

CITY OF NEWBERG  
CITY RECORDER INDEX NO. 1064

CITY OF NEWBERG, OREGON

WATER SUPPLY SYSTEM

OTIS SPRINGS IMPROVEMENTS

Specifications, Proposal & Contract Documents

10/23/1967

Durell Belanger, Mayor  
C. N. Windsor, Chairman  
Public Works Committee  
G. H. Bliesner, City Engineer  
G. Weller Probasco, Superintendent  
Public Works  
M. C. Gilbert, City Recorder  
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Consulting Engineers

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CITY OF NEWBERG, OREGON  
OTIS SPRINGS PROJECT  
PUMPING STATION RECONSTRUCTION

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NOTICE TO CONTRACTORS

OTIS SPRINGS PROJECT

PUMPING STATION RECONSTRUCTION & PUMPING EQUIPMENT

City of Newberg, Oregon

Sealed proposals addressed to the Mayor and City Council of Newberg, Oregon, and endorsed, "Proposal for Otis Springs Pumping Station Reconstruction and Equipment" will be received by the City Recorder, City Hall, Newberg, Oregon, 97132, until 7:30 P.M., Monday, October 2, 1967, and thereafter will be publicly opened and read aloud at an adjourned meeting of said Council in the Council Chambers of the City Hall of Newberg, Oregon.

Bids are invited for furnishing and installing two vertical turbine pumps together with all electrical and control appurtenances, construction of concrete block masonry building, and the furnishing and installation of chlorination control equipment. All equipment shall be furnished by the Contractor.

Plans and specifications and contract documents may be seen at the office of the Consulting Engineers, Carl E. Green and Associates, 1730 S. W. Skyline Blvd., Portland, Oregon, 97221, or at the office of the City Recorder, City Hall, Newberg, Oregon. Copies may be obtained by bona fide bidders upon receipt of deposit check in the amount of Forty Dollars (\$40.00).

Deposit checks of bidders will be returned provided a bid is submitted and the plans and specifications are returned promptly in good condition. The plans and specifications are the property of the Consulting Engineers, shall not be used by others, and shall be returned in their entirety. If no bid is submitted by a planholder, one-half of the amount of the deposit check will be refunded upon return of the plans and specifications in good condition within one week of bid opening date.

Bidders shall prequalify in accordance with Oregon Public Works laws. All proposals shall be made on the regular blank forms furnished with the specifications, and shall be accompanied by a certified check, cashier's check or bid bond in the amount of five percent (5%) of the total bid. The bid security shall be forfeited as liquidated damages by the successful bidder if he should fail or refuse to enter into a contract and furnish a one hundred percent (100%) public works performance bond. The successful bidder shall furnish security for faithful performance of the Contract in the full amount of the work bid.

The City reserves the right to reject any and/or all bids, to waive informalities, and to accept the proposal deemed by the City Council to be in the best interest of the City considering prices bid, experience of the bidders, financial condition, record of performance on similar projects, and the litigation records of the bidders and the principals thereof. The City shall have the right to postpone making award of contract for a period of thirty (30) calendar days after opening of bids.

By order of the City Council of Newberg, Oregon

Durell Belanger, Mayor

M. C. Gilbert, City Recorder

First publication: September 14, 1967

Second publication: September 21, 1967

Last publication: September 28, 1967

CITY OF NEWBERG, OREGON

WATER SUPPLY SYSTEM

OTIS SPRINGS IMPROVEMENTS

SEPTEMBER 6, 1967

ADDENDA #1

Plans, Specifications, Proposal and Contract Documents

BID DATE -- OCTOBER 2, 1967

The plans and specifications are hereby modified as follows:

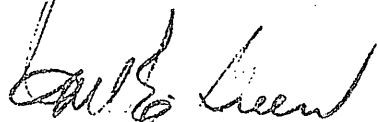
1. Instruction To Bidders (IB) -- Chlorination control equipment shall be installed in the new pumping station, not in the chlorination building.
2. Proposal and Basis of Payment

Bid Item 19 - Delete chlorinator booster pump and concrete base.  
Price shall be for piping between pipe line and chlorinator only.

Bid Item 22 - Delete the chlorine solution diffuser assembly.  
Price shall be for P.V.C. piping from the chlorinator to the pumping station wet well per design.

CARL E. GREEN & ASSOCIATES  
Consulting Engineers

By



Carl E. Green

## INSTRUCTIONS TO BIDDERS

### 1. General

The work contemplated by these specifications consists of the following:

- a: Provide all equipment and materials and construct a wet well pumping station on an existing 12foot diameter covered concrete tank on the City's Otis Springs property adjacent to Highway 99 W, one and one-half miles east of Newberg.
- b. Reconstruct the pump discharge piping, install flow meter and chlorinator control equipment in the existing chlorinator building on the site, together with all necessary electrical and control wiring, piping etc. to make a complete and automatically controlled system.

Alternate bids are requested for furnishing and installing different makes of pumps and equipment. The Engineer reserves the right to select the make of pump and equipment which he considers in the best interest of the owner considering cost, maintenance expense, length of life and trouble free operation.

The Owner is in need of the facilities at the earliest possible date; hence completion time will be considered in awarding of contracts for construction.

### 2. Local Conditions

Bidders shall carefully examine and judge for themselves the character of the work, local conditions of topography, weather, the kind and quality of the materials to be used, the quality of the work to be done, the classifications and kinds of materials to be encountered in excavation, the probability of adverse weather conditions, ground water, etc.

### 3. Qualifications for the Work

Bidders shall be experienced in the type of work being bid and shall have adequate equipment to carry on the work in an expeditious and workmanlike manner. Bidders shall prequalify under the provisions of Chapter 279 of the Oregon Revised Statutes.

### 4. Bidder's Checks or Bid Bonds

Bids shall be accompanied by either a certified check, cashier's check

#### 4. Bidder's Checks or Bid Bonds (Continued)

or bid bond drawn in favor of the Owner in an amount equal to or exceeding five percent (5%) of the total amount bid. The check or bid bond accompanying the accepted bid will be retained until the Contract is signed and performance bond furnished. All other checks will be returned promptly to the bidders.

If the Bidder fails or refuses to enter into a contract for the work and furnish the performance bond called for in the specifications within ten (10) days after notification that his bid has been accepted, the amount of such check or bond shall be deemed liquidated damages and as the case may be, either retained by or paid to the Owner in payment thereof.

#### 5. Public Works Performance Bond and Insurance Requirements

One hundred percent public works performance bond shall be provided as specified under General Conditions. All insurance as specified under General Conditions shall also be furnished, with the exception that the limits shall be no less than those hereunder:

##### Insurance Coverage Minimum

|                                 |                       |
|---------------------------------|-----------------------|
| Liability, one occurrence       | \$200,000 - \$300,000 |
| Property Damage, one occurrence | 100,000 - 200,000     |

#### 6. Estimate of Quantities and Balanced Bids

The estimate of quantities of work to be done and materials to be furnished under the specifications is approximate only and is given only as a basis of calculation upon which the award of the contract shall be made. The Owner reserves the right to increase or diminish without restriction the amount of any class of materials or work that may be deemed necessary, and bidders shall submit balanced bids in order that they may not be adversely affected by increase or decrease in quantities.

#### 7. Interpretation of Plans, Specifications and Contract Documents

The Engineers have endeavored to prepare plans, maps, specifications and contract documents in a manner which clearly sets forth the work to be done, the manner in which the construction is to be accomplished and the basis of payment for the various units of the work. Extreme accuracy and absence of conflict is not guaranteed. Should the Bidder or Contractor discover any apparent error or conflict in the plans, maps, specifications, contract documents or quantities upon which bids are requested, or should there be any ambiguity or doubt regarding any of the same or the interpretation thereof, such matters shall be brought at once to the attention of the Engineers for clarification or correction.

The Owner presumes that all Bidders shall have read the specifications and thoroughly examined the plans before submitting a proposal to do the work; therefore, any discrepancies, omissions, conflicts and ambiguities shall be called to the attention of the Engineers before bids are submitted in

7. Interpretation of Plans, Specifications and Contract Documents (Continued)

order that any conflicts, misunderstandings, questions or doubts may be resolved at once.

In the event of a disagreement arising as to the true intent and meaning of the plans or specifications, the Engineers shall interpret the same and their interpretation shall be accepted by the Contractor as final.

8. Form of Proposal

All proposals shall be made on the forms furnished herewith, and the bidder shall fill in the proposal completely and return the entire and complete set of specifications and proposal with his bid.

Proposals shall be sealed and plainly marked "Proposal For Pumping Station Reconstruction - Otis Springs Project" and addressed to the Owner and the same shall be filed with the Owner prior to the hour and date set for receiving and opening bids.

9. Completion Time

The work included in these specifications shall be completed in the shortest possible time commensurate with good workmanship. Bidders shall state completion time in their bid and shall take into consideration unfavorable weather and other adverse conditions. Extensions of time will be granted only under conditions for which the Owner is clearly responsible.

10. Liquidated Damages

Because of the extreme need for the improvement, the work shall be completed in the earliest possible time after construction begins. To compensate the Owner for any delay in completion of the work and to cover additional costs of interest on invested capital, engineering, supervision and inspection, the Owner shall deduct from payments otherwise due the Contractor liquidated damages for each calendar day the work is delayed beyond completion time bid for the work at the rate of Eighty Dollars (\$80.00) per calendar day.

The damages herein set forth shall not be considered in the nature of a penalty, but shall partially reimburse the Owner for losses and extra costs due to delay.

11. Quality of Materials and Equipment

Wherever in these specifications definitely named materials or manufactured products are called for, such names are specified to establish a standard of quality, and it will be presumed, unless specifically excepted, that the base bid includes the materials or articles so named, and that the contractor's proposal, if accepted, will constitute a contractual obligation to furnish the standard named materials or articles and no other. It is, however, not the purpose of these specifications to eliminate other materials or manufactured products equal to the standard specified.

11. Quality of Materials and Equipment (Continued)

If the Contractor wishes to take specific exception to certain named materials or manufactured products, he shall so state in his bid, giving the difference in cost, if any, between the proposed substitute and the material, equipment or article included in the base bid as standard. A contractor desiring to make a substitution shall submit with his request for prior approval, or, if no prior approval is requested, with his bid, detailed specifications, drawings, performance data, and a list of installations with references, to enable the Owner and Engineer to judge the efficiency, durability and previous history of the substitute materials, equipment or articles.

The determination as to whether or not any such substitute material, equipment, or article is acceptable and in the interest of the Owner shall rest solely with the Owner and Engineer. No allowance shall be made for failure to obtain prior approval if the substitute is determined not to be acceptable.

12. Basis of Award or Awards

The Owner will take into consideration the balanced character of the unit price and lump sum item bids submitted, the experience, ability and equipment of the Contractors and the time for completion of the work as well as the extension of the estimated quantities and estimated totals at the unit prices bid. The Owner will also consider the record of the bidders as to experience, financial condition, record of performance, equipment for the work and litigation records of the bidders.

The Owner reserves the right to reject any or all bids and to waive irregularities or technicalities not affecting substantial rights or in violation of law.

## SPECIAL CONDITIONS AND REQUIREMENTS

### 1.0 Site and Rights-of-way

Access to the construction site is over a city maintained roadway connecting with State Highway 99W one and one-half miles east of Newberg. The Contractor shall confine his operations within lands owned by the City which is adequate for the construction contemplated.

### 1.1 Local Facilities

Electrical power is available on the site. The Contractor shall arrange for electric service from the local power company and shall pay for all energy used. Water is available on the site in the existing 10" main, except for the period of 8" and 10" main reconstruction. No charge will be made for water used.

### 2.0 Existing Facilities and Structures

Pumping Station: The existing pumping station consists of a 12 foot diameter concrete sump 13.5 feet deep covered with a 6" reinforced concrete slab operating floor. The existing round brick super structure, pumps, equipment, and piping will be stripped down to the operating floor and removed by the City, prior to the start of new construction. The Contractor shall strip out all existing piping, and manhole steps in the sump and shall be responsible for cutting new holes and realigning other holes in the existing concrete floor and sump wall to receive the new pipe and pump columns.

Chlorinator Building: The existing chlorinator building has clay tile walls on concrete foundation and floor with wood frame roof and wood doors. Care shall be taken to prevent damage to outside wall finish and damage to the chlorinator building and adjacent reservoir roofs.

## GENERAL CONDITIONS

### 1.0 DEFINITIONS

- 1.1 Work - Whenever the word "Work" occurs in these Specifications, the term shall signify all the Work contemplated by these Specifications, the Contract attached hereto, and the Plans prepared by the Engineer in connection herewith.
- 1.2 Owner - Whenever the word "Owner" occurs in these Specifications, the term shall signify the party to the Contract for whom the Work is being done.
- 1.3 Contractor - Whenever the word "Contractor" occurs in these Specifications, the term shall signify the party or parties contracting to perform the Work.
- 1.4 Engineer - Whenever the word "Engineer" occurs in these Specifications, the term shall signify the Engineer or the firm of engineers employed by the Owner to design and supervise the Work, said Engineer acting either directly or through an authorized assistant whose instructions and decisions shall be limited by the particular duties entrusted to him.
- 1.5 Contract Documents - Whenever the words "Contract Documents" occur in these Specifications, the term shall signify the Specifications, the Plans prepared by the Engineer in connection herewith, and the Contract attached hereto, which latter two are incorporated herein by this reference.

### 2.0 ARBITRATION

- 2.1 The Engineer shall decide all questions which may arise between the parties relative to the true intent and meaning of any and all of the provisions or stipulations contained in the Specifications and/or shown on the Plans, or the amount, quality, acceptability, character, and classification of the several kinds of work performed or to be performed and the materials supplied or to be supplied by the Contractor under the Contract Documents. The Engineer's decision shall be final on all such matters and shall be binding upon both parties.

