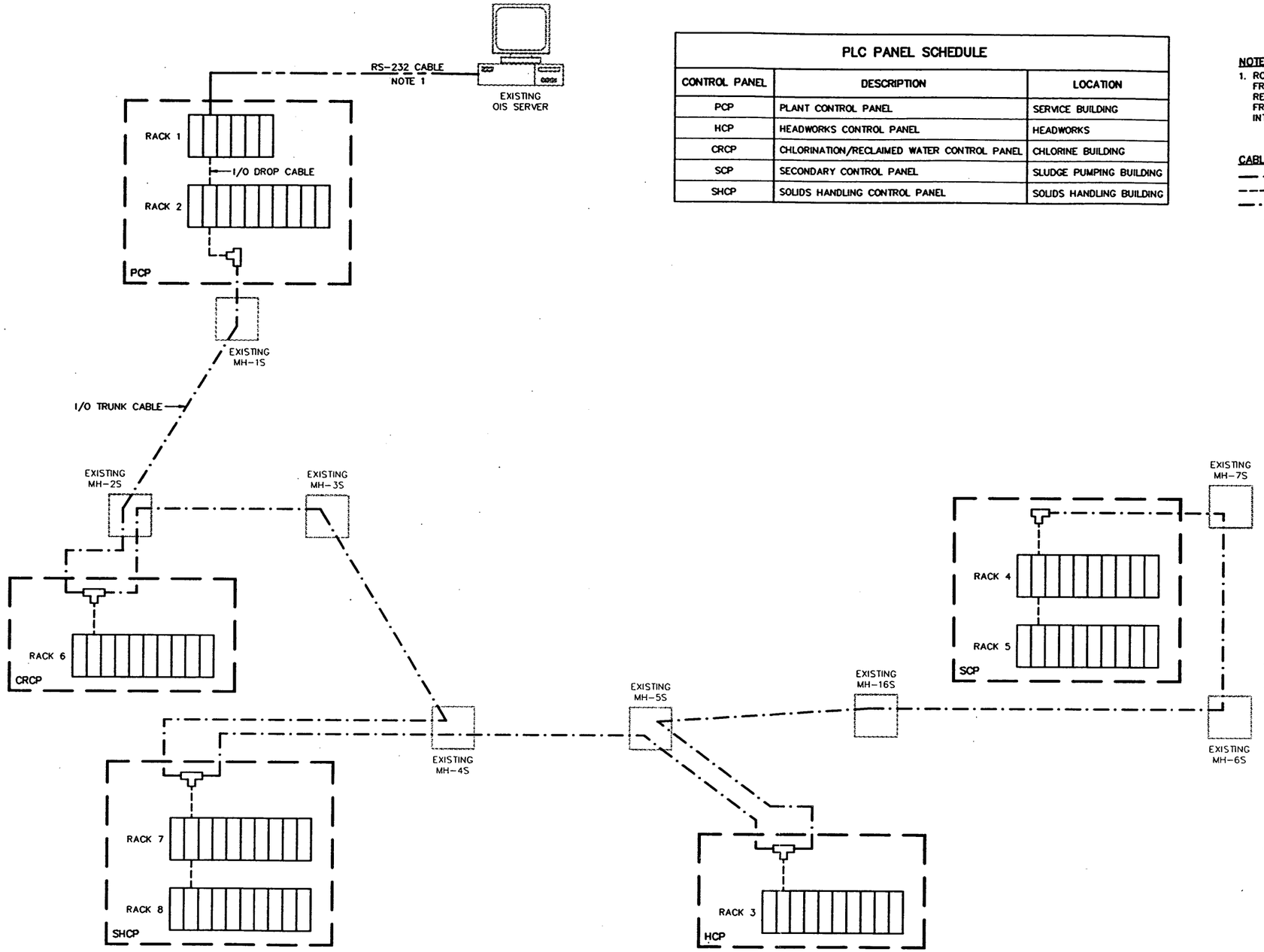
SIM	R	S	P	T	Addr	EQNUM	EQNAME	DEVICE	FUNCTION	DRAWING	I R	I S	I T	TI Mod	TI	TI Addr
5	1	8	13	IN	1149	P5-12	WAS PUMP 2	HS-530F	STOP	3170S85	8	3	27	505-4232	X	1547
5	1	8	14	IN	1150	P5-13	WAS PUMP 3	HS-531F	START	3170S85	8	3	28	505-4232	X	1548
5	1	8	15	IN	1151	P5-13	WAS PUMP 3	HS-531F	STOP	3170S85	8	3	29	505-4232	X	1549
5	1	8	16	IN	1152	P5-14	SLUDGE TRANSFER PUMP 3	HS-549E	START	3170S85	8	3	30	505-4232	X	1550
5	2	1	1	IN	1153	P5-14	SLUDGE TRANSFER PUMP 3	HS-549E	STOP	3170S86	8	3	31	505-4232	X	1551
5	2	1	2	IN	1154	CP7-02	COMPRESSOR 2	QS-773	RUNNING	3170S86	8	3	32	505-4232	X	1552
5	2	1	3	IN	1155	P5-15	SLUDGE TRANSFER PUMP 1	HS-551E	START	3170S86	8	4	1	505-4232	X	1553
5	2	1	4	IN	1156	P5-15	SLUDGE TRANSFER PUMP 1	HS-551E	STOP	3170S86	8	4	2	505-4232	X	1554
5	2	1	5	IN	1157	P5-16	SLUDGE TRANSFER PUMP 2	HS-553E	START	3170S86	8	4	3	505-4232	X	1555
5	2	1	6	IN	1158	P5-16	SLUDGE TRANSFER PUMP 2	HS-553E	STOP	3170S86	8	4	4	505-4232	X	1556
5	2	1	9	IN	1161			HS-553E	GENERAL ALARM	3170S86	8	4	5	505-4232	X	1557
5	2	1	10	IN	1162			HS-553E	BIN HIGH LEVEL	3170S86	8	4	6	505-4232	X	1558
5	2	1	11	IN	1163			HS-553E	BIN LOW LEVEL	3170S86	8	4	7	505-4232	X	1559
5	2	1	12	IN	1164			HS-553E	C8-01 RUNNING	3170S86	8	4	8	505-4232	X	1560
5	2	1	13	IN	1165			HS-553E	SPARE	3170S86	8	4	9	505-4232	X	1561
5	2	1	14	IN	1166		WASH WATER PUMP 1	WWR-1	RUNNING	3170S86	8	4	10	505-4232	X	1562
5	2	1	15	IN	1167		WASH WATER PUMP 2	WWR-2	RUNNING	3170S86	8	4	11	505-4232	X	1563
5	2	1	16	IN	1168		BFP #1 PDR-1	PDR-1	START SLUDGE FEED PU	3170S86	8	4	12	505-4232	X	1564
									SPARE		8	4	13	505-4232	X	1565
									SPARE		8	4	14	505-4232	X	1566
									SPARE		8	4	15	505-4232	X	1567
									SPARE		8	4	16	505-4232	X	1568
									SPARE		8	4	17	505-4232	X	1569
									SPARE		8	4	18	505-4232	X	1570
									SPARE		8	4	19	505-4232	X	1571
									SPARE		8	4	20	505-4232	X	1572
									SPARE		8	4	21	505-4232	X	1573
									SPARE		8	4	22	505-4232	X	1574
									SPARE		8	4	23	505-4232	X	1575
									SPARE		8	4	24	505-4232	X	1576
									SPARE		8	4	25	505-4232	X	1577

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SIM	R	S	P	T	Addr	EQNUM	EQNAME	DEVICE	FUNCTION	DRAWING	I R	I S	I T	TI Mod	TI	TI Addr
									SPARE		8	4	26	505-4232	X	1578
									SPARE		8	4	27	505-4232	X	1579
									SPARE		8	4	28	505-4232	X	1580
									SPARE		8	4	29	505-4232	X	1581
									SPARE		8	4	30	505-4232	X	1582
									SPARE		8	4	31	505-4232	X	1583
									SPARE		8	4	32	505-4232	X	1584
5	2	5	11	CR	1035	P7-05	THICKENED SLUDGE PUMP 1	HS-740B	RUN	3170S86	8	5	1	505-4832	Y	1585
5	2	5	12	CR	1036	P7-06	THICKENED SLUDGE PUMP 2	HS-741B	RUN	3170S86	8	5	2	505-4832	Y	1586
5	2	5	13	CR	1037	SK-742		SK-742	AUTO/MANUAL	3170S86	8	5	3	505-4832	Y	1587
5	2	5	14	CR	1038	SK-742		SK-742	LOCKOUT	3170S86	8	5	4	505-4832	Y	1588
5	2	5	15	CR	1039	SK-743		SK-743	AUTO/MANUAL	3170S86	8	5	5	505-4832	Y	1589
5	2	5	16	CR	1040	SK-743		SK-743	LOCKOUT	3170S86	8	5	6	505-4832	Y	1590
5	2	6	1	CR	1041		TRCK CONV WASH VLV	HS-754	??	3170S87	8	5	7	505-4832	Y	1591
5	2	6	2	CR	1042		FILT CONV WASH VLV	HS-755	??	3170S87	8	5	8	505-4832	Y	1592
5	2	6	3	CR	1043		TRUCK CONV WASH VLV	CR38	OPEN	3170S87	8	5	9	505-4832	Y	1593
5	2	6	5	CR	1045		FILT CONV WASH VLV	CR39	OPEN	3170S87	8	5	10	505-4832	Y	1594
5	2	6	7	CR	1047	MME7-12	BELT FILTER PRESS 1	HS-758	RUN	3170S87	8	5	11	505-4832	Y	1595
5	2	6	8	CR	1048	MME7-13	BELT FILTER PRESS 2	HS-759	RUN	3170S87	8	5	12	505-4832	Y	1596
5	2	6	9	CR	1049	CON7-01	CONVEYOR 1	HS-762B	RUN	3170S87	8	5	13	505-4832	Y	1597
5	2	6	10	CR	1050	CON7-01	CONVEYOR 1	HS-762B	RUN	3170S87	8	5	14	505-4832	Y	1598
5	2	6	11	CR	1051	CON7-02	CONVEYOR 2	HS-764B	RUN	3170S87	8	5	15	505-4832	Y	1599
5	2	6	12	CR	1052	P7-01	WASH WATER PUMP 1	HS-767B	RUN	3170S87	8	5	16	505-4832	Y	1600
5	2	6	13	CR	1053	P7-02	WASH WATER PUMP 2	HS-769B	RUN	3170S87	8	5	17	505-4832	Y	1601
5	2	6	14	CR	1054	CP7-01	COMPRESSOR 1	HS-772B	RUN	3170S87	8	5	18	505-4832	Y	1602
5	2	6	15	CR	1055	CP7-02	COMPRESSOR 2	HS-773B	RUN	3170S87	8	5	19	505-4832	Y	1603
5	2	6	16	CR	1056	P7-11	POLYMER PUMP 1	HS-795	RUN	3170S87	8	5	20	505-4832	Y	1604
5	2	7	1	CR	1057	P7-12	POLYMER PUMP 2	HS-796	RUN	3170S87	8	5	21	505-4832	Y	1605
5	2	7	2	CR	1058	P7-13	POLYMER PUMP 3	HS-797	RUN	3170S87	8	5	22	505-4832	Y	1606
5	2	7	3	CR	1059	P7-14	POLYMER PUMP 4	HS-798	RUN	3170S87	8	5	23	505-4832	Y	1607
5	2	7	4	CR	1060	P7-15	POLYMER PUMP 5	HS-799	RUN	3170S87	8	5	24	505-4832	Y	1608

Newberg WWTP Instrumentation and Control System Improvements

SIM	R	S	P	T	Addr	EQNUM	EQNAME	DEVICE	FUNCTION	DRAWING	I R	I S	I T	TI Mod	TI	TI Addr
5	2	7	5	CR	1061	C8-01		SHCP ALAR	CALL CONV C8-01 RUN	3170S87	8	5	25	505-4832	Y	1609
5	2	7	6	CR	1062	C8-01		SHCP ALAR	CALL CONV C8-01 RUN	3170S87	8	5	26	505-4832	Y	1610
5	2	7	7	CR	1063		WASH WATER PUMP 1	34	RUN	3170S87	8	5	27	505-4832	Y	1611
5	2	7	8	CR	1064		WASH WATER PUMP 2	35	RUN	3170S87	8	5	28	505-4832	Y	1612
5	2	7	9	CR	1065	BFP-1	BELT FILTER PRESS 1	36	REMOTE STOP	3170S87	8	5	29	505-4832	Y	1613
5	2	7	10	CR	1066	BFP-2	BELT FILTER PRESS 2	37	REMOTE STOP	3170S87	8	5	30	505-4832	Y	1614
									SPARE		8	5	31	505-4832	Y	1615



PLC PANEL SCHEDULE		
CONTROL PANEL	DESCRIPTION	LOCATION
PCP	PLANT CONTROL PANEL	SERVICE BUILDING
HCP	HEADWORKS CONTROL PANEL	HEADWORKS
CRCP	CHLORINATION/RECLAIMED WATER CONTROL PANEL	CHLORINE BUILDING
SCP	SECONDARY CONTROL PANEL	SLUDGE PUMPING BUILDING
SHCP	SOLIDS HANDLING CONTROL PANEL	SOLIDS HANDLING BUILDING

NOTES:
1. ROUTE RS-232 CABLE FROM PCP TO DESK IN FRONT OF PCP. PROVIDE 50 FOOT CABLE AS REQUIRED FOR DIRECT SERIAL CONNECTION FROM PLC TO PLC OPERATING WONDERWARE INTOUCH DIRECT DDE DRIVER.

CABLE LEGEND
- RS-232 CABLE
- I/O DROP CABLE
- I/O TRUNK CABLE

HDR
HDR Engineering, Inc.

NEWBERG WWTP INSTRUMENTATION AND CONTROL SYSTEM IMPROVEMENTS

PLC SITE CABLE DIAGRAM

Project Manager	B. EIMSTAD
Designed	D. WOODWARD
Drawn	P. McCLINTOCK
Checked	E. SWANSON
Project Number	07932-002-102
Date	APRIL 1996

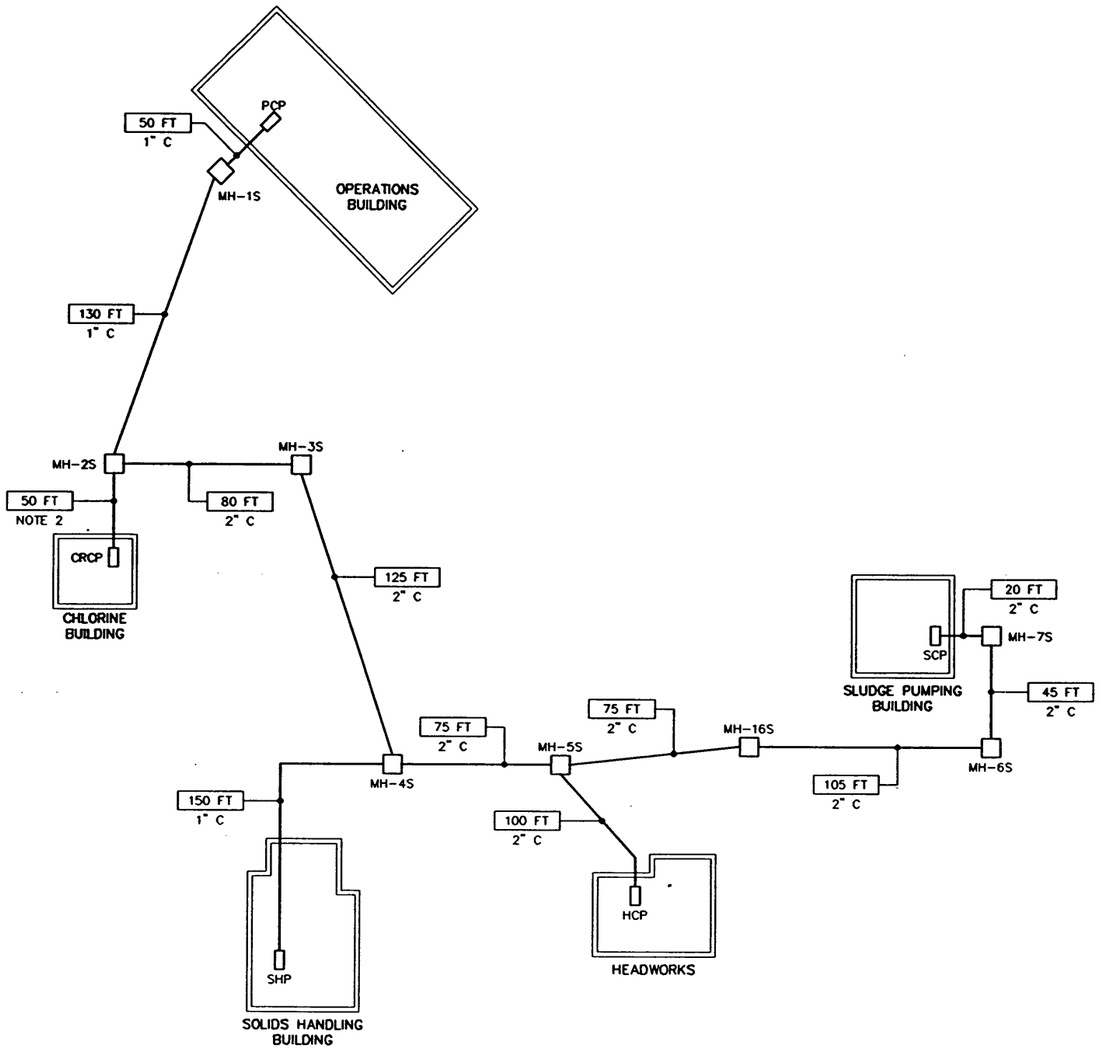
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No	By	Description	Date

Sheet Number 1

P:\07932.002\NBWTPIC1

FILE: NBWTPIC1.DWG PLOT SCALE: 1=1 DATE: 04/08/96 TIME: 10:16am PATH: P:\07932.002\



CABLE LENGTH DIAGRAM
NTS

NOTES:
1. LENGTHS ARE APPROXIMATE. VERIFY ALL LENGTHS PRIOR TO CABLE INSTALLATION.
2. REMOVE EXISTING UNUSED COAX IN 1" CONDUIT. INSTALL NEW PLC CABLE IN EXISTING CONDUIT.
3. DEMOLISH ALL EXISTING COAX AFTER NEW PLC HAS BEEN ACTIVATED.

LEGEND

XX FT Y" C	XX FT = APPROXIMATE CABLE LENGTH Y = EXISTING CONDUIT SIZE TO UTILIZE

HDR
HDR Engineering, Inc.

NEWBERG WWTP INSTRUMENTATION AND CONTROL SYSTEM IMPROVEMENTS

CABLE LENGTH DIAGRAM

Project Manager	B. EIMSTAD
Designed	D. WOODWARD
Drawn	P. McCLINTOCK
Checked	E. SWANSON
Project Number	07932-002-102
Date	APRIL 1996

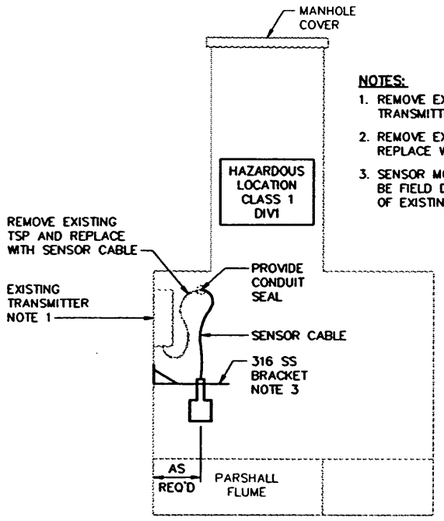
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No	By	Description	Date

Sheet Number 2

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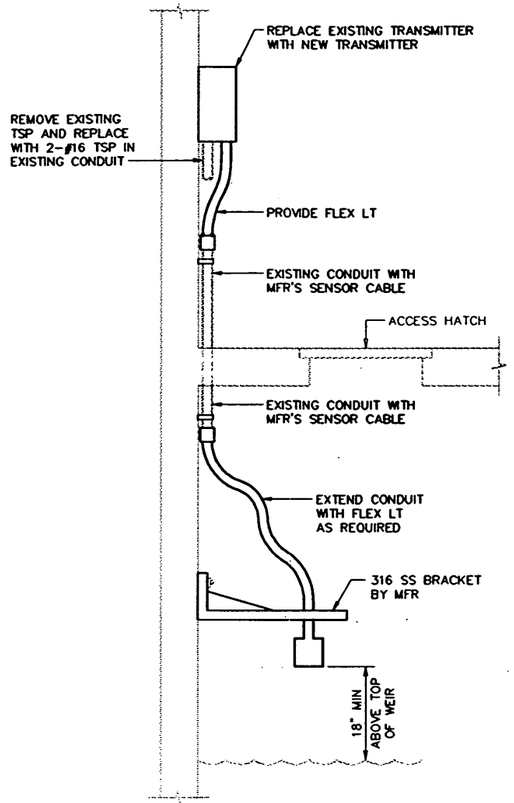
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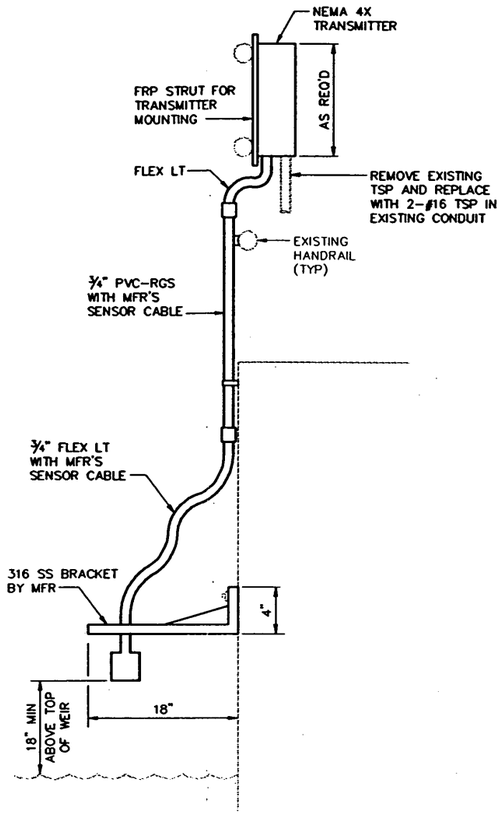
NOTES:

1. REMOVE EXISTING TRANSMITTER. LOCATE NEW TRANSMITTER IN ADJACENT ELECTRIC VAULT.
2. REMOVE EXISTING TSP TO CONTROL PANEL AND REPLACE WITH 2–#16 TSP.
3. SENSOR MOUNTING DISTANCE FROM WALL MUST BE FIELD DETERMINED TO MEET REQUIREMENTS OF EXISTING FLUME.

FIT–116
SENSOR REPLACEMENT
DETAIL 1
NTS



FIT–601
SENSOR REPLACEMENT
DETAIL 2
NTS



FIT–601A/FIT–602B
SENSOR REPLACEMENT
DETAIL 3
NTS

HDR
HDR Engineering, Inc.

NEWBERG WWTP INSTRUMENTATION AND CONTROL SYSTEM IMPROVEMENTS

INSTRUMENTATION DETAILS

Project Manager	B. EIMSTAD
Designed	D. WOODWARD
Drawn	P. McCLINTOCK
Checked	E. SWANSON
Project Number	07932–002–102
Date	APRIL 1996

THIS LINE IS ONE INCH WHEN DRAWING IS FULL SIZE. IF NOT ONE INCH, SCALE ACCORDINGLY.