### 3.0 PERFORMANCE BOND

- 3.1 The Contractor shall furnish a public works faithful performance bond, meeting the requirements of ORS 279.510, in an amount equal to one hundred percent (100%) of the total contract price for the Work. The bond shall include and cover all guarantees required by the Contract Documents.

#### 4.0 INSURANCE

The Contractor shall not begin the Work under the Contract until he has obtained all insurance required by these Documents in a company or companies acceptable to the Owner and certificates of such insurance have been presented to and approved by the Owner and its attorney. The Contractor shall not permit any Subcontractor to begin work until he has likewise complied with the foregoing insurance requirements.

##### 4.1 Workmen's Compensation Insurance

The Contractor shall procure and maintain during the life of the Contract Workmen's Compensation Insurance as required by applicable state law for all of his employees to be engaged in work at the site of the Work under the Contract and in case any such Work is sublet, the Contractor shall require the Subcontractor similarly to provide Workmen's Compensation Insurance for all of the latter's employees to be engaged in such Work unless such employees are covered by the protection afforded by the Contractor's Workmen's Compensation Insurance. In case any class of employees engaged in hazardous work on the Work under the Contract is not protected under the Workmen's Compensation Statute, the Contractor shall provide for his own employees, and shall cause each Subcontractor to provide for his own employees, adequate employer's liability insurance for the protection of such of their respective employees as are not otherwise protected.

##### 4.2 Contractor's Liability and Property Damage Insurance

The Contractor shall procure and maintain during the life of the Contract Public Liability Insurance in an amount not less than \$100,000 for injuries, including accidental death, to any one person, and subject to the same limit for each person in an amount not less than \$200,000, for each occurrence, and Property Damage Insurance in an amount not less than \$50,000 for each occurrence.

##### 4.3 Subcontractor's Liability and Property Damage Insurance

The Contractor shall either (1) require each of his Subcontractors to procure and maintain during the life of his subcontract Public Liability and Property Damage insurance of the type specified in subparagraph 4.2 of this paragraph, in amounts approved by the Owner, or (2) insure the activities of his subcontractors in his policy to the extent specified in said subparagraph 4.2.

##### 4.4 Scope of Insurance and Special Hazards

The insurance required under subparagraphs 4.2 and 4.3 of this paragraph shall provide adequate protection for the Contractor and his

4. INSURANCE (continued)

4.4 (continued)

Subcontractor respectively, against damage claims which may arise out of or in connection with the performance of the Work, whether such performance be by the insured or by anyone directly or indirectly employed by him and, also, against any special hazards which may be encountered in the performance of the Work, such as blasting.

4.5 All Risk Insurance

The Contractor shall procure and maintain at all times during the performance of the Work, and until its acceptance, Builder's or Contractor's All Risk Insurance coverage in an amount no less than the total amount of the construction contract. Such coverage shall apply to fires, floods, earthquakes, wind or collapse during the course of construction and until acceptance by the Owner. The policy shall be endorsed to name the Owner and Engineers as insured as well as the Contractor, and copies of same shall be furnished to both the Owner and Engineers.

4.6 Insurance Certificates

All certificates of insurance shall include a statement by the surety to the effect that no insurance shall be canceled or materially altered except after ten (10) days written notice has been received by the Owner.

5.0 BONDS, INSURANCE, LICENSES AND PERMITS REQUIRED BY PUBLIC AGENCIES, RAILROADS, ETC.

5.1 In addition to the specific performance bond and insurance requirements set forth above, the Contractor shall also furnish any and all bonds, insurance certificates, licenses and permits required by federal, state, county or municipal bodies, as well as by railroads and public utilities, should any be required as a result of any part or all of the Work called for in these specifications.

6.0 CONTRACTOR'S OBLIGATIONS

6.1 The Contractor shall and will, in good workmanlike manner, do and perform all Work and furnish all supplies and materials, machinery, equipment, facilities and means, except as herein otherwise expressly specified, necessary or proper to perform and complete all the Work required by these Specifications and other Contract Documents, within the time herein specified, in accordance with the provisions of the Contract Documents and any and all supplemental Plans made a part hereof, and in accordance with the directions of the Engineer as given from time to time during the progress of the Work. He shall furnish, erect, maintain, and remove such construction plant and such

6. CONTRACTOR'S OBLIGATIONS (cont'd)

6.1 (continued)

temporary works as may be required. He alone shall be responsible for the safety, proper construction of the Work, the method employed in performing the Work, and for any damage which may result from such methods, or the failure of the Work, its improper construction, or prior to final acceptance, its maintenance or operation. The Contractor shall observe, comply with, and be subject to all terms, conditions, requirements and limitations of the Specifications and other Contract Documents, and shall do, carry on, and complete the entire Work to the satisfaction of the Engineer and the Owner.

7.0 LAYING OUT OF WORK

7.1 The Contractor shall give forty-eight (48) hours notice when he shall require the services of the Engineer for laying out any portion of the Work. He shall furnish a man to assist in giving lines and levels under the direction of the Engineer. He shall carefully preserve all stakes when set, together with all bench marks or monuments existing along the lines of the Work. In the event any of them have to be replaced unnecessarily by the Engineer, the Contractor shall be charged with the expense thereof, and the same may be deducted from his estimate.

8.0 OBLIGATION TO FURNISH HIGH QUALITY MATERIALS, EQUIPMENT & WORKMANSHIP

8.1 The Contractor will be expected and required to furnish high quality equipment, supplies and materials, and perform good work, and no Inspector or Engineer shall have the power to waive such obligations. Any failure or omission of an Inspector or Engineer to condemn any defective equipment, supplies, materials, or Work shall not be construed as an acceptance thereof nor release the Contractor of his obligations with respect thereto, and the Contractor shall at once tear out, remove, and properly reconstruct or replace any such defective equipment, supplies, materials, or work at his own cost at any time upon discovery of the defect or upon receipt of a notice to do so during the period of construction and for the full guarantee period following acceptance of the Work.

9.0 INSPECTION

9.1 The Contractor shall not undertake any part of the Work without notifying the Engineer of his intention to do so. If an Inspector or Field Engineer is employed on the project, it is understood that he is the representative of the Owner or Engineer, and it shall be his duty to check materials, equipment and the construction of the Work and the manner of carrying on the same within the limits of these

9. INSPECTION (cont'd)

9.1 (continued)

Specifications. Rejected materials of any kind shall be removed from the job site by the Contractor immediately after its rejection, and shall not be used on the project. Instructions given by the Inspector or Field Engineer shall be respected and executed by the Contractor, but as stated in paragraph 8.1 of these General Conditions, no Inspector or Field Engineer shall have the power to waive the obligations of the Contractor to furnish high quality equipment, supplies and materials or perform good work.

10.0 ORDERS GIVEN CONTRACTOR

10.1 The Contractor shall have an authorized representative on the ground and in charge of the Work, and whenever the Contractor himself is not present, orders will be given to such representative, superintendent, or foreman in immediate charge, and shall be received and obeyed by him. If any person employed on the Work shall refuse or neglect to obey the instructions of the Engineer in any way relating to the Work, or shall appear to the Engineer to be incompetent, unreliable, negligent, disorderly, or unfaithful, he shall, upon written request of the Engineer, be at once discharged and not again employed upon any part of the Work.

11.0 SUBCONTRACTORS

- 11.1 No part of the Work to be performed shall be sublet or transferred without prior written consent of the Engineer, and no such consent shall release the Contractor from any obligation either to the Owner or to persons employed by the Subcontractors.
- 11.2 The Contractor may utilize the services of specialty Subcontractors on those parts of the Work which, under normal contracting practices, are performed by specialty Subcontractors; however, he shall first obtain the Owner's written approval of all such specialty Subcontractors.
- 11.3 The Contractor shall be as fully responsible to the Owner for the acts and omissions of his Subcontractors and of persons either directly or indirectly employed by them as he is for the acts and omissions of persons directly employed by him.
- 11.4 The Contractor shall cause appropriate provisions to be inserted in all subcontracts relative to the Work to bind Subcontractors to the Contractor by the terms of the Specifications and other Contract Documents insofar as applicable to the work of Subcontractors, and to give the Contractor the same power as regards terminating any

11. SUBCONTRACTORS (cont'd)

11.4 (continued)

subcontract that the Owner may exercise over the Contractor under any provision of the Specifications or other Contract Documents.

11.5 Nothing contained in the Contract shall create or be construed to create any contractual relation between any Subcontractor and the Owner.

12.0 ASSIGNMENTS

12.1 The Contractor shall not assign the whole or any part of the Contract or any moneys due or to become due thereunder without the written consent of the Owner, and any assignment without such consent shall be void and of no effect. In the event the Contractor is permitted to and does assign all or any part of any moneys due or to become due under the Contract, the instrument of assignment shall contain a clause substantially to the effect that it is agreed that the right of the assignee in and to any moneys due or to become due to the Contractor shall be subject to prior liens of all persons, firms and corporations for services rendered or materials supplied for the performance of the Work called for in the Contract and all set offs and defenses of the Owner.

13.0 PROSECUTION OF WORK

13.1 The Work shall be begun within the shortest possible and reasonable time after the execution of the Contract attached to these Specifications and shall, unless the Owner specifically directs otherwise in writing, be prosecuted with such force and vigor as to secure its completion by the time bid.

13.2 If the Contractor shall fail to complete the Work within the time specified, the Contractor shall reimburse the Owner for additional expense and damage incurred by reason of the extended time and cost of engineering and other services due to such delay, interest on invested capital, and inability to use the facilities being constructed under the Contract. The amount of reimbursement to the Owner by the Contractor shall be as set forth on Page 1 of the Proposal Section, and in the Agreement Section.

14.0 COMPLETION TIME AND LIQUIDATED DAMAGES

14.1 Because of the need for the Work, the date of beginning, rate of progress, and the time for completion of the Work are and shall be essential conditions of these Specifications and the Contract to be executed between the Owner and the successful bidder.

14. COMPLETION TIME AND LIQUIDATED DAMAGES

(continued)

14.2 The Contractor must prosecute the Work regularly, diligently, and uninterruptedly at such rate of progress as will insure full completion thereof within the time specified. In submitting his Proposal, each bidder represents that the time set forth in his Proposal for the completion of the Work described herein is a reasonable time for the completion of same, taking into consideration the average climatic range and usual industrial and construction conditions prevailing in this locality.

14.3 If the successful Contractor shall neglect, fail, or refuse to complete the Work within the time herein specified, then the Contractor will be required to pay to the Owner, or the Owner shall deduct from payments otherwise due the Contractor, liquidated damages at a rate as specified on Page 1 of the Proposal Section and in Form of Agreement Section for each calendar day the Work is delayed beyond the completion time so specified. Said amount is fixed and agreed upon by and between the Contractor and the Owner because of the impracticability and extreme difficulty of fixing and ascertaining the actual damages the Owner would in such event sustain, and said amount is agreed to be the amount of damages which the Owner would sustain for each day's delay.

14.4 Time shall be of the essence of each and every portion of these specifications and other Contract Documents wherein a definite and certain length of time is fixed for the performance of any act whatsoever; and where under the Contract additional time is allowed for the completion of any Work, the new time limit fixed by such extension shall be of the essence of the Contract. The Contractor shall not be charged with liquidated damages or any excess cost when the delay in completion of the Work is due to:

14.4.1 Unforeseeable cause beyond the control and without the fault or negligence of the Contractor, including, but not restricted to, Acts of God, or of the public enemy, acts of the Owner, acts of another Contractor in the performance of a contract with the Owner, fires, floods, epidemics, quarantine restrictions, strikes, freight embargoes and unusually severe weather; and

14.4.2 Any delays of subcontractors or supplier occasioned by any of the causes specified in subparagraph 14.4.1

15.0 STOPPING WORK, TAKING OVER WORK, and TERMINATION OF CONTRACT

15.1 If, in the opinion of the Engineer, the Contractor or any of his Subcontractors is using defective material or improperly performing the Work and neglects or refuses to take up or reconstruct, at his own expense, such Work as shall have been rejected by the Engineer as defective, or in conflict with the Plans or other Contract Documents or unsuitable, then the Engineer may give written notice to

15. STOPPING WORK, TAKING OVER WORK, and TERMINATION OF CONTRACT (cont'd)

15.1 (continued)

the Contractor and his surety that all Work be stopped, and any Work performed after such notice shall not be accepted.

15.2 If the Contractor shall fail to commence the Work within the time specified or to prosecute said Work continuously and with sufficient workmen and equipment to insure its completion within the time specified in the Contract Documents for completion, or if he should fail to make prompt payment to Subcontractors or for material or labor, or otherwise be guilty of a violation of this Contract, the Owner may serve notice upon the Contractor and his Surety of the Owner's intention to terminate the Contract. Such notice shall state the reasons for such intention to terminate the Contract, and, unless within five (5) days after serving of such notice upon the Contractor the violations or delays shall cease and be corrected or arrangements acceptable to the Owner are made for correction, the Contract shall cease and terminate. The Contract shall also cease and terminate automatically without any notice if the Contractor should file a petition in bankruptcy, should be adjudged a bankrupt, should he make a general assignment for the benefit of his creditors, should a receiver be appointed on account of his insolvency, or if arrangement proceedings are instigated under the provisions of the laws governing bankruptcy.