No	By	Description	Date

Sheet Number 3

P:\07932.002\NBWTPIC3

FILE: NBWTPIC3.DWG PLOT SCALE: 1=1 DATE: 04/08/96 TIME: 10:26am PATH: P:\07932.002\

DRAWING NUMBER	TITLE
PROGRAMMABLE CONTROLLER	
3170PC1	PROGRAMMABLE CONTROLLER SYSTEM CONFIGURATION
3170PC2	PLANT CONTROL PANEL PC I/O RACK # 1 CONFIGURATION
3170PC3	PLANT CONTROL PANEL PC I/O RACK # 2 CONFIGURATION
3170PC4	PLANT CONTROL PANEL PC I/O RACK # 3 CONFIGURATION
3170PC5	HEADWORKS CONTROL PANEL PC I/O RACK # 1 CONFIGURATION
3170PC6	HEADWORKS CONTROL PANEL PC I/O RACK # 2 CONFIGURATION
3170PC7	SECONDARY CONTROL PANEL PC I/O RACK # 1 CONFIGURATION
3170PC8	SECONDARY CONTROL PANEL PC I/O RACK # 2 CONFIGURATION
3170PC9	SECONDARY CONTROL PANEL PC I/O RACK # 3 CONFIGURATION
3170PC10	SECONDARY CONTROL PANEL PC I/O RACK # 4 CONFIGURATION
3170PC11	CRCP PC I/O RACK # 1 CONFIGURATION
3170PC12	SHCP PC I/O RACK # 1 CONFIGURATION
3170PC13	SHCP PC I/O RACK # 2 CONFIGURATION
3170PC14	SHCP PC I/O RACK # 3 CONFIGURATION
CONTROL PANEL LAYOUT	
3170F1L	PLANT CONTROL PANEL FRONT PANEL LAYOUT
3170F1BP	PLANT CONTROL PANEL BACK PANEL LAYOUT
3170F1DT	PLANT CONTROL PANEL ENCLOSURE DETAILS
3170F2L	CHLORINATION-RECLAIM WATER CONTROL PANEL LAYOUT
3170F2DT	CHLORINATION-RECLAIM WATER CONTROL PANEL INTERIOR LAYOUT
3170F2I	CHLORINATION-RECLAIM WATER CONTROL PANEL ENCLOSURE DETAILS
3170F3L	HEADWORKS CONTROL PANEL LAYOUT
3170F3DT	HEADWORKS CONTROL PANEL ENCLOSURE DETAILS
3170F3I	HEADWORKS CONTROL PANEL INTERIOR LAYOUT
3170F4L	SOLIDS HANDLING CONTROL PANEL FRONT PANEL LAYOUT
3170F4DT	SOLIDS HANDLING CONTROL PANEL ENCLOSURE DETAILS
3170F5L	SECONDARY CONTROL PANEL FRONT PANEL LAYOUT
3170F5DT	SECONDARY CONTROL PANEL ENCLOSURE DETAILS
3170LP-1	PANEL LP-1 FRONT PANEL LAYOUT & SCHEMATIC DIAGRAM
ANNUNCIATOR GRAPHIC	
3170AG1	SHCP GRAPHIC ANNUNCIATOR SCHEMATIC
3170AG2	SHCP GRAPHIC ANNUNCIATOR SCHEMATIC
3170AG3	PCP GRAPHIC ANNUNCIATOR SCHEMATIC
3170AG4	PCP GRAPHIC ANNUNCIATOR SCHEMATIC
3170AG5	PCP GRAPHIC ANNUNCIATOR SCHEMATIC
3170AG6	PCP GRAPHIC ANNUNCIATOR SCHEMATIC
3170AG7	PCP GRAPHIC ANNUNCIATOR POWER SCHEMATIC
3170AG8	SHCP GRAPHIC ANNUNCIATOR POWER SCHEMATIC
3170AG9	PCP GRAPHIC ANNUNCIATOR LAYOUT
3170AG10	PCP GRAPHIC ANNUNCIATOR LAYOUT
3170AG11	PCP GRAPHIC ANNUNCIATOR LAYOUT
3170AG12	PCP GRAPHIC ANNUNCIATOR LAYOUT
3170AG13	SHCP GRAPHIC ANNUNCIATOR LAYOUT
3170AG14	SHCP GRAPHIC ANNUNCIATOR LAYOUT

DRAWING NUMBER	TITLE
SCHEMATIC	
3170S1	PLANT CONTROL PANEL POWER SCHEMATIC
3170S2	PLANT CONTROL PANEL POWER SCHEMATIC
3170S3	PLANT CONTROL PANEL SCHEMATIC
3170S4	PLANT CONTROL PANEL SCHEMATIC
3170S5	PLANT CONTROL PANEL SCHEMATIC
3170S6	PLANT CONTROL PANEL SCHEMATIC
3170S7	PLANT CONTROL PANEL SCHEMATIC
3170S8	PLANT CONTROL PANEL SCHEMATIC
3170S9	PLANT CONTROL PANEL SCHEMATIC
3170S10	PLANT CONTROL PANEL SCHEMATIC
3170S11	PLANT CONTROL PANEL SCHEMATIC
3170S12	PLANT CONTROL PANEL SCHEMATIC
3170S13	PLANT CONTROL PANEL SCHEMATIC
3170S14	PLANT CONTROL PANEL TERMINAL BLOCKS LAYOUT
3170S15	PLANT CONTROL PANEL SCHEMATIC
3170S20	HEADWORKS CONTROL PANEL POWER SCHEMATIC
3170S21	HEADWORKS CONTROL PANEL POWER SCHEMATIC
3170S22	HEADWORKS CONTROL PANEL SCHEMATIC
3170S23	HEADWORKS CONTROL PANEL SCHEMATIC
3170S24	HEADWORKS CONTROL PANEL SCHEMATIC
3170S25	HEADWORKS CONTROL PANEL SCHEMATIC
3170S26	HEADWORKS CONTROL PANEL SCHEMATIC
3170S27	HEADWORKS CONTROL PANEL SCHEMATIC
3170S28	HEADWORKS CONTROL PANEL TERMINAL BLOCKS LAYOUT
3170S40	SECONDARY CONTROL PANEL POWER SCHEMATIC
3170S41	SECONDARY CONTROL PANEL POWER SCHEMATIC
3170S42	SECONDARY CONTROL PANEL SCHEMATIC
3170S43	SECONDARY CONTROL PANEL SCHEMATIC
3170S44	SECONDARY CONTROL PANEL SCHEMATIC
3170S45	SECONDARY CONTROL PANEL SCHEMATIC
3170S46	SECONDARY CONTROL PANEL SCHEMATIC
3170S46A	SECONDARY CONTROL PANEL SCHEMATIC
3170S47	SECONDARY CONTROL PANEL SCHEMATIC
3170S48	SECONDARY CONTROL PANEL SCHEMATIC
3170S49	SECONDARY CONTROL PANEL SCHEMATIC
3170S50	SECONDARY CONTROL PANEL SCHEMATIC
3170S51	SECONDARY CONTROL PANEL SCHEMATIC
3170S52	SECONDARY CONTROL PANEL SCHEMATIC
3170S53	SECONDARY CONTROL PANEL SCHEMATIC
3170S54	SECONDARY CONTROL PANEL SCHEMATIC
3170S55	SECONDARY CONTROL PANEL SCHEMATIC
3170S56	SECONDARY CONTROL PANEL TERMINAL BLOCKS LAYOUT
3170S57	SECONDARY CONTROL PANEL SCHEMATIC
3170S58	SECONDARY CONTROL PANEL SCHEMATIC
3170S59	SECONDARY CONTROL PANEL SCHEMATIC
3170S60	CHLORINATION & RECLAIM CONTROL PANEL POWER SCHEMATIC
3170S61	CHLORINATION & RECLAIM CONTROL PANEL POWER SCHEMATIC
3170S62	CHLORINATION & RECLAIM CONTROL PANEL SCHEMATIC
3170S63	CHLORINATION & RECLAIM CONTROL PANEL SCHEMATIC
3170S64	CHLORINATION & RECLAIM CONTROL PANEL SCHEMATIC
3170S65	CHLORINATION & RECLAIM CONTROL PANEL TERMINAL BLOCKS LAYOUT
3170S80	SOLIDS HANDLING CONTROL PANEL POWER SCHEMATIC
3170S81	SOLIDS HANDLING CONTROL PANEL POWER SCHEMATIC
3170S82	SOLIDS HANDLING CONTROL PANEL SCHEMATIC
3170S83	SOLIDS HANDLING CONTROL PANEL SCHEMATIC
3170S84	SOLIDS HANDLING CONTROL PANEL SCHEMATIC
3170S85	SOLIDS HANDLING CONTROL PANEL SCHEMATIC
3170S86	SOLIDS HANDLING CONTROL PANEL SCHEMATIC
3170S87	SOLIDS HANDLING CONTROL PANEL SCHEMATIC
3170S88	SOLIDS HANDLING CONTROL PANEL SCHEMATIC
3170S89	SOLIDS HANDLING CONTROL PANEL SCHEMATIC
3170S90	SOLIDS HANDLING CONTROL PANEL SCHEMATIC
3170S91	SOLIDS HANDLING CONTROL PANEL SCHEMATIC

DRAWING NUMBER	TITLE
3170S92	SOLIDS HANDLING CONTROL PANEL SCHEMATIC
3170S95	SOLIDS HANDLING CONTROL PANEL SCHEMATIC
ANALOG LOOP	
3170A001	HESS CREEK INTERCEPTER FLOW
3170A002	TWELFTH STREET INTERCEPTER FLOW
3170A003	TOTAL INTERCEPTER FLOWS
3170A004	INFLUENT PUMP STATION WET WELL LEVEL
3170A106	INFLUENT PUMP NO.3 SPEED CONTROL
3170A107	INFLUENT PUMP NO.4 SPEED CONTROL
3170A115	TOTAL PLANT INFLUENT FLOW
3170A116	PLANT RECYCLE FLOW
3170A117	PLANT NET TOTAL FLOW
3170A201	BAR SCREEN DIFFERENTAL LEVEL
3170A209	GRIT CHAMBER PH
3170A306	EQUALIZATION BASIN LEVEL
3170A401	OXIDATION DITCH NO.1
3170A402	OXIDATION DITCH NO.2
3170A403	OXIDATION DITCH NO.1 DISSOLVED OXYGEN
3170A404	OXIDATION DITCH NO.2 DISSOLVED OXYGEN
3170A413	LOOP 413,414,415,416 OXIDATION DITCH NO.1 ROTOR 1,2,3,4 AMPERES
3170A417	LOOP 417,418,419,420 OXIDATION DITCH NO.2 ROTOR 1,2,3,4 AMPERES
3170A507	SCUM PIT NO.1 LEVEL
3170A508	SCUM PIT NO.2 LEVEL
3170A514	CLARIFIER NO.1 RETURN ACTIVATED SLUDGE FLOW
3170A515	CLARIFIER NO.2 RETURN ACTIVATED SLUDGE FLOW
3170A516	CLARIFIER NO.3 RETURN ACTIVATED SLUDGE FLOW
3170A517	LOOP 517,513,519,520 RETURN ACTIVATED SLUDGE PUMP NO.1,2,3,4 FLOW CONTROL
3170A535	LOOP 535,536,537,WAS PUMP NO.1,2,3 SPEED CONTROL
3170A536	LOOP 535,536,537,WAS PUMP NO.1,2,3 SPEED CONTROL
3170A545	WASTE ACTIVATED SLUDGE FLOW RATE NO. 1
3170A546	WASTE ACTIVATED SLUDGE FLOW RATE NO. 2
3170A547	SLUDGE STORAGE NO. 1 LEVEL
3170A548	SLUDGE STORAGE NO.2 LEVEL
3170A556	SLUDGE TRANSFER PUMP NO.3 SPEED CONTROL
3170A557	SLUDGE TRANSFER PUMP NO.1 SPEED CONTROL
3170A558	SLUDGE TRANSFER PUMP NO.2 SPEED CONTROL
3170A560	WASTE ACTIVATED SLUDGE FLOW RATE NO.3
3170A599	LOOP 601, SECONDARY EFFLUENT FLOW
3170A600	LOOP 601, SECONDARY EFFLUENT FLOW
3170A601	LOOP 601, SECONDARY EFFLUENT FLOW
3170A602	PLANT EFFLUENT FLOW
3170A701	DISSOLVED AIR FLOTATION THICKENER NO. 1 INFLUENT FLOW
3170A702	DISSOLVED AIR FLOTATION THICKENER NO. 2 INFLUENT FLOW
3170A703	DAFT NO.1 EFFLUENT LEVEL
3170A704	DAFT NO.2 EFFLUENT LEVEL
3170A742	LOOP 742,743 THICKENED SLUDGE PUMP NO. 1 & 2 SPEED CONTROL
3170A752	BELT FILTER PRESS NO.1 INFLUENT FLOW AND FEED CONTROL
3170A753	BELT FILTER PRESS NO.2 INFLUENT FLOW AND FEED CONTROL
3170A794	STANDBY POLYMER FEED PUMP CONTROL SELECTION
TERMINAL BLOCK	
3170TB1S56	SECONDARY CONTROL PANEL TERMINAL BLOCKS (TB1) LAYOUT
3170TB2S56	SECONDARY CONTROL PANEL TERMINAL BLOCKS (TB2) LAYOUT
3170TB3S56	SECONDARY CONTROL PANEL TERMINAL BLOCKS (TB3) LAYOUT
3170TB4S56	SECONDARY CONTROL PANEL TERMINAL BLOCKS (TB4) LAYOUT
3170TB5S56	SECONDARY CONTROL PANEL TERMINAL BLOCKS (TB5) LAYOUT
3170TB1S14	PLANT CONTROL PANEL TERMINAL BLOCKS (TB1) LAYOUT
3170TB3S14	PLANT CONTROL PANEL TERMINAL BLOCKS (TB3) LAYOUT
3170TB1S93	SOLIDS HANDLING CONTROL PANEL TERMINAL BLOCKS (TB1) LAYOUT
3170TB2S93	SOLIDS HANDLING CONTROL PANEL TERMINAL BLOCKS (TB2) LAYOUT
3170TB3S93	SOLIDS HANDLING CONTROL PANEL TERMINAL BLOCKS (TB3) LAYOUT
3170TB4S94	SOLIDS HANDLING CONTROL PANEL TERMINAL BLOCKS (TB4) LAYOUT

NOTE- PCP: PLANT CONTROL PANEL, SCP: SECONDARY CONTROL PANEL, HCP: HEADWORK CONTROL PANEL, SHCP: SOLIDS HANDLING CONTROL PANEL, CRCP: CHLORINATION & RECLAIM CONTROL PANEL

				Des.	WYK
				Drn.	WYK
3-6-89	⚠	FINAL	WYK	Ck.	R.H.
Date	No.	Revision	By	App.	