15.3 In the event of any such termination the Owner shall immediately serve notice thereof upon the Surety and the Contractor, and the Surety shall have the right to take over and perform the Contract, provided, however, that if the Surety does not commence performance thereof within five (5) days from the date the notice of such termination is mailed to such Surety, the Owner may, without process of law, take over the Work and prosecute same to completion by Contract or otherwise, and in so doing the Owner may take possession of and utilize in completing the Work such materials, supplies and equipment as may be on the site of the Work and necessary therefor. Neither by the taking over of the Work nor by its completion in accordance with the terms of this provision shall the Owner forfeit its right to recover damages from the Contractor or from the Contractor's Surety for the former's breach of this Contract. Should the expense incurred by the Owner in taking over and completing the Work be less than the sum that would have become payable under the Contract if said Work had been completed by the Contractor, then such savings shall accrue solely to the Owner, and the Contractor shall have no claim thereto. Should such expense exceed said sum, then the Contractor and the Contractor's Surety shall be liable to the Owner for the amount of such excess. Upon the taking over the Work by the Owner as herein provided, no further payment shall be made to the Contractor until the Work is completed and accepted, and any moneys due or that become due the Contractor under the Contract

15. STOPPING WORK, TAKING OVER WORK, and TERMINATION OF CONTRACT (cont'd)

15.3 (continued)

for work, materials and equipment furnished prior to its termination will be withheld and may be applied by the Owner in payment therefor, in payment of any damages sustained by the Contractor's breach, and to the payment of any excess cost to the Owner of completing said Work. After completion and acceptance of the Work any balance remaining due Contractor after the payments above described shall be paid to the Contractor.

16.0 TEMPORARY SUSPENSION OF WORK

- 16.1 The Owner reserves the right to suspend operation on the Work or any parts thereof, temporarily. In the event of such temporary suspension, the Owner shall give the Contractor five (5) days written notice thereof, and the date of completion of the Contract shall be extended for a period of time equal to said temporary suspension period, but the Contractor shall have no claim for damage or anticipated profits on said Work from or by reason of said temporary suspension.

17.0 DAMAGE CLAIMS

- 17.1 The Contractor shall indemnify and hold the Owner harmless from any and all claims for damages of every nature and description arising from or through the operation of the Contractor or those in his employ, including all Subcontractors, including all claims for death or injury to persons, and for injury or damages to the property or right of any person, persons, or corporations, either public or private, and including any fine or penalties that may result or be imposed by any public authority as a result of the prosecution of the Work, and the Contractor further agrees to accept and comply with the requirements of the State Industrial Accident Commission or similar state agency and to indemnify and save the Owner harmless from any claim of the State or other authority for fees, compensation, or industrial insurance for workmen injured or killed in connection with the prosecution of the Work called for by the Contract.

- 17.2 In the event of the failure of the Contractor to secure a valid release of any and all such claims before the final acceptance of the Work, then the Owner may settle or compromise such claims as best it can and charge the cost thereof to the Contractor; provided, however that if upon completion of the Work called for by the Contract, any such claims are pending and unsettled, irrespective of whether they are in litigation or not, the Contractor shall be privileged to furnish the Owner a surety bond covering the full amount of said claims, executed by a responsible surety company authorized to transact a

17. DAMAGE CLAIMS (continued)

17.2 (continued)

general surety business in the State, for the purpose of indemnifying the Owner from such claims, and thereupon the Owner shall release and pay to the Contractor all moneys withheld as a protection against such claims, but such bond shall not operate to release the Contractor from his primary obligation to the Owner as outlined in this paragraph.

18.0 FEES, ROYALTIES AND PATENTS

18.1 The Contractor shall indemnify and hold the Owner and its officers, agents, servants and employees harmless from liability of any nature or kind, including cost and expenses, for or on account of any patented or unpatented invention, process, article, or appliance manufactured or used in the performance or construction of the Work, including its use by the Owner, unless otherwise specifically stipulated in the Contract Documents.

18.2 License and/or royalty fees for the use of any process which is authorized by the Owner shall be paid to the holder of the patent or his authorized agent or licensee directly by the Contractor.

18.3 If the Contractor uses any design, device or materials covered by letters patent or copyright, he shall provide for such use by suitable agreement with the owner of such patented or copyrighted design, device or material. It shall be mutually agreed and understood that, without exception, the contract price for the Work shall include all royalties and costs arising from the use of such design, device or materials in any way involved in or connected with the Work. The Contractor and/or his sureties shall indemnify and save harmless the Owner from any and all claims for infringement by reason of the use of such patented or copyrighted design, device or materials or any trademark or copyright in connection with work agreed to be performed under the Contract, and shall indemnify the Owner for any cost, expense or damage which it may be obliged to pay by reason of such infringement at any time during the prosecution of the Work or after completion of the Work.

19.0 ENGINEER'S AUTHORITY

19.1 The Engineer shall give all orders and directions contemplated under these Specifications and other Contract Documents relative to the execution of the Work. As stated in paragraph 2.1 of these General Conditions, the Engineer shall determine the amount, quality, acceptability, character, and classification of the several kinds of Work and materials which are to be paid for under the Contract, and shall decide all questions which may arise in relation to said Work and the

19. ENGINEER'S AUTHORITY (continued)

19.1 (continued)

construction thereof. The Engineer's estimates and decisions shall be final and conclusive, except as herein otherwise expressly provided. In the event any question shall arise between the parties hereto relative to said Specifications or Plans, the determination or decision of the Engineer shall be a condition precedent to the right of the Contractor to receive any money or payment for Work under the Contract affected in any manner or to any extent by such question.

20.0 CONTRACTOR'S RISK

20.1 It is understood that the whole of the Work to be performed under the Contract for this Work is to be done at the Contractor's risk, that he has familiarized himself with the local conditions, weather and other conditions and contingencies likely to be encountered, and has bid accordingly and that he is to assume the responsibility and risk of all loss or damage to materials or Work which may arise from any cause whatsoever prior to final completion.

21.0 RIGHTS-OF-WAY

21.1 The Owner shall furnish all land and rights-of-way necessary for the carrying out of the Contract and the completion of the Work and will use due diligence in acquiring said land and rights-of-way as speedily as possible. It is possible that all lands and rights-of-way may not be obtained as herein contemplated before construction begins. In such event the Contractor shall begin work upon such land and rights-of-way as the Owner may have previously acquired, and no claim for damages whatsoever will be allowed by reason of the delay in obtaining the remaining lands and rights-of-way. Should the Owner be prevented or enjoined from proceeding with the Work, or from authorizing its prosecution, either before or after its commencement, by reason of any litigation, or by reason of its inability to procure any lands or rights-of-way for said Work, the Contractor shall not be entitled to make or assert any claim for damage by reason of said delay, or to withdraw from the Contract except by consent of the Owner; but the time for completion of the Work will be extended to such time as the Owner fairly determines will compensate for the time lost by such delay, such determination to be set forth in writing.

22.0 PERMITS

22.1 The Contractor shall obtain and pay for any and all municipal, county, and state permits incidental to or necessary in the actual performance of the Work and shall, during its progress, comply with all laws,

22. PERMITS (continued)

22.1 (continued)

statutes, and governmental regulations pertaining to or necessary to the carrying out of the Work. As stated in paragraph 21.1 of these General Conditions, however, the Owner shall obtain rights-of-way. All highway crossings, restoration of pavement, blockading of roads and highways, and railroads, erection and maintenance of barricades, etc. shall be done by the Contractor in accordance with the requirements of the officials having jurisdiction over such matters.

23.0 SAFETY REQUIREMENTS

23.1 The Contractor shall at all times conduct his Work in such a manner as to comply with all requirements of the State Industrial Accident Commission or any other agency having authority over such matters and minimize the possibility of accident or injury to any of his workmen or the general public, and he shall so conduct his Work, maintain his operations and provide all reasonable safeguards so as to protect public and private property as well as to protect persons from injury.

24.0 CONSTRUCTION PROCEDURES

24.1 The Contractor shall at all times during the performance of the Work and until its acceptance keep the site of the Work safe and in as neat order and repair as feasible, store and cover equipment, materials and supplies so as to keep them from weather and other damage, and otherwise maintain and operate the Work and the site thereof in an efficient and workmanlike manner. At the conclusion of the Work, Contractor shall remove from the site of the Work all rubbish and leave the worksite in an orderly and clean condition.

25.0 STATUTORY REQUIREMENTS, TAXES AND CONTRIBUTIONS

25.1 The Contractor shall comply with all federal and state laws pertaining to the employment of labor, including Workmen's Compensation laws. Typical forms for reporting Workmen's Compensation are included in these documents.

25.2 The Contractor shall make prompt payment to the Internal Revenue Service for Federal income taxes withheld from payroll, as well as F.I.C.A. payments covering both employees' amounts withheld and taxes required of employers.

25.3 The Contractor shall make prompt payment to appropriate departments

25. STATUTORY REQUIREMENTS, TAXES AND CONTRIBUTIONS (continued)

25.3 (continued)

of the state to cover all applicable payroll withholding taxes, employer taxes and contributions, and other taxes imposed by the State of Oregon with respect to or in connection with the Work contemplated by these Specifications and other Contract Documents.

26.0 CONTRACTOR'S BILLS

26.1 The Contractor shall promptly pay all payrolls and all bills for materials, supplies, outfits, equipment, machinery, appliances and expenses incurred upon or in connection with the Work. Prior to final settlement, the Contractor shall furnish the Owner a statement and satisfactory evidence that he has paid all bills and claims for labor and materials, withholding taxes, contributions, to both state and federal governments for payroll withholding, Workmen's Compensation, F.I.C.A., and income taxes, and made all other payments required by law, and, if required, shall give access to books and records in substantiation of such payments. Before making said final or other payment, the Owner may pay for and charge the Contractor any unpaid bills or accounts, and sums so paid shall be deducted from amounts earned by the Contractor on the Work, and if such payments exceed the earnings of the Contractor on the Work, the Owner shall recover such excess from the Contractor or his Surety.

27.0 PAYMENTS

27.1 Payments for the Work shall be in accordance with the schedule of prices submitted by the Contractor to, and accepted by, the Owner. Such payments shall be based upon monthly estimates prepared by the Engineer at the end of each calendar month. The Owner will retain ten percent (10%) of each payment to insure faithful completion of the Work and payment of all claims, in accordance with the Contract Documents. Should any state or federal agency exercising control over the project require a retainage of fifteen percent (15%) of each payment, then such amount will be retained. In the absence of legal or other requirements to the contrary, the Owner may, in its sole discretion, reduce the amount of the retained percentage to five percent (5%) for that part of the Work which is in excess of \$250,000. The established retainage shall apply in any case for work done up to the \$250,000 amount.

27.2 Within thirty (30) days after the Work is fully completed, the Owner has been furnished with satisfactory evidence that all payrolls and bills have been paid as provided for in paragraph 26.1 of these General Conditions, a certificate to that effect is given by the Engineer to the Owner, and upon the execution of the release hereinafter mentioned, the retained percentage shall be paid to the

27. PAYMENTS (continued)

27.2 (continued)

Contractor, unless the Contractor has failed to complete the Contract within the time specified, or has been deficient or defaulted in the completion or full performance of the Contract.

28.0 REVISIONS OF ESTIMATES

28.1 No estimate made under this Contract, except the final estimate, shall be construed or considered as final or conclusive against the Owner in respect to the amount of work done or material furnished, or compensation to be allowed therefor or payments made, but all such estimates made before the final payment shall be considered only as being altogether approximate and provisional; the same shall be subject to revision and adjustments, readjustments, and correction by the Engineer for errors or omissions as to the determination of the amount of Work done or material furnished under the Contract, or the amounts paid, or the amounts of Work unfinished, or the amounts of material unfurnished, or as to any other matter or thing connected therewith, and the values thereof, respectively, as well as the amount of compensation therefor, having reference to the uncompleted part of said work and material as well as the work done and the material furnished.

28.2 Any omission to disapprove of Work at the time of making any monthly estimate or other estimate shall not be construed as an acceptance of any defective Work, materials, or equipment, and as stated in paragraph 8.1 of these General Conditions, the Contractor shall, at his own cost, remove and rebuild or make good any work, materials, or equipment which the Engineer may find defective in any way.

29.0 CHANGE IN PLANS

29.1 It is understood and agreed that the Owner shall have the right to make such changes in the amount, dimensions, or character of the Work to be done as may be deemed necessary if, in the opinion of the Engineer, the interest of the Owner and the available funds so require. If any such changes or alterations should diminish the quantity of the Work to be done, they shall not constitute a claim for damages for anticipated profits on the Work that may be dispensed with or reduced. If the amount of Work to be done is increased, payment shall be made according to the quantity actually done and at prices established for similar work under the Contract.

30.0 EXTRA WORK

30.1 Any work necessary or incident to the carrying out of the Work herein contracted, but which is not clearly indicated on the Plans and

30. EXTRA WORK (continued)

30.1 (continued)

Specifications, nor covered by the intent and meaning of this agreement and which cannot be classified and paid for under the prices agreed to, and which may be advantageously furnished or performed by the Contractor, may be designated as "extra work" and shall be paid for at the actual cost of the material, labor and large equipment necessary to perform said work, if and as approved by the Engineer, plus fifteen percent (15%) thereof for the Contractor's overhead and supervision, use of tools and small equipment, bond premiums and profit, etc.

- 30.2 Extra work shall be performed or supplied by the Contractor only upon written order of the Engineer, and all claims and demands for extra work must be made out in itemized and detailed bill form and furnished to the Engineer by the Contractor for settlement at least three (3) days before the day upon which the monthly estimates are to be prepared by the Engineer.

31.0 FEDERAL ANTI-KICKBACK REGULATIONS

- 31.1 The Contractor shall agree to and there shall be included in the signed Contract for construction a provision that he shall comply with all of the stipulations pertaining to "anti-kickback" as set forth in the Regulations of the U.S. Secretary of Labor, (29 CFR, Part 3), all in accordance with the Copeland Act, as amended (40 U.S.C. 276c) and to aid in the enforcement of the Anti-Kickback Act (18 U.S.C. 874).

32.0 RIGHT OF ENTRY TO WORK

- 32.1 Representatives of the Owner and any state, county, municipal or federal agencies having jurisdiction over the Work shall have the right of entry to any and all portions of the Work at all times, and the Contractor shall provide proper facilities for access and inspection.

33.0 RELEASE

- 33.1 As a condition of final payment to the Contractor and payment of retained percentage, the Contractor shall execute and deliver to the Owner in substance and form as required by the Owner, a release and waiver of all claims against the Owner arising out of or in any way connected with the Contract or the Work performed thereunder.

34.0 GUARANTIES AND ACCEPTANCE OF WORK

- 34.1 Except as specifically provided in these Specifications and other Contract Documents, all materials, equipment, workmanship, and completed project shall be guaranteed against any and all defects for a period of not less than one year following acceptance of the Work. This guarantee shall include restoration of settled fills, trenches, pavement and surfaces. Detailed specifications elsewhere in these Contract Documents may impose additional guarantees.
- 34.2 Painting work and painted finishes shall be guaranteed for a period of two (2) years after acceptance of the complete project.
- 34.3 Plastic pipe, coated steel pipe, and insulation on motor windings shall be guaranteed for a minimum period of two (2) years.
- 34.4 Neither the final estimate for payment nor any provisions in the Contract Documents nor partial or entire occupancy or use of the premises or facilities by the Owner shall constitute an acceptance of work not done in accordance with the Contract Documents or relieve the Contractor of liability in respect to any express or implied warranties or responsibility for faulty materials or workmanship. The Contractor shall remedy any defects in the Work and pay for any damage to other work, materials or equipment resulting therefrom, which shall appear prior to the termination of the appropriate guarantee period. The Owner will give notice of observed defects with reasonable promptness

35.0 CONTRACTS WITH PUBLIC BODIES

35.1 General. The following provisions shall apply to contracts and agreements with public bodies of Oregon within state, county, city, water district, sanitary district, drainage district, school district, municipality, municipal corporation or any subdivisions of the foregoing entities all in accordance with Chapter 279 O.R.S.

35.2 Payments - The Contractor shall:

- (a) Make payment promptly, as due, to all persons supplying to such contractor labor or material for the prosecution of the work provided for in such contract.
- (b) Pay all contributions or amounts due the State Industrial Accident Fund from such Contractor or Subcontractor incurred in the performance of the contract.
- (c) Not permit any lien or claim to be filed or prosecuted against the state, county, school district, municipality, municipal corporation or subdivision thereof, on account of any labor or material furnished.
- (d) Pay to the State Tax Commission all sums withheld from employees pursuant to ORS 316.711.

35.3 Conditions Concerning Claims by Public Officers

- (a) If the Contractor fails, neglects or refuses to make prompt payment of any claim for labor or services furnished to the Contractor or a Subcontractor by any person in connection with the public contract as such claim becomes due, the proper officer or officers representing the state, county, school district, municipality, municipal corporation or subdivision thereof, as the case may be may pay such claim to the person furnishing the labor or services and charge the amount of the payment against funds due or to become due the Contractor by reason of his contract.
- (b) The payment of a claim in the manner authorized in this section shall not relieve the contractor or his surety from his or its obligation with respect to any unpaid claims.

35.4 Conditions Concerning Hours of Labor. No person shall be employed for more than eight hours in any one day, or 40 hours in any one week, except in cases of necessity, emergency, or where the public policy absolutely requires it, and in such cases the laborer shall be paid at least time and a half pay for all overtime in excess of eight hours a day and for work performed on Saturday and on legal holidays.

35.5 Conditions Concerning Forfeiture of Contract

The contract may be canceled at the election of the state, county, school district, municipality, municipal corporation, or other subdivision concerned, for any wilful failure or refusal on the part of the Contractor to faithfully perform the contract according to its terms.

35.6 Conditions Concerning Payment of Medical Care and Attention to Employees.

- (a) The Contractor shall promptly, as due, make payment to any person, co-partnership, association or corporation, furnishing medical, surgical and hospital care or other needed care and attention, incident to sickness or injury, to the employees of such Contractor, of all sums which the Contractor agrees to pay for such services and all moneys and sums which the Contractor:
  - (1) May or shall have deducted from the wages of his employees for such services pursuant to the terms of ORS 655.010 to 655.160, and any contract entered into pursuant thereto; or
  - (2) Collected or deducted from the wages of his employees pursuant to any law, contract or agreement for the purpose of providing or paying for such service.

## WORKMEN'S COMPENSATION

The Contractor shall comply with the Oregon State Laws pertaining to wage rates on public works. Wages shall not be less than the prevailing wages in the territory in which the work is done and for comparable trades or occupations. The Contractor, or his surety, shall furnish to the Owner wage certification forms and affidavits as required by the Oregon State Bureau of Labor and comply with the applicable provisions of Chapter 279, ORS, as amended.

The forms and affidavits shall conform to those designated as Form W-1 and Form W-2 on the following pages.

Oregon Revised Statutes, 279-354 states as follows:

"Before payment is made of any sum due on account of a contract for a public work, the state treasurer or the treasurer of the county, city, district, authority, public corporation or entity or of any of their instrumentalities organized and existing under charter or law, or other officer charged with the disbursement of funds applicable to the contract under and pursuant to which payment is made, shall require the contractor or his surety and every subcontractor or his surety to file a statement in writing in form prescribed by the State Labor Commissioner, certifying the hourly rate of wage paid each classification of workmen employed by him upon such public work, and further certifying that no workman employed by him upon such public work has been paid less than the prevailing rate of wage or less than the minimum hourly rate of wage specified in the contract, which certificate and statement shall be verified by the oath of the contractor or his surety or subcontractor or his surety that he has read such statement and certificate and knows the contents thereof and that the same is true to his knowledge."

OREGON PUBLIC WORKS CONTRACTOR WAGE CERTIFICATION FORM

(Form W-1)

|                                                                                                                     |                                                                                                                              |
|---------------------------------------------------------------------------------------------------------------------|------------------------------------------------------------------------------------------------------------------------------|
| <u>Contractor or Subcontractor:</u><br>Name: _____<br>Address: _____<br>Name & Title of Responsible Official: _____ | <u>Project Owner or Governmental Agency:</u><br>Name: _____<br>Address: _____<br>Name & Title of Responsible Official: _____ |
| Description of work:                                                                                                | Location of work:                                                                                                            |

Instructions:

1. Oregon Law <sup>279-354-O.R.S</sup> (~~Chapter 627, O.L. 1959~~) specifies that no payment may be made on public work contracts unless the contractor or subcontractor, or surety, provides a certificate stating the hourly rate of wages paid to the workmen; and also certifying that such rate is not below the prevailing rates for the locality. This form is required in making such certification.

2. Submit this completed form in duplicate with each request for payment.

3. List below each craft employed by you and the hourly rate paid. It is not necessary to list each employee. Supervisory and office personnel or other workmen on regular monthly or per diem salary need not be listed.

4. Complete the affidavit on this form and have it notarized.

| Craft Classification | Min. Rate | Apprentice Classification | Inter-val | Period | Min. Rate |
|----------------------|-----------|---------------------------|-----------|--------|-----------|
|                      |           |                           |           |        |           |
|                      |           |                           |           |        |           |
|                      |           |                           |           |        |           |
|                      |           |                           |           |        |           |
|                      |           |                           |           |        |           |
|                      |           | Overtime Provisions:      |           |        |           |
|                      |           |                           |           |        |           |
|                      |           |                           |           |        |           |
|                      |           |                           |           |        |           |

(Form W-2)

State of Oregon )  
County of \_\_\_\_\_ )

I 9

I further certify that no workmen employed by me (my principal) upon said public work has been paid less than the prevailing rate of wage or less than the minimum hourly rate of wage specified in the contract for said public work..

I have read this statement and certificate and know the contents thereof and the same is true to my knowledge.

Signature

(Title)

Subscribed and sworn to before me this

\_\_\_\_\_ day of \_\_\_\_\_, 196\_\_\_\_\_

Notary Public of Oregon

My Commission expires \_\_\_\_\_

## SPECIFICATIONS FOR CONCRETE CONSTRUCTION - GENERAL

### 1.0 General

- 1.1 These specifications shall apply to plain and reinforced concrete throughout the work. They shall be superseded only by applicable special clauses written into the detailed construction specifications, or by special notation on the plans.
- 1.2 Additional specifications relative to order of placement, type of forms, finish, etc. will be found in the detailed construction specifications elsewhere in the complete set of job specifications.
- 1.3 The proportioning, mixing, placing and finishing of concrete shall be done under the direction of the Engineer and in conformance with the best practice required to secure the objectives of strength, density, watertightness and good surface appearance.

### 2.0 Cement

- 2.1 All cement shall be of standard and accepted brand and shall conform to the Standard Specifications for Type 1 Portland Cement of the American Society for Testing Materials, Serial Designation C-150-49 and subsequent revisions thereof. The cement shall be delivered in sacks and marked with the brand unless specific approval is given for bulk shipments. A sack of cement shall contain not less than ninety-four (94) pounds of cement net, and shall be deemed equivalent to one (1) cubic foot in volume.

### 3.0 High Early Strength Portland Cement

- 3.1 High early strength cement shall be used only where expressly called for in the specifications or approved by the Engineer, and shall conform to the Standard Specifications for Portland Cement, Type III, of the American Society for Testing Materials, C-150-49 and revisions thereof.

### 4.0 Admixtures

- 4.1 Admixtures shall be used only by special permission of the Engineer and for particular locations. They shall be considered only as a means of improving the workability of the concrete and facilitating its placement, and in no case shall be a reason for reducing the cement content below the amount specified.

### 5.0 Air Entrainment

- 5.1 In order to obtain concrete which will adequately withstand weathering and exposure to extremes of freezing and thawing, the Engineer

5. Air Entrainment (continued)

5.1 (continued)

may require the use of an air entraining agent having a record of satisfactory use. Such materials shall be (1) sulphonated hydrocarbon, (2) resin from distillation of wood, or (3) grease especially manufactured for the purpose.

5.2 Air entraining agents when used shall be sufficient to keep the air content between three and five percent (3% - 5%).

6.0 Water

Water for concrete shall be clean and free from injurious amounts of oil, acid, alkali, organic matter, or other deleterious substances.

7.0 Fine Aggregate

7.1 Fine aggregate shall consist of natural sand, sand prepared from the product obtained by crushing stone, rock or gravel, or other approved inert materials with similar characteristics, or a combination thereof, having clean, hard, strong, durable, uncoated grains and free from injurious amounts of dust, lumps, soft or flaky particles, shale, alkali, organic matter, loam or other deleterious substances.

7.2 Fine aggregate shall be uniform in fineness and quality and shall not show a variation in fineness modulus greater than 0.20 plus or minus.

7.3 Fine aggregate shall conform to the pertinent sections in the Standard Specifications for Concrete Aggregates of the American Society for Testing Materials, C-33-49 and revisions thereof.

8.0 Coarse Aggregate

8.1 Coarse aggregate shall consist of crushed stone, gravel, or other approved inert materials with similar characteristics or combinations thereof, having clean, hard, strong, durable, uncoated particles free from injurious amounts of soft, friable, thin, elongated or laminated pieces, alkali, organic or other deleterious matter. The maximum size of aggregate for general concrete work, such as reinforced walls, beams, columns, slabs, etc. shall be a size which will pass a 1½" square opening.

8.2 Coarse aggregates shall conform to the pertinent sections in the Standard Specifications for Concrete Aggregates of the American Society for Testing Materials, C-33-49 and revisions thereof.

9.0 Reinforcing Steel

9.1 Steel for concrete reinforcement shall be intermediate grade deformed

9. Reinforcing Steel (continued)

9.1 (continued)

(not twisted) bars, conforming to the Standard Specifications for Billet Steel Bars for Concrete Reinforcement of the American Society for Testing Materials, A-305-50T and A.S.T.M. A-15-50T and all latest revisions thereof. Bars shall be new stock, free from dirt, excessive scale, rust, paint, oil or other foreign substances.

10.0 Wire Fabric

10.1 Steel wire fabric or mesh used for reinforcement shall conform to the Standard Specifications for Welded Steel Wire Fabric of the American Society for Testing Materials A-185-37, and to the Standard Specifications for Cold Drawn Steel Wire, A-82-34, and the latest revisions thereof. Any make or style of mesh conforming to the Specifications and giving equal or greater sectional areas may be substituted for the one on the plans if approved by the Engineer.

11.0 Form Lumber

11.1 Form lumber shall be straight, well manufactured shiplap, boards or plywood, surfaced at least on one side and two edges and free from loose knots, cracks or roughness which will show on the surface of the finished concrete. Lumber which is cupped or twisted shall not be used. Form lumber may be re-used provided that it has been thoroughly oiled, cleaned, all nails withdrawn, and is the equivalent in usefulness of new lumber. Framing lumber for forms shall be true and straight and free from defects that will reduce the strength for the purpose intended. Studs shall be surfaced on one edge. Wherever the forms may stand for some time before use, the lumber shall be sufficiently dry to avoid shrinkage or warping after erection.

11.2 Undressed lumber may be used for unexposed surfaces and rough work if approved by the Engineer.

11.3 Forms for exposed surfaces shall be of new material or the equivalent thereof approved by the Engineer.

12.0 Forms for Special Finishes

12.1 For exposed surfaces requiring a special finish the Engineer may specify the use of matched lumber or form lining. Forms for special finishes shall be matched lumber which is straight, well manufactured flooring, grade "C" under the rules of the Western Wood Products Association, free from warping or cupping; or full thickness concrete form plywood conforming to the specifications of the Douglas Fir Plywood Association, or regular board forms lined with 1/4" plywood or hard pressed board suitable for the purpose and which will not warp or buckle.

12. Forms for Special Finishes (continued)

12.2 Plywood shall be true and free from defects on the side next to the concrete and shall be used in as large sheets as practical unless otherwise specified. Lining material may be re-used provided that it is in good condition and thoroughly cleaned between pours.

13.0 Form Construction

13.1 Forms shall conform to the shape, lines, grades and dimensions of the concrete, as called for on the drawings. Joints shall be horizontal or vertical, and adjacent surfaces shall be in substantially true planes to permit the concrete to be finished with a minimum of grinding. Forms shall be sufficiently tight to prevent leakage of mortar and formation of fins.

13.2 Forms shall be adequately supported by studding and walling to carry the maximum concrete pressures and shall be braced against distortion from any cause during or after the placing of concrete.