Proj. NEWBERG WASTEWATER TREATMENT PLANT

Engr. KRAMER, CHIN & MAYO, INC

TABLE OF CONTENTS

uniPAC INTEGRATED CONTROL SYSTEMS

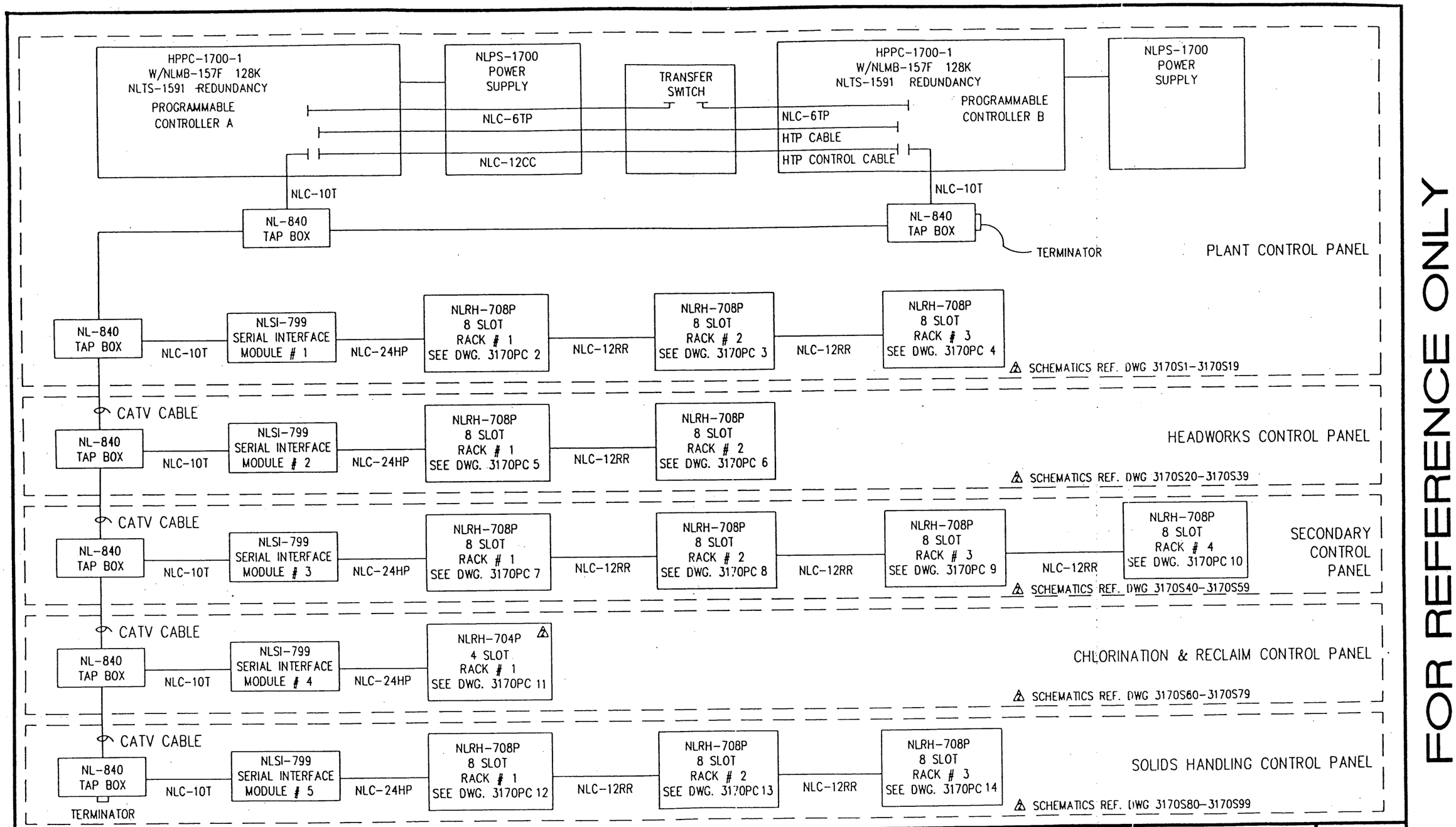
UNITED PACIFIC CONTROLS, INC.

410 N.W. 14th P.O. Box 4423 Portland, Oregon 97209

Date 2-17-89

Dwg. No. 3170TC1

FOR REFERENCE ONLY



FOR REFERENCE ONLY

Date	No.	Revision	By
2-17-89	4	FINAL	R.H.
4-5-88	3	AS BUILT	WYK

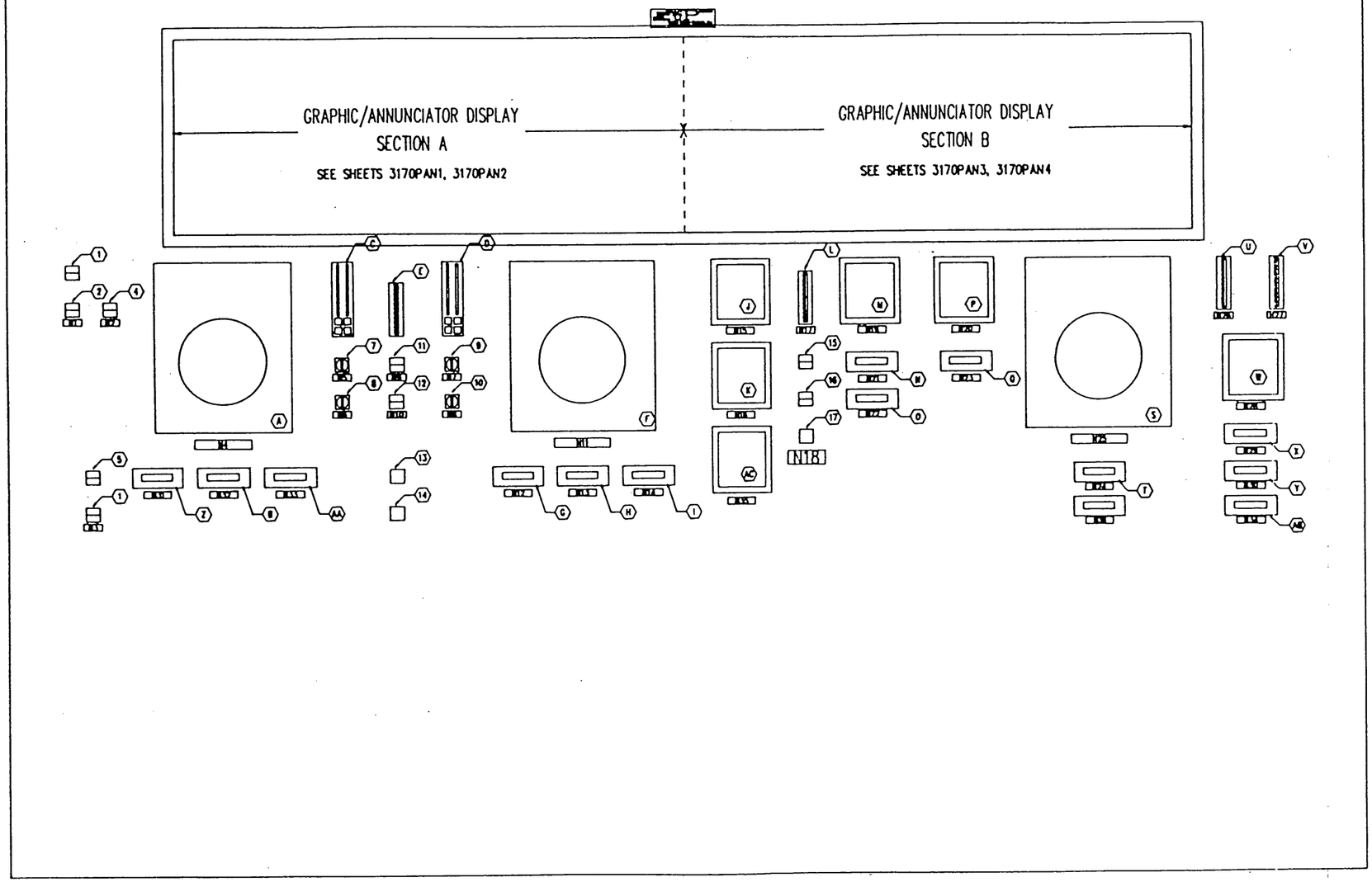
Des. R.H.
Drn. SOUANE
Ck. R.H.
App.

Proj. NEWBERG WASTEWATER TREATMENT PLANT
Engr. KRAMER, CHIN & MAYO, INC

PROGRAMMABLE CONTROLLER SYSTEM CONFIGURATION

uniPAC INTEGRATED CONTROL SYSTEMS
UNITED PACIFIC CONTROLS, INC.
410 N.W. 14th P.O. Box 4423 Portland, Oregon 97209

Date 4-3-86
Dwg. No. 3170PC1



N – SEE NAMEPLATE SCHEDULE 3170NP-PCP

M – SEE DEVICE SCHEDULE 3170DV-PCP

FOR REFERENCE ONLY

				Des. KJS
				Drn. KJS
3-6-89	⚠	FINAL	R.H.	Ck. KJS
Date	No.	Revision	By	App.