13.3 Form ties shall generally be bolts or rods with spacers, so arranged that when the forms are removed no metal will be within one inch (1") of any surface. Wire ties shall not be used unless specifically approved by the Engineer.

13.4 Floor slabs and horizontal members shall be adequately supported, allowing not only sufficient strength but also rigidity to prevent deflection when the forms are loaded, and where necessary the forms shall be cambered so that the finished members shall conform accurately to the desired line and grade. If adequate foundation for shores cannot be secured, trussed supports shall be provided. Shores supporting successive stories or pours shall be placed over those below, or so designed and placed that the load will be transmitted directly to them.

13.5 Unless otherwise specified, outside or inside corners which are for convenience shown square on the drawings shall be chamfered by the use of suitable moldings or bevels placed in the angles of forms. The tops of exposed walls shall generally be finished to a molding inside the forms which shall be accurately leveled and lined.

13.6 Temporary openings shall be provided at the base of columns and wall forms, and otherwise where necessary to facilitate cleaning and inspection immediately before depositing concrete, and other openings shall be placed where necessary for spading or vibrating.

13.7 Pipes passing through walls shall be placed in walls before concrete is poured, or block-outs shall be provided through which pipes may later be installed and grouted in place.

13.8 The inside of forms shall be coated with an approved non-staining mineral oil or other material, or wooden forms not to be reused shall

13. Form Construction (Continued)

13.8 (continued)

be thoroughly wetted. Form oil shall be applied before steel reinforcement is placed.

13.9 Removal of forms shall be subject to the approval of the Engineer, and shall not be started until the concrete has attained the necessary strength to support its own weight and any construction live loads.

14.0 Bending and Placing Reinforcement

14.1 Metal reinforcement, before being positioned, shall be thoroughly cleaned of mill and rust scale and of coatings that will destroy or reduce bond with concrete. Reinforcement appreciably reduced in section shall be rejected. Where there is delay in depositing concrete, reinforcement shall be re-inspected, and, when necessary, cleaned. Reinforcement shall be carefully formed to the dimensions indicated on the plans.

14.2 Bend in bars shall be made around pins having diameters not less than the following:

|                           |                 |
|---------------------------|-----------------|
| For stirrups and tie bars | 2 bar diameters |
| Bars 1" or less           | 6 bar diameters |
| Bars exceeding 1"         | 8 bar diameters |

14.3 Metal reinforcement shall not be straightened or rebent in a manner which will injure the metal, and bars with kinks or bends not called for on drawings shall not be used. All bars shall be bent cold except in special cases where the entire operation of heating and bending is specifically approved by the Engineer.

14.4 Metal reinforcement shall be accurately positioned, and secured against displacement by using annealed iron wire of not less than No. 18 gauge, or suitable clips, at intersections, and shall be supported by concrete or metal chairs or spacers, or metal hangers. The minimum clear center-to-center distance between parallel bars shall be  $2\frac{1}{2}$  times the bar diameter, but in no case shall the clear spacing between the bars be less than  $1\frac{1}{2}$  times the maximum size of the coarse aggregate, nor less than one (1) inch in beams and girders, nor less than one and one-half ( $1\frac{1}{2}$ ) inches in columns. Bars parallel to the exterior face of any member not exposed to water or weather shall be embedded at least one bar diameter for round bars or diagonal dimension for square bars, but in no case less than three-quarters ( $\frac{3}{4}$ ) inch from the exterior surface. In walls exposed to water pressure, the embedment shall be not less than one and one-half ( $1\frac{1}{2}$ ) inches and in footings in contact with the ground not less than three (3) inches.

14. Bending and Placing Reinforcement (Continued)

14.5 Splices in steel reinforcement bars shall be lapped not less than thirty (30) diameters for top bars or twenty-five (25) diameters for other bars. The use of splices shall at all times be subject to the approval of the Engineer. Splices shall not be made at points of maximum stress, except in the case of hoops, and splices in adjacent bars will be well staggered. Splices in hoop steel bars shall be welded if called for on the plans or in the detailed specifications.

15.0 Storage of Materials

- 15.1 Cement to be used for on-the-job concrete mixing shall be delivered on the work a sufficient length of time in advance of use to permit sampling and testing. It shall be stored in a dry shed or a platform elevated above the ground and covered with a tent, tarp, or canvas in such a manner that the canvas does not come in contact with the sacks. Cement must come up to the specification requirements at the time of use, and shall not be released from storage without the express permission of the Engineer. Sacks shall be tiered up in such a manner as to facilitate counting and shall be hauled away only with the knowledge and approval of the Engineer.
- 15.2 Fine and coarse aggregate shall be kept in separate piles and in such a manner as to avoid the inclusion of dirt or foreign materials. Frozen aggregate shall be thawed by the use of steam.

16.0 Quality of Concrete

- 16.1 Concrete shall be homogeneous in the structures, and upon having set and hardened, shall have the strength required, and shall be resistant to weathering under the conditions of its intended use.
- 16.2 The quantity of cement used per cubic yard shall be specified, and that quantity shall not be reduced even though tests of concrete indicate a higher strength than may have been specified or required for the work.

17.0 Sampling and Testing

- 17.1 The Contractor shall cooperate with the Engineer in furnishing typical samples of aggregate and cement for testing purposes. He shall also facilitate the collection of samples of mixed concrete for testing purposes.
- 17.2 All sample collecting and testing procedures shall comply with the latest A.S.T.M. specifications pertinent to the particular tests being made.
- 17.3 Actual sampling and testing shall be at the expense of the Owner unless otherwise specifically stated in the detailed specifications of construction.

## 18.0 Proportioning Concrete

18.1 The classification of concrete used in different parts of the work shall be indicated on the plans or covered by the detailed specifications for construction. It shall be based upon three factors, namely:

18.1.1 The minimum number of 94 pound sacks of cement per cubic yard of the finished concrete, which number shall be the class designation.

18.1.2 The maximum permissible water-cement ratio.

18.1.3 The maximum size of coarse aggregate, referring to square opening test screens.

18.2 For general work and unless modified by the detailed plans and/or specifications, the following proportions shall be used:

18.2.1 Maximum size of coarse aggregate: 1½"

|                                                              | Class of Concrete |    |    |    |
|--------------------------------------------------------------|-------------------|----|----|----|
|                                                              | 4                 | 5  | 6  | 7  |
| Sacks of Cement per Cu. Yd. Concrete                         | 4                 | 5  | 6  | 7  |
| Maximum Water Cement Ratio                                   | 8                 | 7  | 6  | 5  |
| Maximum Permissible Water in Gallons per Cu. Yd. of Concrete | 32                | 35 | 36 | 35 |

NOTE: Above water amounts based upon dry aggregate

18.3 Subject to these fixed factors, the proportions of fine and coarse aggregates and the water content shall be subject to the control and approval of the Engineer, with the objectives of securing the maximum strength, durability, density and watertightness reasonably practicable for the location and conditions of placement. The fact that concrete has more than adequate strength for the design requirements shall not be a reason for increasing the water-cement ratio, and if the Contractor desires added workability to suit the particular equipment and methods placement that he uses, this shall be attained by increasing the cement content or the addition of an admix, provided the proposed change in mix is first approved by the Engineer. Any such increase in cement per yard or the addition of an admix shall be at the Contractor's expense.

18.4 For small jobs requiring less than 100 cubic yards at a given plant setup, the fixed proportions of aggregates may be controlled by volumetric measurements, and a measuring box of exactly one cubic foot volume shall be provided for checking the contents of wheelbarrows or buggies. For larger jobs materials shall be measured by weighing, using approved apparatus especially designed and constructed

18. Proportioning Concrete (Continued)

18.4 (continued)

for the purpose. The mixing water shall in all cases be measured by volume or by weight. The tolerance of uniformity in aggregate weights shall be plus or minus one percent (1%) from the desired amount and the tolerance of accuracy for water measurement shall be plus or minus one-half of one percent ( $\frac{1}{2}\%$ ).

19.0 Consistency of Concrete

- 19.1 The consistency of concrete to be used in different sections of the work shall be determined by the Engineer and shall in all cases have the lowest water-cement ratio which can reasonably be placed, using the best available equipment together with mechanical vibration as hereinafter specified. As a guide in the field, standard slump cones shall be provided and used by the Contractor and generally the following slumps will be required:

| <u>Type of Concrete Placement</u>      | <u>Slump in Inches</u> |                |
|----------------------------------------|------------------------|----------------|
|                                        | <u>Maximum</u>         | <u>Minimum</u> |
| Reinforced foundation walls & footings | 3½                     | 2              |
| Plain footings and substructure walls  | 3                      | 1              |
| Slabs, beams and reinforced walls      | 4                      | 2              |
| Building columns                       | 4                      | 2              |
| Pavement                               | 2                      | 1½             |
| Heavy mass construction                | 2                      | 1              |

20.0 Mixing Concrete

- 20.1 Unless otherwise specifically authorized by the Engineer, the mixing of concrete shall be done in a batch mixer of approved type which will insure a uniform distribution of the material through the mass. Hand mixing shall be permitted only for very small and isolated structures and under approved methods. The equipment at the mixing plant shall be so constructed that all materials entering the drum, including the water, can be accurately proportioned within the tolerances heretofore provided. The entire batch shall be discharged before recharging and the mixer shall be cleaned at frequent intervals during use. The volume of the mixed material per batch shall not exceed the manufacturer's rated capacity.
- 20.2 The mixing period shall be not less than one and one-half (1½) minutes for mixers having a rated capacity of one (1) cubic yard or less, and two (2) minutes for larger mixers, the mixing periods being measured from the time when all solid materials are in the mixer drum, provided that all of the water shall be added before one-fourth of the mixing time has elapsed.

20. Mixing Concrete (continued)

- 20.3 Retempering of concrete or mortar which has partially set, that is, remixing with or without additional cement, aggregate or water shall not be permitted.

21.0 Truck Mixing

- 21.1 Truck mixers may be used in connection with batching plants which will insure proportioning of materials within the tolerances stated above. Truck mixers shall be provided with a tank for carrying mixing water, and only the prescribed amount of water shall be placed in the tank. Mixers shall be of the revolving drum type, watertight, and so constructed that the concrete can be mixed to insure a uniform distribution of materials throughout the mass. The maximum batch shall not exceed the manufacturer's rating. The Engineer may require that truck mixers be provided with a timing device. Mixing shall continue for not less than fifty revolutions at a speed of not less than 4 rpm after all ingredients, including the water, are added. Mixing shall begin within thirty (30) minutes after the cement has been added to the batch, and the batch shall be discharged within one and one-half (1½) hours after the cement has been added to the batch.

- 21.2 During hot weather and for rich mixes or mixing using high early strength cement, the time between addition of cement and placement in forms shall not exceed one (1) hour or less if required by the Engineer.

22.0 Ready Mixed Concrete

- 22.1 If ready mixed concrete is used, it shall conform in all respects to the standard specifications of the American Society for Testing Materials designated C-94-4B and all latest revisions thereof.

23.0 Hauling Ready Mixed Concrete

- 23.1 Concrete may be hauled from a central mixing plant only for distances and under conditions which will insure that there be no segregation of materials, and strictly subject to the approval of the Engineer. The use of a truck mixer or a truck equipped with agitating blades may be required. The volume of mixed concrete transported in an agitator shall be in accordance with the manufacturer's rating. Concrete shall be discharged from the agitator or other transportation device within one and one-half (1½) hours after the cement has been added to aggregates at the batching point, or in one (1) hour or less if required by the Engineer for special mixes or during hot weather.

24.0 Depositing Concrete

- 24.1 Under these specifications concrete shall be placed only in the dry. Underwater work requiring special methods shall be covered by detailed specifications therefor. Any water flowing into the excavation shall be diverted to a sump or removed by other approved methods which will prevent it from coming in contact with the freshly deposited concrete.
- 24.2 Before beginning the placement of any run of concrete, surfaces of contact at construction joints shall be thoroughly cleaned and prepared, as hereinafter specified. Forms shall be cleaned and wetted or oiled. All debris and foreign materials shall be removed from the space to be occupied by the concrete. Placement and tying of reinforcement shall be finally checked. Mixing and conveying equipment shall be clean. Concreting shall begin only after all conditions have been inspected and final approval given by the Engineer.
- 24.3 Concrete shall be handled from the mixer to the place of final deposit as rapidly as practical by methods which prevent the separation or loss of the ingredients. It shall be deposited in the forms as nearly as practicable in its final position to avoid rehandling. It shall be so deposited as to maintain, until the completion of the unit, a plastic surface approximately horizontal. Forms for walls or other thin sections of considerable height shall be provided with openings, or other devices, that will permit the concrete to be placed in a manner that will prevent segregation or accumulations of hardened concrete on the forms or metal reinforcement. If required by the Engineer, trunks shall be used for placing concrete in deep walls.
- 24.4 Under no circumstances shall concrete which has partially hardened be deposited in the work.
- 24.5 For ordinary structures the preferred method of placing concrete shall be by the use of buggies or other approved containers or bottom dump buckets. Chuting shall be done only after the plant set-up has received specific approval of the Engineer and with equipment of such size and design as will insure a continuous flow in the chute. Chutes shall be metal or metal lined, with a uniform slope of not less than one vertical to two horizontal. The discharge end of the chute shall be provided with a baffle plate, and if the height of the discharge end above the surface of the concrete is more than three (3) times the thickness of the layer being deposited, a spout or trunk shall be used and the lower end shall be kept close to the surface. When the operation is intermittent, the chute shall discharge into a hopper. It is the intent of these specifications that no segregation of concrete shall take place between the mixing plant and the point of final placement in the forms, and the methods of handling shall be strictly under the control of the Engineer.
- 24.6 Placement of concrete in wall forms in a manner dependent upon horizontal flow shall not be permitted.