Proj. NEWBERG WASTEWATER TREATMENT PLANT

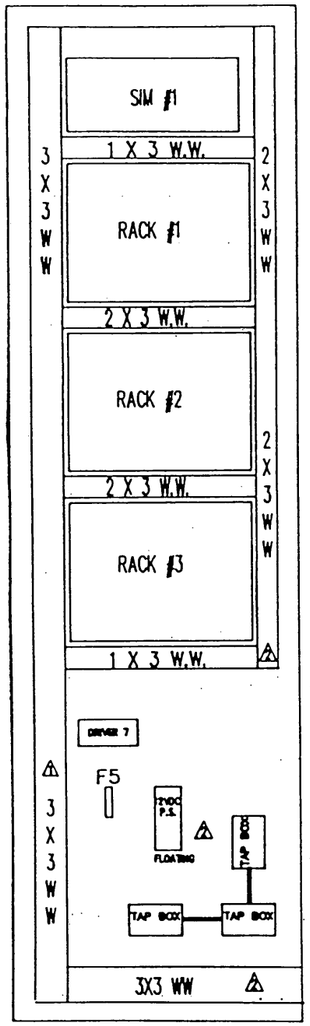
Engr. KRAMER, CHIN & MAYO, INC

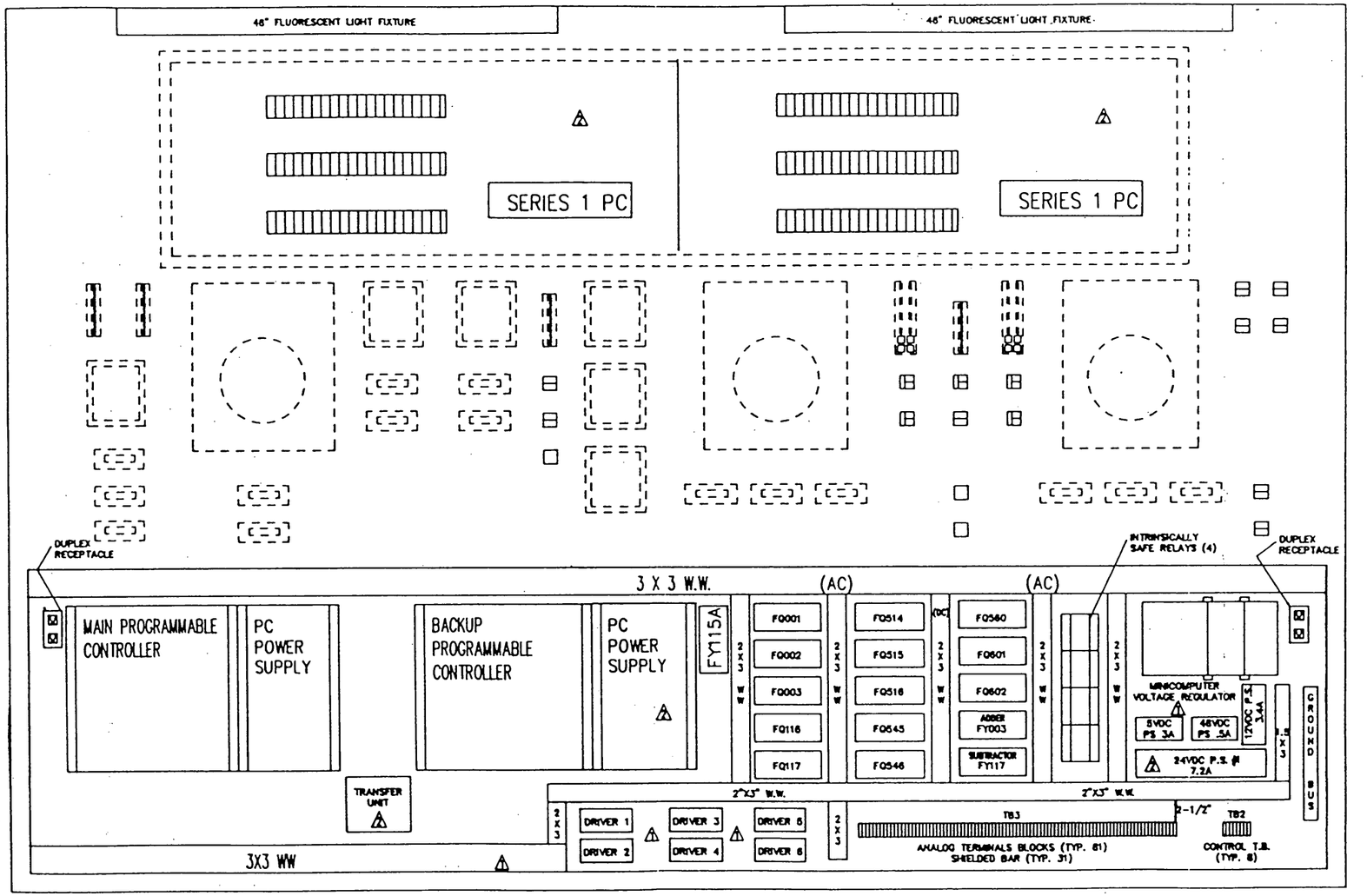
PLANT CONTROL PANEL FRONT PANEL LAYOUT

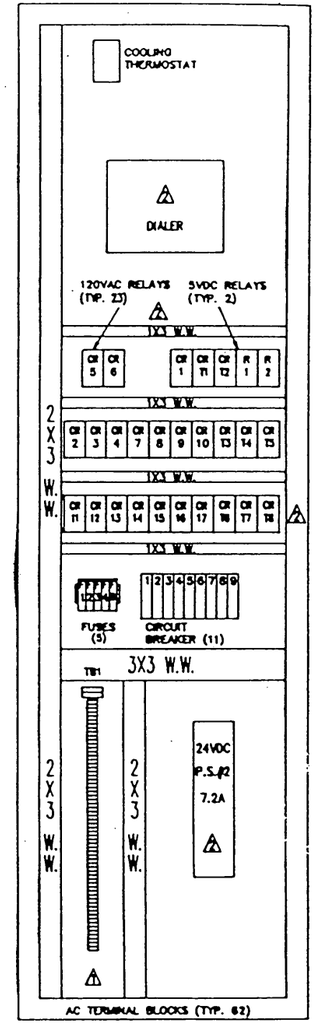
uniPAC INTEGRATED CONTROL SYSTEMS
UNITED PACIFIC CONTROLS, INC.
410 N.W. 14th P.O. Box 4423 Portland, Oregon 97209

Date 8-27-86

Dwg. No. 3170F1L







FOR REFERENCE ONLY

				Des. R.H.
2-8-89	2	FINAL	WYK	Drn. KJS
7-22-87	1	AS BUILT	S	Ck. KJS
Date	No.	Revision	By	App.

Proj. NEWBERG WASTEWATER TREATMENT PLANT

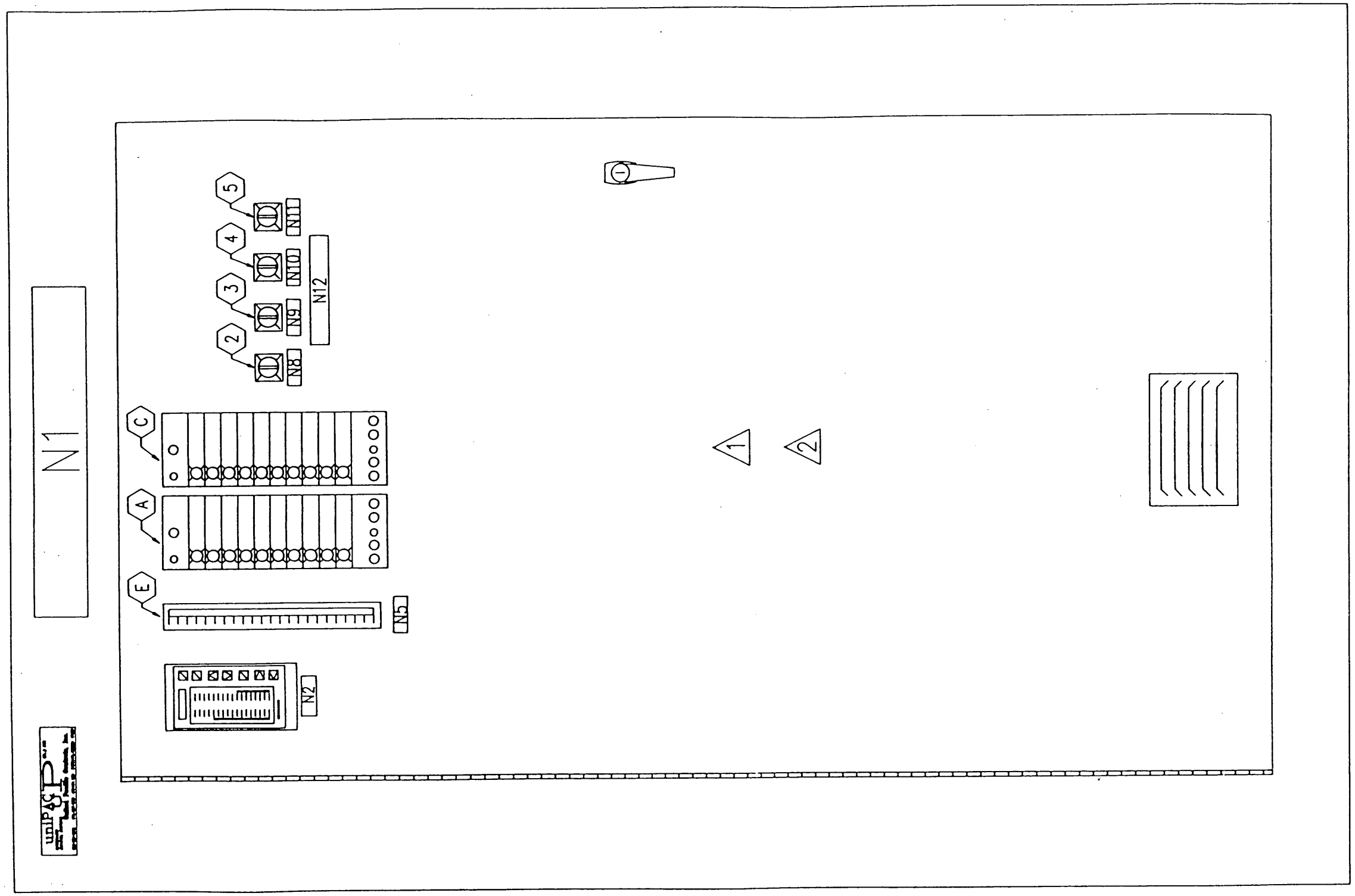
Engr. KRAMER, CHIN & MAYO, INC

PLANT CONTROL PANEL BACK PANEL LAYOUT

uniPAC INTEGRATED CONTROL SYSTEMS
UNITED PACIFIC CONTROLS, INC.
410 N.W. 14th P.O. Box 4423 Portland, Oregon 97209

Date 8-27-86

Dwg. No. 3170F1BP



N~ – SEE NAMEPLATE SCHEDULE 3170NP-CRCP

M~ – SEE DIVICE SCHEDULE 3170DV-CRCP

FOR REFERENCE ONLY

				Des. R.H.
3-6-89	3	FINAL	R.H.	Drn. SOUANE
2-27-87	2	AS BUILT	S	Ck. R.H.
Date	No.	Revision	By	App.

Proj. NEWBERG WASTEWATER TREATMENT PLANT

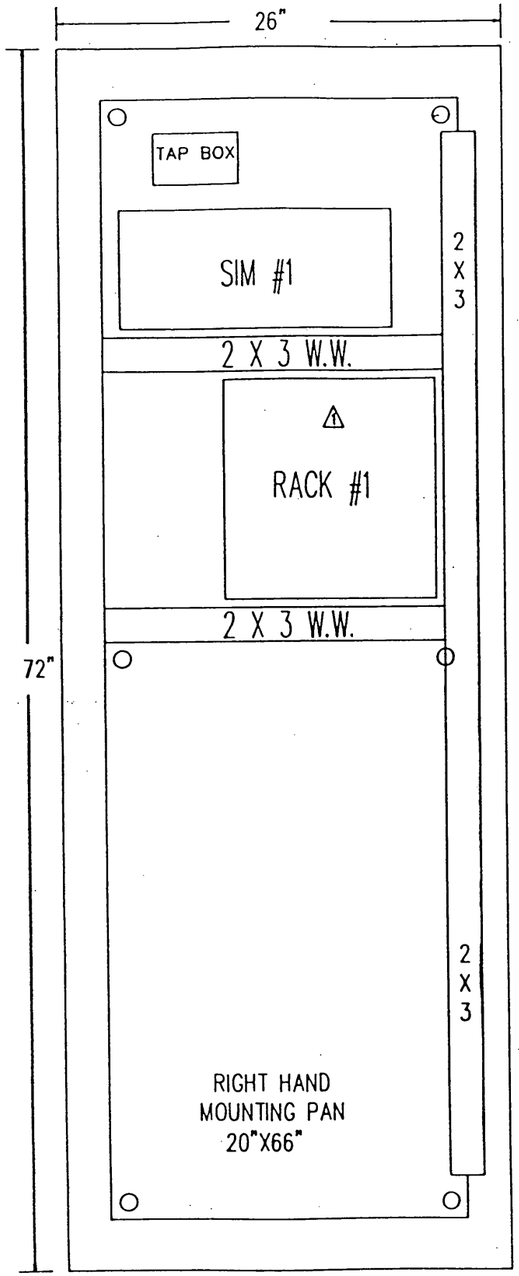
Engr. KRAMER, CHIN & MAYO, INC

CHLORINATION-RECLAIM WATER CONTROL PANEL (CRCP)

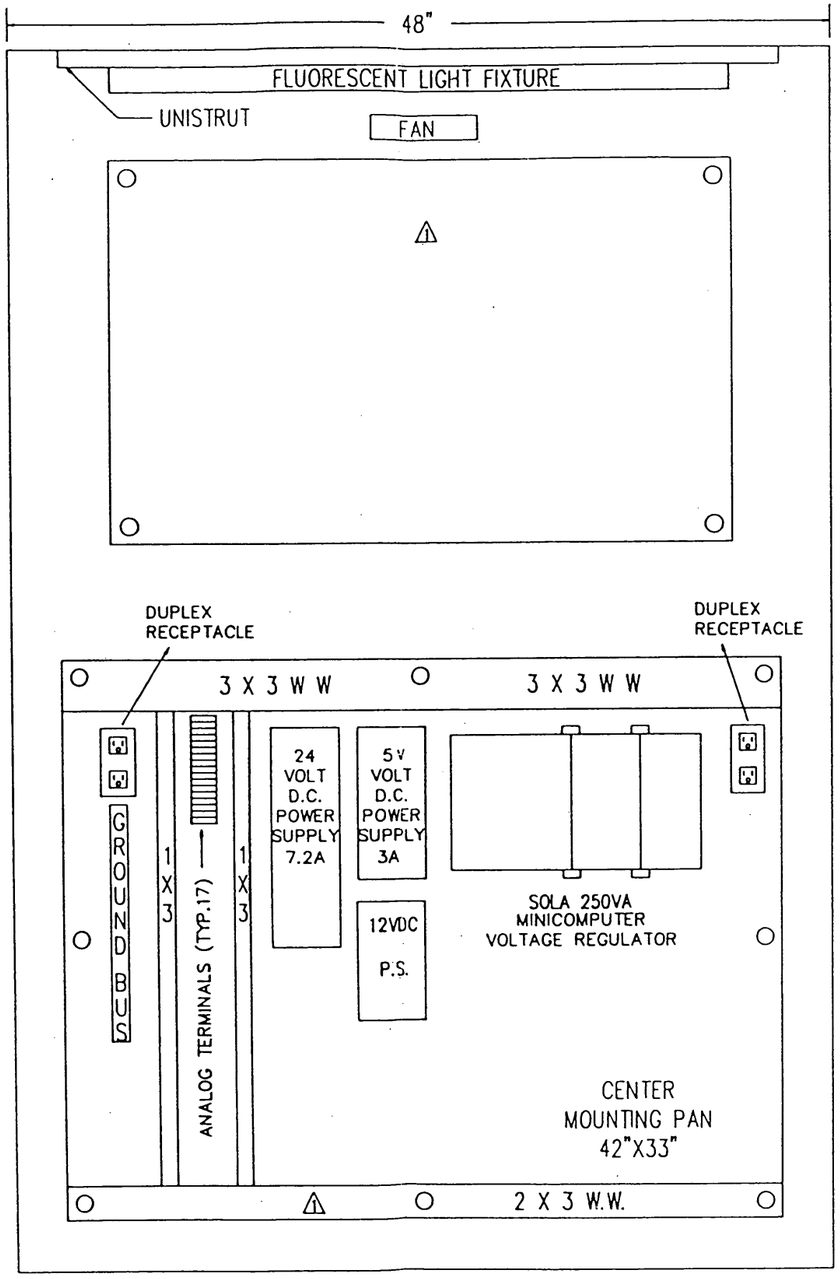
uniPAC INTEGRATED CONTROL SYSTEMS
UNITED PACIFIC CONTROLS, INC.
410 N.W. 14th P.O. Box 4423 Portland, Oregon 97209

Date 4-3-86

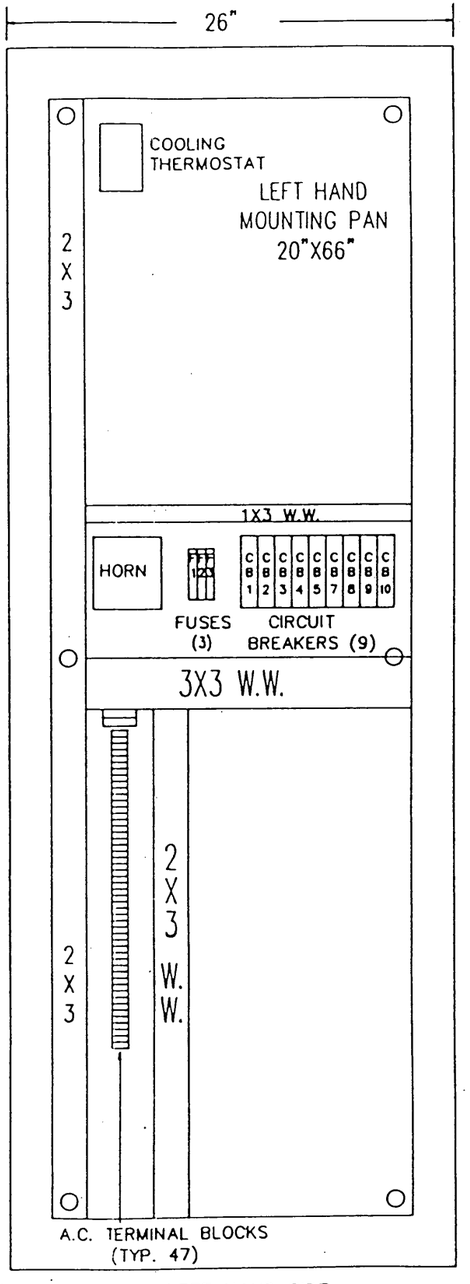
Dwg. No. 3170F2L



RIGHT HAND SIDE



INTERIOR – REAR VIEW



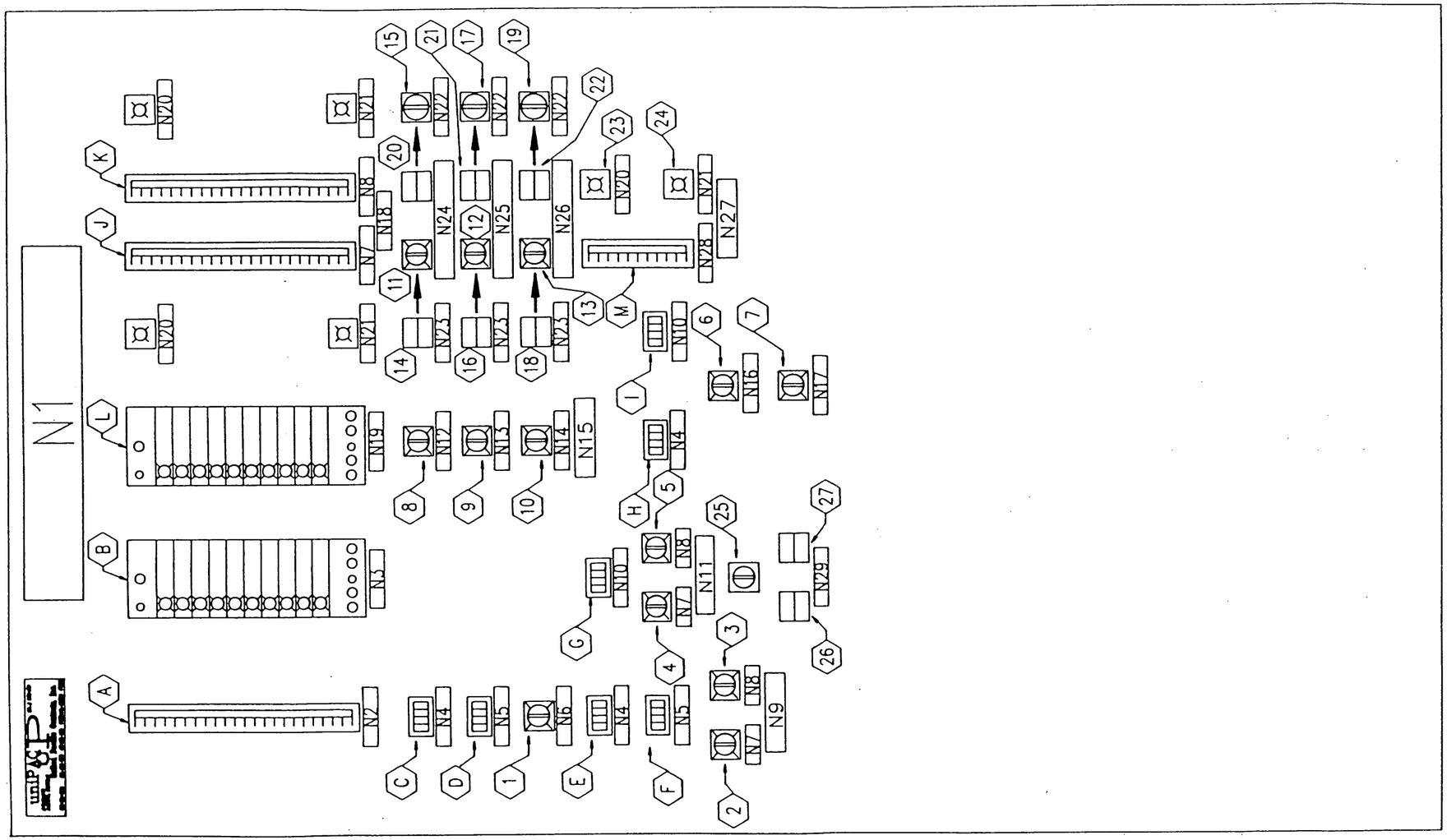
LEFT HAND SIDE

FOR REFERENCE ONLY

				Des.	KS	Proj. NEWBERG WASTEWATER TREATMENT PLANT	CHLORINATION – RECLAIM WATER CONTROL PANEL (CRCP) INTERIOR – REAR VIEW
				Drn.	S		
3-6-89	⚠	FINAL	R.H.	Ck.	KS	Engr. KRAMER, CHIN & MAYO, INC	
Date	No.	Revision	By	App.			

uniPAC INTEGRATED CONTROL SYSTEMS
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410 N.W. 14th P.O. Box 4423 Portland, Oregon 97209