## 25.0 Special Methods of Placing

- 25.1 Concrete may be placed by pumping with equipment which is suitable in construction and adequate in capacity for the work. An agitating hopper shall be provided immediately ahead of the pump. The operation shall be such that a continuous flow of concrete without air pockets is produced. The length of discharge lines shall be limited to 1,000 feet with a minimum number of bends. Special pipe with detachable couplings shall be used. All precautions shall be taken to avoid segregation at the point of discharge, and an air booster at the end of the line shall be used only with great care and subject to the approval of the Engineer. When pumping is completed, the concrete remaining in the line shall be ejected by methods which will avoid addition of water to the concrete or separation of its ingredients. After this operation and before re-use, the entire equipment shall be thoroughly cleaned.

## 26.0 Depositing Concrete in Cold Weather

- 26.1 Concrete when deposited shall have a temperature of not less than fifty degrees nor more than 120 degrees Fahrenheit. When the air temperature is below 40 degrees at any time during the day or night, concreting shall be carried on only under special precautions which shall meet the approval of the Engineer, and the concrete in place shall receive special protection. For moderate cold weather conditions, the mixing water shall be heated, but not to a higher temperature than 140 degrees F. When necessary the aggregates shall also be heated by the use of steam. Forms shall be free from frost or ice, and after the concrete is placed, it shall be protected on all exposed sides by the use of straw, sawdust, tarpaulins or other means, and heat shall be provided if necessary during the entire curing period, as hereinafter specified. Salts, chemicals, or other foreign materials shall not be mixed with the concrete for the purpose of preventing freezing.

## 27.0 Depositing Concrete Under Water

- 27.1 Concrete deposited under water shall be done in strict compliance with the Engineer's requirements. It shall not be placed in water having a temperature below 35 degrees F. Concrete temperature shall be not less than 60 degrees F. nor more than 120 degrees F.
- 27.2 Underwater concrete shall contain seven (7) sacks of cement per cubic yard, and the volume or weight of coarse aggregate shall be not less than one and one-half, nor more than twice the volume or weight of the fine aggregate. Slump shall be not less than four (4) nor more than seven (7) inches.
- 27.3 Insofar as it is possible to accomplish, no flow of water shall pass over the concrete during deposition and until hardening takes place.

27. Depositing Concrete Under Water (continued)

27.3 (continued)

If this cannot be prevented, the current shall in no case exceed ten (10) feet per minute in the space occupied by the concrete.

27.4 Concrete shall be deposited continuously until all is brought to the required height.

28.0 Compacting Concrete

28.1 As concrete is placed, it shall be thoroughly compacted by means of mechanical vibrators to secure a dense structure without voids, close bond with reinforcement, and smooth exposed surfaces. The use of hand tools for spading or rodding the concrete shall not be permitted except in locations where the use of mechanical equipment may prove impractical and the Engineer gives specific approval.

28.2 Methods, and the extent of compaction, shall be subject to the control of the Engineer. Any tendency to accumulate water or fines at the surface shall be offset by adjustment in the mix.

29.0 Construction Joints

29.1 Concrete shall generally be deposited continuously, or in layers of such thickness that no concrete which has hardened sufficiently to prevent bond or create planes of weakness shall come in contact with fresh concrete.

29.2 Construction joints shall be used wherever it is neither feasible nor desirable to place concrete in a continuous operation, or wherever it is necessary or desirable to provide for shrinkage. Construction joints shall be located as called for in the plans and construction specifications or as required and approved by the Engineer. Construction joints shall be keyed and provided with water stops if called for in the plans or required by the Engineer. Construction joints shall be so located and built as to prevent weakening of the structure and not interfere with the finished appearance.

29.3 Joints in columns shall be made at the underside of floor members and at floor levels. Haunches and column capitals shall be considered as part of and continuous with the floor or roof. At least two (2) hours must elapse after depositing concrete in the columns or walls before depositing in beams, girders, or slabs. Construction joints in floors shall be located near the middle of span of slabs, beams or girders, unless a beam intersects a girder at this point, in which case the joints in the girders shall be offset a distance equal to twice the width of the beam. Adequate provisions shall be made for shear by use of inclined reinforcement.

29. Construction Joints (continued)

- 29.4 Construction joints which do not serve as expansion joints shall be made so as to insure bonding of the new concrete to the old. The surface of the hardened concrete shall be roughened to expose the solidly embedded particles of aggregate. Loose or damaged concrete, foreign matter, and laitance shall be removed, and the surface thoroughly washed. Forms shall be tightened; and to insure an excess of mortar at the juncture of the old and new concrete the cleaned surfaces including vertical and inclined surfaces shall be coated with a layer of mortar or neat cement grout against which the new concrete shall be placed before it has attained its initial set. If additional strength of resistance to shear is required at construction joints, it shall be provided through the use of concrete keys or additional dowel bars, or both.

30.0 Watertight Structures

- 30.1 Walls or floors in structures to contain water shall be given special care in the location and workmanship of construction joints. Generally, a keyway will be required to increase the length of the leakage path, and a continuous metal plate or water stop will be placed in the middle of the keyway. Joints not shown on the plans and placed to suit the operations of the contractor shall be in every way equal to those definitely shown, and it shall be the responsibility of the Contractor to secure complete watertightness in the finished structure. Otherwise, methods used shall correspond to those specified for other construction joints.

31.0 Removal of Forms

- 31.1 Forms shall not be removed until the concrete has attained a strength fully adequate to support itself and carry any superimposed loads, and also to permit the removal of forms without breaking corners or defacing the surface. Subject to these limitations, and the seven (7) day curing period specified hereinafter, the forms for exposed surfaces shall be removed as early as possible to permit repair of defects and surface grinding while the concrete is still green. The time for form removal shall be subject to the approval of the Engineer, and shall take into account the location and character of the concrete, weather and curing conditions. Beams, elevated slabs, domes, etc. shall be supported for at least fourteen (14) days. Where local codes require a longer period they shall apply. Such support may be provided by reshoring the structure after the removal of the forms.

32.0 Curing Concrete

- 32.1 All concrete shall be protected so that there will be no loss of moisture from the surface for at least seven (7) days when normal cement is used. When high, early strength cement is used, the

32.0 Curing Concrete (continued)

32.1 (continued)

minimum period shall be three (3) days. Protection of loss of moisture from the surface of concrete shall be accomplished by keeping the surface continuously wet.

- 32.2 On vertical and bottom faces the forms generally shall be kept in place and kept wet. If the forms are to be removed earlier, the method of curing shall be approved by the Engineer. The upper surfaces of slabs or floors shall be protected from evaporation by the use of burlap or other absorbent material which shall be kept wet by spraying. The surfaces of walls shall be cured in the same manner as floors. Sealing compounds may be used if they do not discolor the concrete, and if the compound and its application are approved by the Engineer. The use of calcium chloride or other salts will not be permitted.

33.0 Surface Finish

- 33.1 Concrete that is to have a showing face, even though no particular finish is called for, shall be mixed, placed and compacted in a manner that will insure a uniform distribution of aggregates, freedom from void spaces, and a uniform texture. Existence of rock pockets, air or water bubbles, shall be evidence of improper mix or handling and shall be corrected. After forms are removed, all defects shall be repaired at once. The same cement shall be used as in the original work, and color shall be added if necessary for matching. Holes left by the rods shall be hammer-packed with stiff, dry mortar, and the surfaces shall be leveled. Rock pockets shall be similarly filled and finished. Honeycombed areas shall be cut out to a depth at which sound concrete is exposed and filled with concrete matching that of the structure. Offsets, fins and irregularities due to defective forms shall be filled and ground off to a reasonably true surface in keeping with the location in the structure and subject to the approval of the Engineer.
- 33.2 Exterior and interior walls and surfaces of structures, where matched flooring or plywood forms are called for, shall have a true alignment, free from streaks or discoloration and uniform finish with no form marks of any sort. This result shall be secured by special care in the construction of forms and placing the concrete. Only a minimum of pointing up will be permitted, and there shall be no plastering. Irregularities shall be removed by mechanical grinding or by hand rubbing with a carborundum brick.
- 33.3 Top surfaces of walls, etc. not subject to wear shall be struck off evenly to screeds which have been set with a level. Generally a beveled molding shall be used to finish top corners in preference to a curbing edger. Excess water shall be drained off and the surface finished with a wood float.

33. Surface Finish (continued)

- 33.4 Floors and other wearing surfaces shall be finished as one course work to accurately set screeds or templates. The concrete proportions and consistency and the methods of compaction shall be such that only sufficient mortar is available for finishing and there is no excess water. During the preliminary finishing operation the surface shall be worked only as necessary to insure a layer of mortar at the surface. While the concrete is still soft, the surface shall be checked with a straight edge or template, and inaccuracies corrected. Final troweling shall be delayed until the surface can no longer be dented with the finger.
- 33.5 Floors of substantial area shall be finished by the use of a rotary finishing machine. Smaller areas shall be given a steel trowel finish by experienced cement finishers to give a dense, hard surface meeting the approval of the Engineer. Joints and edges shall be finished with proper tools and surplus mortar cleaned away. The finished surface shall be immediately covered and protected from sun and rain, and shall be cured under moist conditions as hereinbefore provided.
- 33.6 Floors to have a non-slip surface shall be broomed or otherwise finished as required by the Engineer.

## MATERIALS

### 1.0 General

All materials required for the project shall be furnished by the Contractor unless specifically stated elsewhere in these specifications and documents.

### 2.0 Guarantees and Certificates

Suppliers of pipe, fittings, valves, hydrants, valve boxes, corporation stops, shut-off cocks, meter boxes, pumps, motors, starting and switching gear, etc. shall furnish certified statements of compliance with the specifications and further that they shall be responsible for all costs of replacement and or repair of their products if any defect or failure occurs or is detected within one year after acceptance of the project.

### 3.0 Cast Iron Pipe and Fittings

#### 3.1 Bell and Spigot Cast Iron Pipe

Bell and spigot cast iron pipe shall be Class 150 unless otherwise specified and shall conform to American Standards Association specifications A 21.6 or A 21.8 and American Water Works Association C 106-53 or C 108-53 for centrifugally cast pipe in metal or sand lined molds. No pipe shall be less than 16 feet in length.

#### 3.2 Mechanical Joint Cast Iron Pipe

Mechanical joint cast iron pipe shall conform to the specifications for bell and spigot pipe except that bells shall be drilled or cored to receive high strength cast iron bolts and shall conform to American Standards Association Specifications A 21.11 as well as A 21.6 or 21.8.

#### 3.3 Rubber Ring Joint Pipe

Rubber ring joint pipe shall conform to American Standards Association Specifications A 21.6 or A 21.8 and shall in addition have hubs cast to receive Tyton rubber ring gaskets. Gaskets shall be Tyton.

#### 3.4 Fittings, Bell and Spigot Cast Iron Pipe

Fittings for use with bell and spigot pipe shall conform to American Standards Association Specifications A 21.1, Class 250 lbs. per square inch.

#### 3.5 Fittings, Mechanical Joint Cast Iron Pipe

Fittings for use with mechanical joint cast iron pipe shall conform to American Standards Association Specifications A 21.10 and A 21.11, Class 250 lbs. per square inch.

#### 3.6 Fittings, Rubber Ring Joint Pipe

Fittings for rubber ring joint pipe shall be identical with those required for mechanical joint pipe.

### 3. Cast Iron Pipe and Fittings (Continued)

#### 3.7 Flanged Fittings and Flanges for Cast Iron Pipe

Flanges and flanged fittings for cast iron pipe shall conform to the American Standards Association Specifications B 16.1 - 1948 and all latest revisions thereof and shall be Class 125 unless otherwise specified.

Materials used in making castings shall conform to A.S.T.M. Specifications A-126-1942 and all latest revisions thereof.

Face to face dimensions, flange thicknesses, bolt holes and flange facings shall conform to 125 lb. standards unless Class 250 is called for elsewhere in the specifications.

Bolts and nuts for use with flanged fittings shall conform with American Standards Association Specifications B 18.2 - 1941 and all latest revisions thereof.

Gaskets shall be flat ring type conforming to A.S.A. Specifications B 16.1.

#### 3.8. Concrete Mortar Lining, Cast Iron Pipe and Fittings

Concrete or cement mortar lining for cast iron pipe, either bell and spigot or mechanical joint type shall conform to American Standards Association Specifications A 21.4. Cement mortar lining shall be made with Type II Portland Cement conforming to American Society for Testing Materials Specifications, A.S.T.M. C 150, and sand shall be hard, uncoated, durable and clean. The mortar mix shall contain not less than one part cement to two parts dry sand by volume, and the minimum thickness of lining shall be 1/8". Lining shall be spun in place and sealed with bituminous material applied for the purpose of curing the lining and sealing the surface thereof.

#### 3.9 Couplings for Mechanical Joint Cast Iron Pipe and Fittings

Gaskets, glands, bolts and nuts shall comply in all respects to the American Standards Association Specifications A 21.11.

Bolts and nuts shall be high strength, heat treated cast iron, or ductile iron. Glands shall be made of first quality gray iron complying with A.S.T.S. Specifications A 48 and American Standards Association Specifications G 25.1.

Gaskets shall be made of first grade plantation rubber or neoprene rubber.

#### 4.0 Galvanized Iron Pipe

Galvanized iron pipe shall be standard weight, threaded and coupled, commercial grade complying with A.S.T.M. Specifications A-120.

## 5.0 Copper Tubing

Copper tubing shall be Type K copper water tubing in 60-foot coils complying with Federal Specifications W.W.T.-799.

## 6.0 Plastic Tubing

Plastic tubing shall be Yardley P.V.C. schedule 40 Type - 11 or equal, design stress 1000 P.S.I., high impact strength, maximum working pressure of 240 P.S.I. at 74° F. Couplings to cocks and adaptors shall be by means of stainless steel clamps, two per each connection.

## 7.0 Valves

### 7.1 Gate Valves

Gate valves shall conform to the latest standard specifications of the American Water Works Association, C 500, and shall be Class 175 unless otherwise specified, and shall be tested to 300 pounds per square inch.