Date 8-27-86
Dwg. No. 3170F21

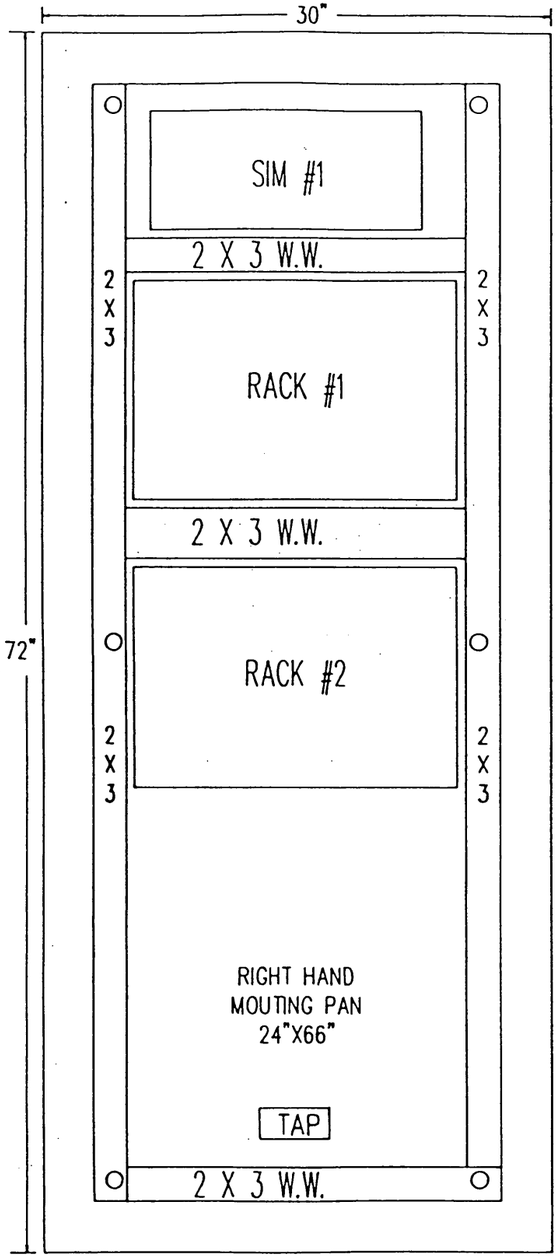


N~ – SEE NAMEPLATE SCHEDULE 3170NP-HCP

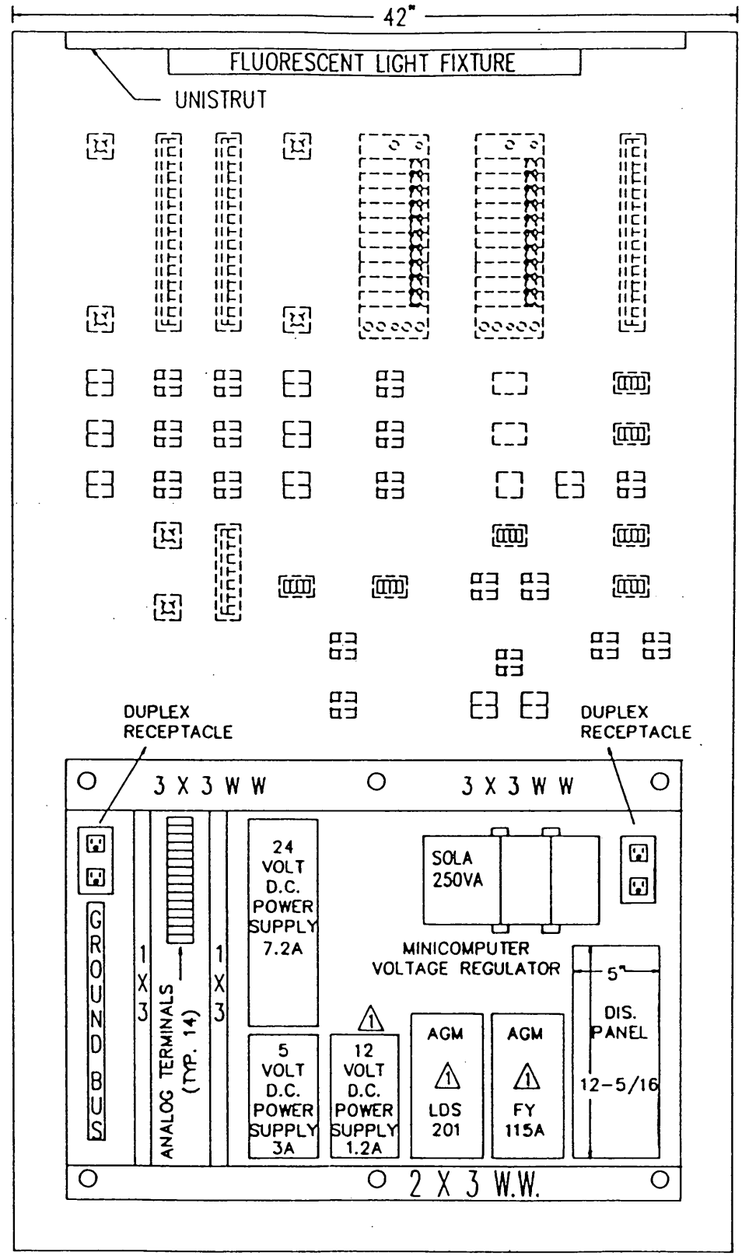
(M~) – SEE DIVICE SCHEDULE 3170DV-HCP

FOR REFERENCE ONLY

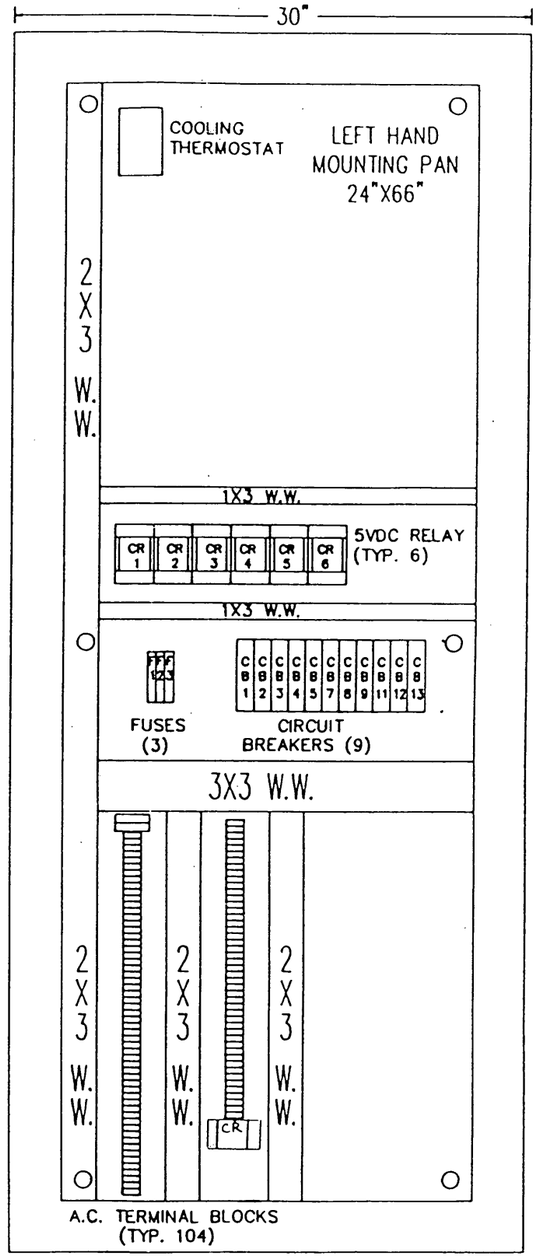
				Des. R.H.	Proj. NEWBERG WASTEWATER TREATMENT PLANT	HEADWORKS CONTROL PANEL	uniPAC INTEGRATED CONTROL SYSTEMS UNITED PACIFIC CONTROLS, INC. 410 N.W. 14th P.O. Box 4423 Portland, Oregon 97209	Date 4-3-86
				Drn. SOUANE				Dwg. No. 3170F3L
3-6-89	⚠	FINAL	R.H.	Ck. R.H.	Engr. KRAMER, CHIN & MAYO, INC			
Date	No.	Revision	By	App.				



RIGHT HAND SIDE



INTERIOR – REAR VIEW



LEFT HAND SIDE

FOR REFERENCE ONLY

			Des.	KS
			Drn.	S
3-6-89	⚠	FINAL	R.H. Ck.	KS
Date	No.	Revision	By App.	

Proj. NEWBERG WASTEWATER TREATMENT PLANT

Engr. KRAMER, CHIN & MAYO, INC

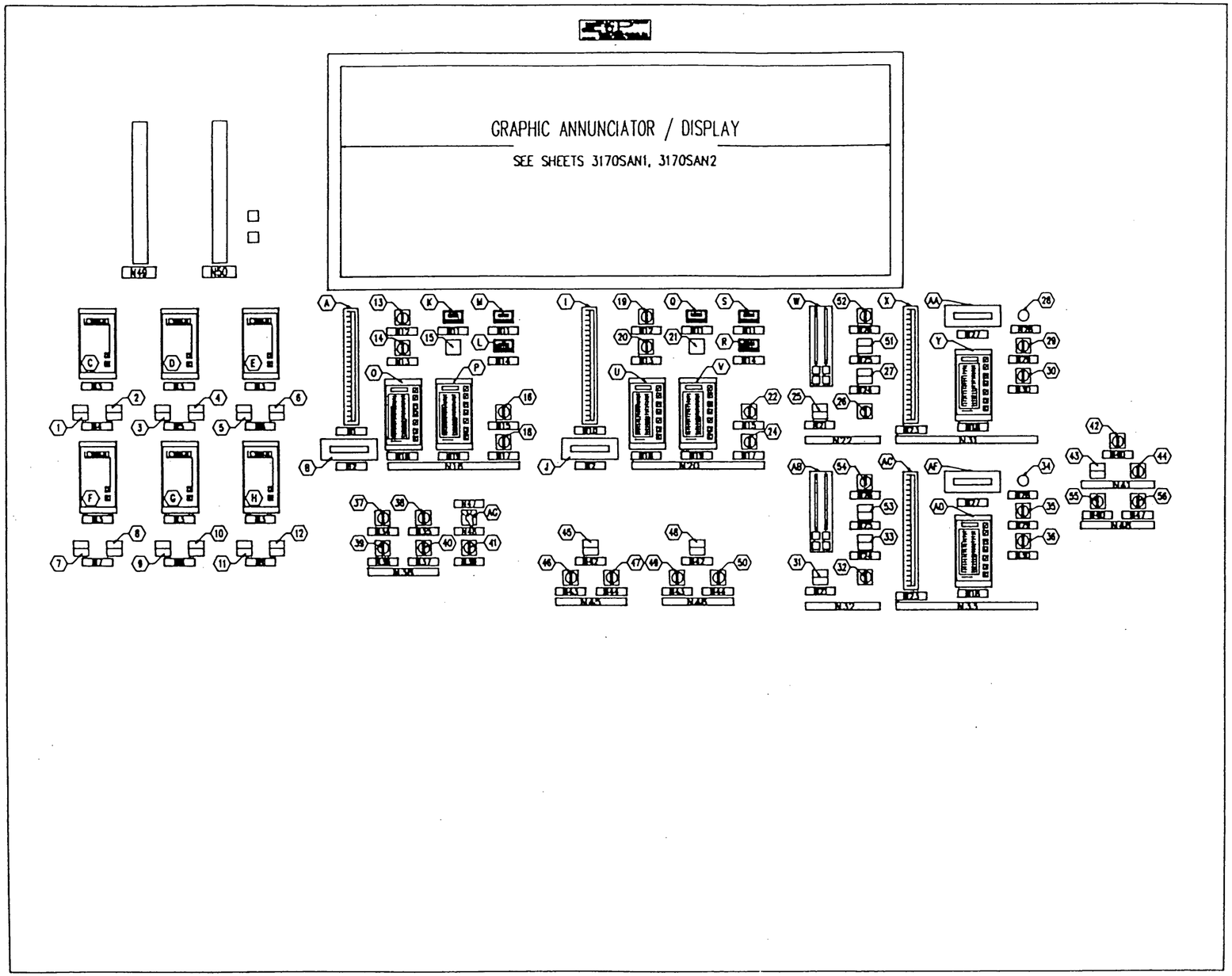
HEADWORKS CONTROL PANEL

INTERIOR – REAR VIEW

uniPAC INTEGRATED CONTROL SYSTEMS
UNITED PACIFIC CONTROLS, INC.
410 N.W. 14th P.O. Box 4423 Portland, Oregon 97209

Date 8-27-86

Dwg. No. 3170F31

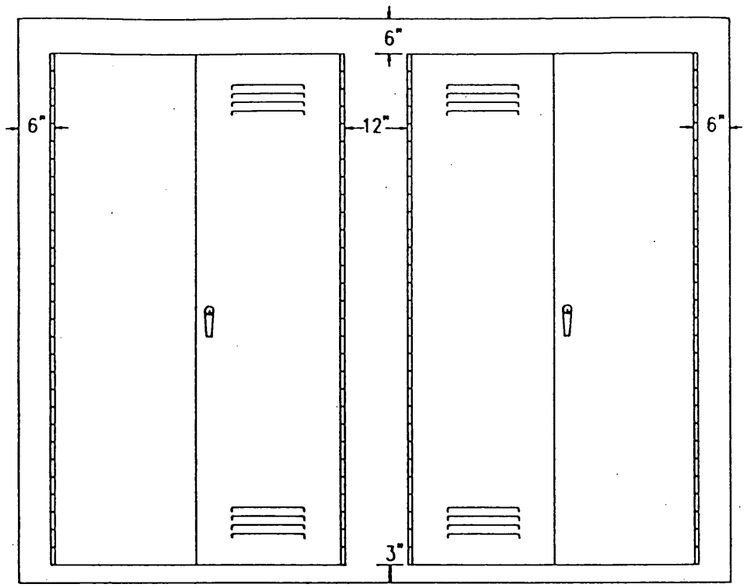


N~ – SEE NAMEPLATE SCHEDULE 3170NP–SHCP

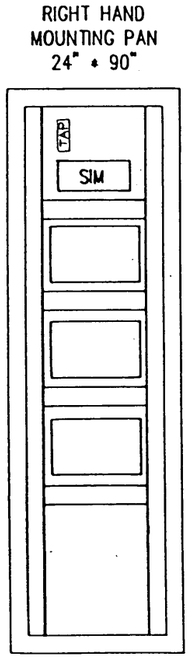
M~ – SEE DEVICE SCHEDULE 3170DV–SHCP

FOR REFERENCE ONLY

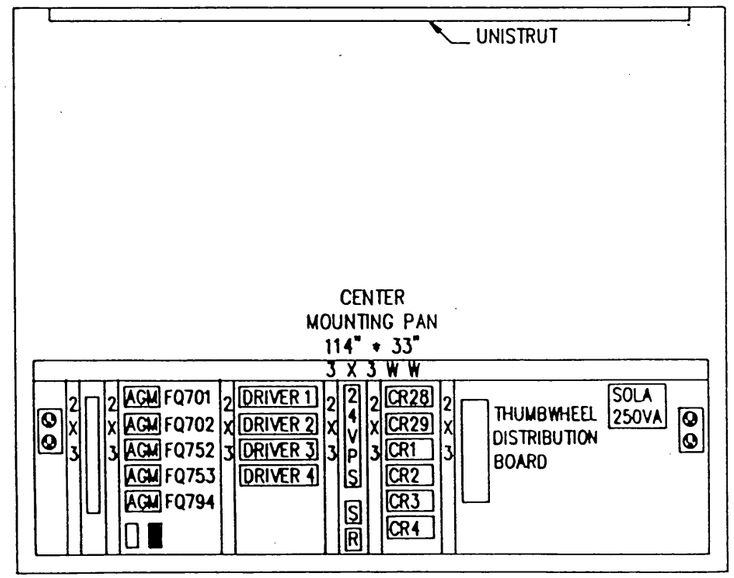
				Des. KJS	Proj. NEWBERG WASTEWATER TREATMENT PLANT	SOLIDS HANDLING CNTRL. PNL. FRONT PANEL LAYOUT	uniPAC INTEGRATED CONTROL SYSTEMS UNITED PACIFIC CONTROLS, INC. 410 N.W. 14th P.O. Box 4423 Portland, Oregon 97209	Date 8–27–86
				Drn. KJS				
3–6–89	⚠	FINAL	R.H.	Ck. KJS	Engr. KRAMER, CHIN & MAYO, INC			Dwg. No. 3170F4L
Date	No.	Revision	By	App.				



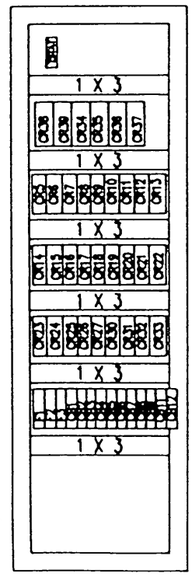
ENCLOSURE – REAR VIEW



RIGHT HAND SIDE



INTERIOR – REAR VIEW



LEFT HAND SIDE

NOTE: PANEL WILL BE CONSTRUCTED FROM 10 GAUGE STEEL WITH 1/4" • 1 1/2" FLAT BAR STIFFNERS BEHIND THE FRONT PANEL AS NECESSARY TO PREVENT PANEL DEFLECTION UNDER LOADING. THE FRONT OF THE ENCLOSURE WILL BE CONSTRUCTED OUT OF TWO PIECES OF STEEL WITH A WELDED HORIZONTAL SEAM AT AN ELEVATION OF 5'-8". THE SEAM WILL NOT BE VISIBLE FROM THE FRONT OF THE PANEL.

ENCLOSURE FRAMING WILL BE 3" • 3" ANGLE IRON FRAME IN THE BASE OF THE ENCLOSURE WITH 3" CHANNEL FROM FRONT TO REAR IN THE BOTTOM OF THE ENCLOSURE. VERTICAL FRAMING WILL BE 2" • 2" ANGLE AND TOP FRAMING WILL BE 1 1/2" • 1 1/2" ANGLE IRON.

MOUNTING PANS AND DOORS WILL BE CONSTRUCTED OF 12 GAUGE STEEL.

MOUNTING PANS ARE REMOVABLE AND MOUNTED INTERNALLY TO UNISTRUT INSIDE THE ENCLOSURE.

EACH PAIR OF DOORS WILL HAVE A LOCKING HANDLE.

ENCLOSURE HAS 4 DOORS, EACH 24" • 87". CENTER DOORS HAVE LOUVERS WITH FILTERS ON THE LOWER PART OF THE DOOR AND LOUVERS WITH VENTILATION FANS ON THE UPPER PART OF THE DOOR.

TWO LENGTHS OF UNISTRUT ARE MOUNTED TO THE UNDERSIDE OF THE TOP OF THE ENCLOSURE FOR MOUNTING FLUORESCENT LIGHTS AND INTERNAL BRACING OF FRONT PANEL MOUNTED EQUIPMENT.

FOUR REMOVABLE LIFTING EYES WILL BE PROVIDED IN THE TOP OF THE ENCLOSURE.

PANEL SHALL BE PAINTED WHITE INSIDE. ENGINEER TO SELECT OUTSIDE PAINT COLOR.

FOR REFERENCE ONLY

			Des.	KJS
			Drn.	KJS
3-6-89	⚠	FINAL	R.H. Ck.	KJS
Date	No.	Revision	By App.	

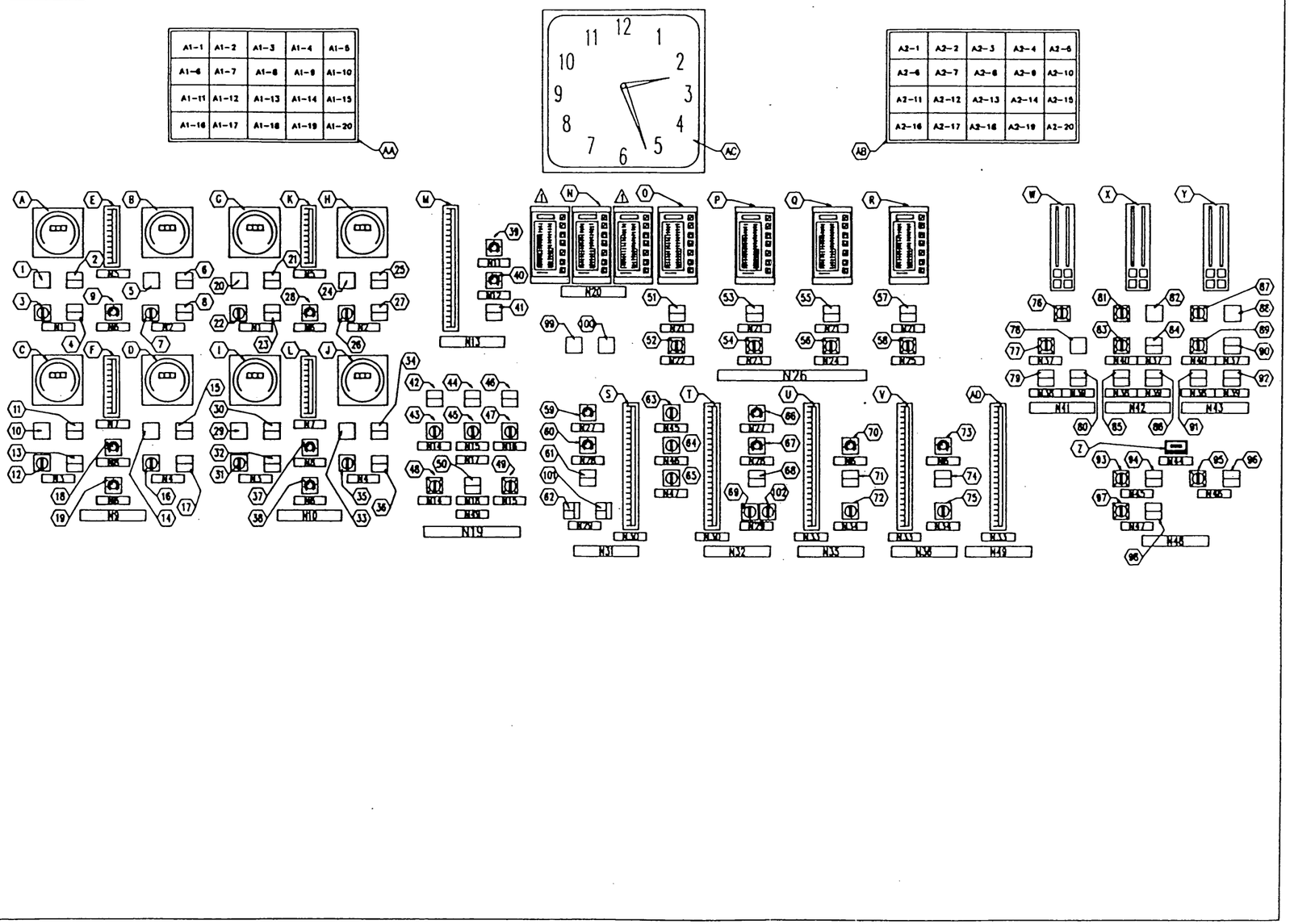
Proj. NEWBERG WASTEWATER TREATMENT PLANT
Engr. KRAMER, CHIN & MAYO, INC

SOLIDS HANDLING CONTROL PNL
ENCLOSURE DETAILS

uniPAC INTEGRATED CONTROL SYSTEMS
UNITED PACIFIC CONTROLS, INC.
410 N.W. 14th P.O. Box 4423 Portland, Oregon 97209

Date 8-27-86
Dwg. No. 3170F4DT

SECONDARY CONTROL PANEL



[N~] – SEE NAMEPLATE SCHEDULE 3170NP-SCP

⟨M~⟩ – SEE DEVICE SCHEDULE 3170DV-SCP

FOR REFERENCE ONLY

				Des. KJS
				Drn. KJS
3-6-89	⚠	FINAL	R.H.	Ck. KJS
Date	No.	Revision	By	App.

Proj. NEWBERG WASTEWATER TREATMENT PLANT

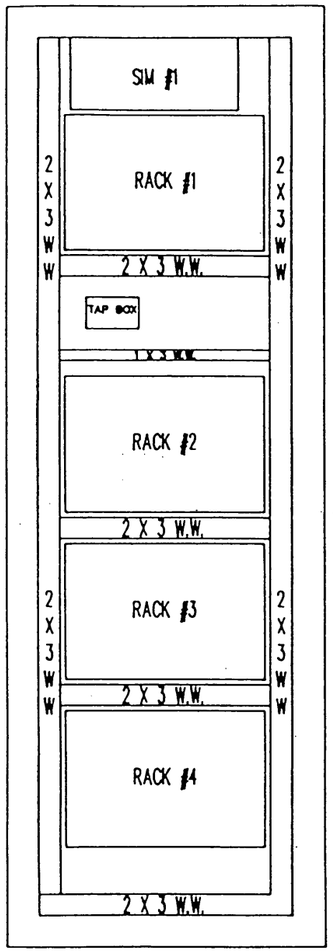
Engr. KRAMER, CHIN & MAYO, INC

SECONDARY CONTROL PANEL
FRONT PANEL LAYOUT

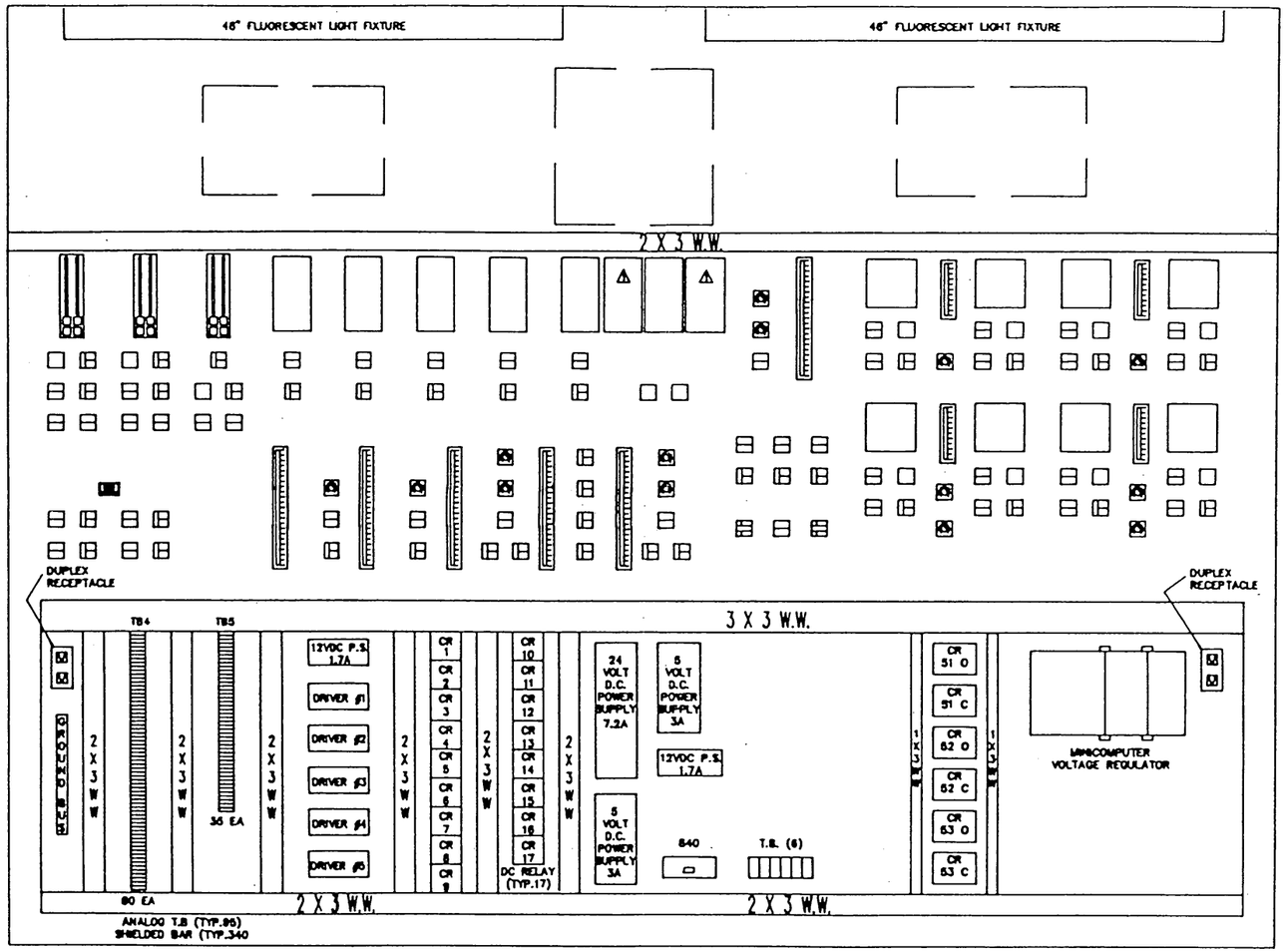
uniPAC INTEGRATED CONTROL SYSTEMS
UNITED PACIFIC CONTROLS, INC.
410 N.W. 14th P.O. Box 4423 Portland, Oregon 97209

Date 8-27-86

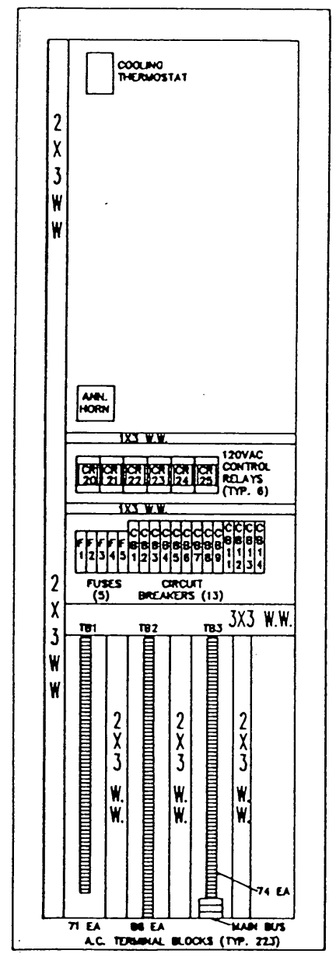
Dwg. No. 3170F5LD



RIGHT HAND SIDE



INTERIOR - REAR VIEW



LEFT HAND SIDE

FOR REFERENCE ONLY

				Des. KJS	Proj. NEWBERG WASTEWATER TREATMENT PLANT
				Drn. KJS	Engr. KRAMER, CHIN & MAYO, INC.
3-24-89	⚠	FINAL	R.H.	Ck. RH	
Date	No.	Revision	By	App.	

SECONDARY CONTROL PANEL
INTERIOR LAYOUT

uniPAC
UNITED PACIFIC CONTROLS, INC.
410 N.W. 14th P.O. Box 4423 Portland, Oregon 97209

Date 8-27-86
Dwg. No. 3170F5DT