Gate valves 4" and larger shall be of the double disc, parallel seat, non-rising stem type with iron body and shall have full bronze mountings including bronze wedging surfaces, pins and bolts. Valves 4" and larger shall be furnished with standard Class D hub ends, standard 125 lb. flanges, cast iron mechanical joint drilled or cored hubs; or hubs for cement-asbestos pipe as called for in the bid schedule or elsewhere in the specifications.

7.2 Gate valves 3" and smaller shall be brass bodied, double disc valves with rising stem and shall have screwed connections.

7.3 Unless otherwise specified 3" and smaller gate valves shall be furnished with operating wheels; 4" and larger gate valves shall be furnished with either square operating nuts or hand wheels as required. All valves shall open by turning left, and the direction of opening shall be cast on the gland or stem nut.

## 8.0 Concrete Masonry Units

Blocks shall be of expanded shale aggregate and shall conform to the physical requirements of the current A.S.T.M. standards for "Hollow Load-Bearing Concrete Masonry Units" (C-90).

### 8.1 Mortar

Materials used as ingredients of the mortar shall conform to A. S. T. M. standards. Mortar shall be made of one part Portland Cement, one part hydrated lime or lime putty and three parts of mortar sand.

### 8.2 Grout

The grout shall be composed of one part Portland Cement; three parts sand and two parts of 3/8" maximum pea gravel, to which may be added not more than 1/10 part of lime. Sufficient water shall be added to produce consistancy

8.2 Grout (Continued)

for pouring without segregation of the constituents of the grout. The grout shall have a 28 strength of 2000 P.S.I.

8.3 Reinforcing Steel

Reinforcing steel shall be deformed immediate grade conforming to R.S.T.M. 15 and A.S.T.M. 305.

8.4 Horizontal Joint Reinforcement

Shall be Dur-O-Wall, Block-Mesh, or approved equal.

## PUMPING STATION CONSTRUCTION SPECIFICATIONS

### 1.0 General

The pumping station superstructure is to be constructed over and around the existing 12' diameter concrete wet-well. Area to be excavated for new building foundation and pipe work is accessible in part for small machines; some hand excavation may be required in areas close to structures.

### 2.0 Excavation

Excavation for foundation shall be carried down to firm undisturbed soil; all loose clods, roots and debris shall be removed before placing concrete. Excavation for pipe trenches shall be as narrow as practical for the installation of piping and wiring. All trench backfill under structures or walkways shall be backfilled with select granular material mechanically tamped to no less than 95% compaction.

### 3.0 Concrete

The general specifications for Concrete Construction shall govern but in addition the Contractor shall comply with the supplemental requirements herein described.

The Engineer shall have rigid control over concrete mixes and shall determine proportions of fine and coarse aggregate to be used for each class of concrete and for each area in which it is to be placed. Careful controls shall be exercised by the Contractor in regulating the mix and amount of water used. Slump tests will be used by the Engineer for the regulation, control and modification of water-cement ratios. All concrete shall be placed as dry as reasonably possible to obtain a workable mix and secure maximum density, strength and impermeability in place. Cement, fine and coarse aggregates and the methods of proportioning and mixing shall conform to the requirements of the General Specifications for Concrete Construction.

All concrete in pumping station foundation shall be Class "4" containing four sacks of cement per cubic yard, and shall be formed to the neat building lines shown on the drawings. Existing concrete walls shall be scraped clean of all foreign and loose material and washed clean before receiving the new concrete.

All concrete in the pumping station floor, wall curb and entry slab shall be Class "6" containing six sacks of cement per cubic yard. All concrete shall be worked and vibrated down to a smooth plane and rodded to accurate lines and grades sloping to drain. The slab shall be layed down by hand steel troweling until a dense hard surface is achieved. Outside walks and entry shall be layed down once

### 3.0 Concrete (continued)

with steel trowel followed by light brooming and edging. All exposed foundation above grade, pump bases and pipe supports shall be ground smooth and sacked with neat cement leaving a smooth dense surface, neat lines and free from discoloration.

### 4.0 Placing Reinforcing Steel

Reinforcing steel shall be accurately placed both as to spacing and alignment in conformity to the plans and General Specifications for Concrete Construction.

Reinforcing steel shall be continuous through all construction joints, but no bars shall extend through expansion joints.

### 5.0 Conduits and Piping

The Contractor on the concrete work shall familiarize himself with the plans for the piping and electrical work and shall in no case place concrete until piping and conduits are in place in the forms and under floor slabs. He shall cooperate in every possible way with those handling other trades.

Electric conduits shall be run in concrete wherever possible and feasible, and all such conduits, junction boxes, etc., shall be placed before concrete is poured. Care shall be taken not to displace or damage floor drains, outlets, etc., set in place in advance of concrete work.

### 6.0 Pipe Headers

Pump discharge piping shall be made up with flanged cast iron pipes and fittings. Pump dimensions for discharge flanges shall be checked to insure exact alignment without strain on pumping units. The entire discharge assembly shall be made up to line and grade before the concrete foundation is placed around the existing tank. Pipes shall be anchored and jointed as indicated on the drawings.

### 7.0 Small Piping

Small piping shall be of copper or galvanized iron as shown on the plans. Drain piping shall be galvanized iron with drainage fitting and cast iron body drains. Connections to pump packing gland wells shall be 1/2" copper tubing as well as all piping 1/2" or smaller.

### 8.0 Control Valves

Control check valves in discharge piping of pumps shall be Clayton of type and number shown on the drawings together with all necessary air valves, control equipment and piping.

#### 9.0 Pump Foundations

Pump foundation bases shall be larger by 4 inches in each dimension than the metal base plate furnished by the pump manufacturer and as shown on shop drawings.

#### 10.0 Installing Pumps

10.1 Pumps shall be set in true vertical position and shall be rigidly held in place without strain.

10.2 The pump assemblies shall be examined for completeness and tight connections before lowering into the barrels. Precautions must be taken to avoid distorting the column or shaft in handling. The pump head and the motor base shall be carefully and accurately connected without strain or misalignment. Piping connections shall be assembled without strain to the pumps. No pumps shall be started without being approved by the Engineer.

#### 11.0 Electrical Work

All electrical work shall conform to State code and shall comply with the detailed electrical specifications in the separate ES section of these documents.

#### 12.0 Pump Controls

The operation of pumps shall be controlled by an induction type Probotrol system that provides automatic pump alternation for two pumps and automatic cutting in of second pump on rising level. The range and levels of the control shall conform to the schedule shown on the drawings. The assembly shall be floor mounted and enclosed in a 3" galvanized iron pipe housing as detailed on the plans.

#### 13.0 Metal Doors and Louvers

Hollow metal doors complete with accessories and hardware shall be furnished and installed as indicated on plans. Adjustable metal louvers shall be provided as shown on plans. Caulk all door and louver frames.

#### 14.0 Structural Steel and Iron Work

14.1 The Contractor shall furnish all clip angles, anchor bolts, brackets, ladders, ladder rungs, manhole frame and cover, supports, lintels, hangers, chains, etc. required.

#### 14.0 Structural Steel and Iron Work (Continued)

- 14.2 After fabrication, all steel and iron work except galvanized items shall be thoroughly cleaned of rust, splatter, oil, dirt, grease, etc. and shall be given one shop coat of rust-inhibitive primer.

#### 15.0 Concrete Masonry

Concrete masonry units shall be of expanded shale aggregate and conform to the physical requirements to the current A.S.T.M. Standards "Hollow load-bearing concrete masonry units" C-90 Grade A.

All masonry walls shall be true and plumb and built to dimensions as indicated. Running bond shall be used. Provide special units for bond beams, joint recess, openings, corners, etc. Mortar shall be made of one part Portland cement, one part hydrated lime or lime putty and three parts of mortar sand. Mortar joints shall be 3/8" thick, tooled to a dense smooth surface, kept clean and straight. Provision shall be made for installation of bolts, anchors, hangers, nailing strips, wall plugs and frames as required. Reinforcing steel shall be placed as shown on the plans. Cores with vertical reinforcing shall be filled with grout.

#### 16.0 Carpentry

- 16.1 The pump house roof shall be accurately framed, closely fitted, shimmed and fastened in place. Sills resting on concrete shall be treated with two (2) heavy coats of Woodtox and anchored down by bolts. Joining of structural members to plates and members with cantilevered action shall be secured by metal corner clips and hangers. Bridging and blocking shall be provided as required. Install all rough hardware including nails, screws, bolts, anchors, hangers, etc. detailed on the drawings or reasonably necessary to give a complete, strong and workmanlike job. Lumber shall be of grades as indicated below:

- 16.2 Roof Decking: construction grade plyshield 3/4"  
Beams and others: Structural grade, Douglas fir, S4S, K.D.  
Plywood: 3/8" Exterior grade Douglas fir S1S  
Trim: Select Merchantable, Western red cedar S4S K.D.  
Fascia Board: Select Merchantable Western Redwood S4S.

#### 17.0 Sheet Metal Work

The Contractor shall furnish all material and labor and do all sheet metal work shown on the plans or reasonably required for a complete and workmanlike job, including flashing, edgings, vents, linings, rain conductors, drains and devices for hanging and connecting the same.

18.0 Roofing

18.1 Built up roofing over the wood decking of the pump house shall be Flint-kote Flintglas Specification No. F-N-G-20 year roof or approved equal. Roofing shall be applied in accordance with the manufacturer's specifications.

19.0 Painting

All materials shall be first quality, workmanship the best, and paint shall be applied without runs or sags.

Painting shall include the following work:

- A. Exterior walls
- B. Interior walls and underside roof
- C. Doors
- D. Piping, valves, structural steel and iron work

Corroded or rusted surfaces of metal shall be thoroughly wire brushed to clean, bright metal before primer is applied. Metal primer shall be red lead and linseed oil, Rustoleum damp proof primer, or equal product approved by the Engineer. Finish coat of metal protective paint approved by the Engineer shall be applied, but not until preceding primer coat has thoroughly dried and hardened.

Red lead primer coat for metal shall comply with Federal Specifications TT-P-86a, Type I. Finish coat shall be aluminum paint complying with Federal Specifications TT-A-46a, Type II, Class B for pigment and TT-V-81b, Type II, Class B for mixing varnish.

During painting of interior walls and underside of roof, tarps or drop cloths shall be used to protect all equipment, piping, floors, etc. from spatter and spills. All painting shall be done with brushes by hand.

All exterior and interior surfaces shall be free of dirt, grease or foreign material.

Interior wood surfaces shall be painted with one coat of Inertol Interior Undercoater No. 623 and one coat of Glamortex Enamel.

Exterior wood surface shall be painted with one coat of Exterior Primer and two coats of Exterior Trim Enamel.

## 19.0 Painting

Exterior and Interior concrete wall surfaces shall be painted with two coats of chlorinated natural rubber-base coating, flat finish. Coating shall be Ramuc Masonry Paint, Inertol Co. or equal.

All metal surfaces including steel doors, louvers, pipe headers, valves, piping, conduits, and miscellaneous steel items shall be painted with two coats of Glamortex Enamel, Inertol Co., after thorough wire brushing and restoration of primer coat.

Bituminous-coated pipe and fittings shall be painted with two coats of Inertol Tar Stop prior to the application of enamel finish.

Concrete floor, aluminum and non-ferrous metal surfaces shall not be painted.

Color of coatings shall be determined by the Engineer and sufficient difference in color of successive coats shall be used to check coverage. No coat shall be applied until prior coat has thoroughly hardened and approval of Engineer has been given.

All paint work shall be guaranteed for a period of two years following acceptance of the work.

## 20.0 Grading and Clean-Up

The Contractor shall place the plant site in a neat and finished appearance with earth graded so as to permit planting of lawn and shrubs.

Form lumber and debris shall be removed, burned or disposed of as directed by the Engineer. Piles of excess concrete material and other surfaces of construction work shall be regraded and settled areas shall be refilled. All clean-up work shall be to the satisfaction of the Engineer.

## 21.0 Safety Provisions

All safety requirements of the State Industrial Accident Commission shall be adhered to and the entire operation shall be conducted so as to minimize all hazards to workmen and others on the project.

## 22.0 Guarantee

All equipment, materials and workmanship shall be guaranteed for one year following acceptance with the exception that painting shall be guaranteed for two years following acceptance.

## PUMPING EQUIPMENT SPECIFICATIONS

### 1.0 General

- 1.1 Booster pumps shall be identical in manufacture, size and capacity and shall be of vertical turbine wet well type, supported free from a pump base plate on the operating floor. Pumps shall be furnished with 6" 150 P.S.I. standard flange on the outlet and an 8" galvanized steel strainer over the suction. Pumps shall be driven by direct drive electric motors.
- 1.2 Pumps shall be of high grade material, workmanship and construction and shall be manufactured by a reputable firm having representation and service facilities available in the Multnomah-Yamhill counties area. Pump shall be manufactured by Cornell, Johnston, Worthington, Peerless, Byron Jackson or approved equal.
- 1.3 Motors shall likewise be manufactured by a firm having both representation and service facilities in the Multnomah-Yamhill counties area, and shall be Louis Allis, Allis-Chalmers, General Electric, Westinghouse U.S. or approved equal. Motors shall be non-overloading throughout the entire operating range of the pump bid.

### 2.0 Alternate Pumps & Motors

Bidders shall bid three makes of pumps and motors. Selection of units will be made after review of construction and material specifications, performance curves and efficiencies of the alternate items bid.

### 3.0 ~~Pumps and~~ Motor Requirements

#### Both Pumps

|                            |                          |
|----------------------------|--------------------------|
| Mounting plate             | 1-1/4" x 18" x 18"       |
| Pump capacity--GPM         | 200                      |
| T.D.H. -- Feet             | 280                      |
| Pump speed -- RPM, Maximum | 1800                     |
| H.P. Approx.               | 20 H.P.                  |
| Pump head                  | 6" discharge above floor |

### 3.1 Construction Details

#### Both Pumps

|                                       |                                    |
|---------------------------------------|------------------------------------|
| Motor enclosures                      | Drip proof                         |
| Motor shafts                          | Solid                              |
| Couplings                             | IFR                                |
| Seals                                 | Mech. John Crane                   |
| Discharge Flange                      | C" - 150 lb Standard               |
| Bowls                                 | Iron Glass Lined                   |
| Bearings                              | Rubber-Bronze                      |
| Impellers                             | Closed Bronze                      |
| Seal rings                            | SAE 660 Bronze                     |
| Shaft                                 | Solid Stainless Steel A.I.S.I. 416 |
| Pump base to bottom of suction screen | 14' - 3"                           |

#### 4.0 Motor Requirements

- 4.1 Motors shall be of standard manufacture, built and tested in accord with NEMA and AIEE standards, equal to U.S. Motors, Westinghouse, General Electric or Louis Allis as approved by the Engineer. No motor or motor equipment will be approved unless complete service and parts are readily available and stocked locally.
- 4.2 Motor shall be of the polyphase squirrel cage induction type, normal starting torque, NEMA design B, with pre-lubricated ball bearings. Voltage rating shall be 440-480 Volts, 60 Cycle, A.C.
- 4.3 Motor enclosures shall be open, drip-proof construction with motor rated for not more than 40 degrees Centigrade (40° C.) temperature rise under full load operation. Insulation to be NEMA Class A.
- 4.4 Motor operation shall be appropriate for the pumps and shall not exceed 1800 RPM. The motor horsepower shall be adequate to provide the pump performance specified elsewhere under the stated conditions.
- 4.5 Motors shall be non-overloading throughout the entire operating range of the pumps and motors shall be sized accordingly.
- 4.6 Motors shall have solid shafts.
- 4.7 A thrust bearing of ample capacity to carry the weight of all rotating parts plus the hydraulic thrust shall be incorporated into each motor as an integral part of it. The bearing shall be of such size that the average life rating is no less than five (5) years continuous operation.

#### 5.0 Installing Pumps

- 5.1 Pumps shall be set in true vertical position and shall be rigidly held in place without strain.
- 5.2 The pump assemblies shall be examined for completeness and tight connections before lowering into the sump. Precautions must be taken to avoid distorting the column or shaft in handling. The pump head and the motor base shall be carefully and accurately connected without strain or misalignment. Piping connections shall be assembled without strain to the pumps. No pumps shall be started without being approved by the Engineer.

#### 6.0 Pump Control System

- 6.1 There shall be furnished and installed an integrated control system which shall be the product of one manufacturer who has had at least five years experience in furnishing similar equipment. It shall be completely tested and inspected prior to shipment. Complete hydraulic electrical, and dimension drawings; and functional description shall be provided for approval by the Engineer. All control equipment shall be guaranteed against defects of material and workmanship for a period of one year from date of shipment.

#### 6.1 Pump Control System (Continued)

A representative of the manufacturers shall be present to supervise the final adjustments of the control system after installation is completed, and instruct the operating personnel in the use of this equipment. Manufacturer shall maintain a service organization in Oregon with Factory trained personnel available on 24-hour notice who shall stock parts for this equipment.

- 6.2 The controls shall be furnished in a NEMA 1 enclosure, wall mounted, of dead front construction, as shown on the Plans. The control center shall be suitable for operation on the voltage shown on the Plans, and shall be NEMA Class II Type B wiring. The assembly shall consist of the necessary number of vertical sections to accommodate the required control devices. Individual flanged and gasketed doors mounted on semi-concealed, full length piano type hinges shall be furnished for each motor starter and control compartment. Doors shall be secured by slotted head, one quarter turn captive speed fasteners. Enclosure shall be manufactured of sheet steel, no less than 14 gauge in thickness. The metal shall be prepared for painting with Bonderite metal preparation process, primed and finished with a duPont ASA-61 enamel. A phenolic nameplate, 1" x 4" shall be mounted on each door to describe the equipment control by the device therein.
- 6.3 Control panel shall include combination motor starters with thermal-magnetic molded case circuit breakers of the quick-make, quick-break type. Two elapsed time meters will be flush mounted on each motor starter door to show hours and tenths of hours that each pump has run. Circuit breakers shall be able to be padlocked in the on or off positions, and door shall be interlocked so that it cannot be opened with the circuit breaker in the on position. ✓
- 6.4 Motor starters shall contain dual voltage coils, and shall be wired for under voltage release. Hand-off-automatic selector switches will be included for each starter, and all starters will contain three thermal overload relays. The overload relays shall have a manual reset which is externally operable.
- 6.5 The lighting panel shall be incorporated in the motor control center, and shall be of the circuit breaker type with size as shown on the Plans. Circuit breakers shall have thermal-magnetic action, and shall conform to the NBC requirements. Tandem type circuit breakers will not be acceptable. Multiple pole circuit breakers shall be operated by one handle. A hinged door shall be provided in front of the lighting panel, and lamicoid nameplates provided for each circuit.

All autosensory control wiring shall be completed to master terminal blocks, and all interwiring between autosensory control and power equipment shall be completed. The control wiring diagram shall be printed on aluminum, and mounted with permanent adhesive inside the control door.

- 6.6 Accurate control of the water level in the sump will be accomplished by two Induction Probe Relay Units. Probe relay will have a capacitor in series with the relay coil, and a maximum open circuit voltage not to exceed 250 volts AC. If the water level in the sump rises to 143.5 feet, the lead pump will start. If the water continues to rise, to 146.5 feet, the lag pump will start. When water level falls to 144.5 feet, the lag pump will stop; and when the water level falls to 142.0 feet, the lead pump will stop.

The Contractor shall furnish and install a 5-probe cast bronze housing at the location shown in the Plans. One stainless steel probe rod will be installed in this housing for a ground circuit. Four insulated stainless steel probe rods will be installed, with lengths to perform the functions described in the preceding paragraph. The five wires connecting the probe splices will be allowed between these units.

The control panel will also contain a 2-circuit alternator, which will change the starting sequence of the two pumps each pumping cycle. The alternator shall provide for operation of the lag pump through the second probe relay device in event of high inflow, failure of lead unit or first probe relay, or failure of alternator coil. No auxiliary starter or relay contacts shall be required to operate the alternator. Complete control system shall be Autocon Probotrol Model DA-4137-AAL, as manufactured by Autocon Industries, Inc., P. O. Box 3803, Portland, Oregon, 97208.

The equipment and materials deemed most suitable for the control system have been specified. This is not done, however, to eliminate other equipment equally as good and efficient. The Contractor shall prepare his bid on the basis of the particular equipment and materials specified. The awarding of the contract will constitute a contractual obligation to furnish the specified equipment and materials unless the Contractor follows the following procedure. The Contractor must bid the equipment specified but may submit a bid on alternate equipment, stating the advantage to the Owner and the saving or additional cost involved. To receive consideration, requests for such substitution must be accompanied by documentary proof of the actual difference in cost to the Contractor in the form of certified copies of Quotations to the Contractor covering such equipment or materials proposed for substitution; including wiring diagrams, dimension prints, and material lists, or other proof satisfactory to the Engineer. It is the intention that the owner shall receive the full benefit of the saving in cost involved in any substitution as a reduction in the contract price. In all cases, the burden of proof that the equipment offered for substitution is equal in construction and efficiency to that named in the Specifications shall rest on the Contractor; and unless the proof is satisfactory to the Engineer, the substitution will not be approved. The Engineer will be the sole judge as to whether alternate equipment may be substituted.

## 7.0 Installation

- 7.1 Workmanship shall be in accordance with the best modern standard practice, and all methods shall conform to the latest rules of the NBC.
- 7.2 All electrical equipment shall be effectively bonded and grounded according to the latest requirements of the National Electric Code. A connection shall be made to the water pipe using a suitable bolted, grounding type clamp or lugged connection. Copper wires or straps shall be used to jumper flanges and the water meter to assure ground continuity to the street side of the water service.
- 7.3 All underground and concealed conduits shall be galvanized rigid steel, and shall terminate with insulating type bushings. Exposed conduits shall run parallel to or at right angles to the structures, and shall be secured at intervals not exceeding 6 feet with approved types of galvanized straps or bolting clamps. All underground conduit shall be buried a minimum of 24" below finished grade, and all couplings and threaded joints of buried conduit shall be painted with primer and covered with 2-1/2 lap layers of Scotchrap No. 50 or No. 51 tape.
- 7.4 Conductors shall be continuous from outlet to outlet, and no splices shall be made except within outlet or junction boxes. Wire connectors of insulating material or solderless pressure connectors, properly taped, shall be utilized for all splices in wiring where possible. All power and control wiring shall be terminated in a compression type lug or fitting.
- 7.5 Each outlet in the wiring system shall be provided with an outlet box to suit the conditions encountered which shall be not less than 1-1/2" deep.

## 8.0 Approval Data and Maintenance Books

- 8.1 Contractor shall submit in triplicate, within forty days after award of contract, a list of all material he proposes to furnish. These shall be accompanied by manufacturers literature, where applicable. In the case of the motor control center and automatic controls; complete wiring diagrams, dimension drawings, functional operation, and hydraulic layout shall be submitted. Manufacture or installation of any equipment prior to approval shall be at the risk of the Contractor.
- 8.2 Three copies of Installation and Maintenance Manuals shall be submitted to the Consulting Engineer when the work is completed. This data shall be supplied for all major equipment, and any other equipment which will require maintenance or replacement of parts; and shall include wiring diagrams, dimension drawings, functional description of operation, installation and maintenance information, and spare parts lists. Final payment will not be made until this information is received by the Engineer.

## 9.0 Testing

- 9.1 The Contractor will arrange with the Engineer to witness a test of the system and equipment after installation is completed. These tests shall demonstrate that the complete facility operates in accordance with the Plans and Specifications, and the required functions. All defects shall be corrected at the Contractor's expense before final acceptance. All exposed electrical equipment shall be cleaned, and all lamps shall be in working condition.

## 10.0 Payments

- 10.1 Payment for materials and equipment received and properly stored on the job site, or in other approved storage facilities will be recommended to the Owner by the Engineer. Material storage areas shall be weather and theft proof and any and all such stored materials or equipment shall be maintained in new condition until installed and accepted by the Engineer. Payment for such materials and equipment does not constitute acceptance by the Owner of such items as to quality, specified performance, or name plate, nor does such payment release the Contractor of his responsibility for safekeeping of any or all such stored materials or equipment.
- 10.2 Recommended full payment for equipment will be made only after such equipment is installed, accepted and test run for a period of two weeks.

## RECORDING & CONTROL EQUIPMENT SPECIFICATIONS

### 1.0 General

- 1.1 Equipment to be furnished and installed under this specification shall include the following:
- 1.2 One - 8" Sparling Master flow line meter. Complete with 150 lb. standard 8" flanged pipe section, including double outlet transmitter head. Other makes of flow meters will be considered.
- 1.3 One Sparling Indicator - Totalizer and recorder unit wall mounted Type 218-B. The totalizer shall read in gallons, rate of flow in G.P.M. on a scale 0-500. The recording chart shall be 7 day rotation driven by 110-Volt 60 cycle motor. A one year's supply of charts shall be supplied with the unit.
- 1.4 One - chlorinator controller - Wallace & Tiernan Series A-744, together with all equipment and materials necessary to place the existing Wallace & Tiernan chlorinator Series V 800 20 lb. 24 hours capacity in automatic operation.

### 2.0 Water Supply Piping

- 2.1 Piping from water main to 6" above floor level.

Piping from main into chlorination building shall be copper tubing type K copper water tubing complying with Federal Specifications W.W.T. - 799. Above floor level pipe shall be Galvanized Iron Pipe, standard weights, threaded and coupled, commercial grade complying with A.S.T.M. Specifications A-120. The following accessories shall be furnished:

- (a) All necessary piping, couplings, and fittings needed to make a connection from the water main into the booster pump.
- (b) One double strap service clamp, Mueller No. H-10533, with 1" Mueller corporation stop thread.
- (c) One corporation stop, Mueller No. H 15001, with 1" Mueller thread by copper outlet.

- 2.2 Piping from 6" above floor level into chlorinator.

Piping from 6" above floor level into Chlorinator shall be galvanized iron pipe as specified in section 2.1. The following accessories shall be furnished:

- (a) All necessary piping, couplings, and fittings needed to connect to the Chlorinator.
- (b) One water pressure gauge not less than 3" dial, bottom fitting 1/8" male pipe thread range 0-160 p.s.i.
- (c) One 1" shut off valve.

### 3.0 Chlorine Solution Discharge Line

- 3.1 Chlorine solution discharge line shall be 1" plastic tubing, Yardley P.V.C. schedule 40 Type - 11 or equal, design stress 1000 p.s.i., high impact strength, maximum working pressure of 240 p.s.i. at 74° F. Couplings to cocks and adaptors shall be by means of stainless steel clamps, two per each connection.

The following accessories shall be furnished:

- (a) All necessary piping, couplings and fittings needed to connect chlorine solution line from chlorinator to wet wall.
- (b) All necessary anchors, straps, bolts, and flush shells to secure P.V.C. pipe in wet well.

### 4.0 Meter and Instrumentation

- 4.1 Meter shall be 8" Sparling Master-Flo Main Line meter, 150 lb. flanged, 150 p.s.i. working pressure. Provide with a double outlet for electrical transmission to the controller and the flow indicator, totalizer and recording equipment.
- 4.2 Controls shall consist of two (2) wire connection from the meter to the controller which proportions the rate of chlorine feed to the rate of water flow, and a three (3) wire connection from the meter to the indicator, totalizer and recording equipment plus all wiring necessary to make the above described connections.
- 4.3 The indicator, totalizer and recording equipment shall be wall mounted with a 12" circular chart, seven day chart movement. Recorder to have built in switch to start operation of chlorinator and water supply.

### 5.0 Power Supply

Under the electrical specifications 110 volt power will be delivered to the controller, totalizer-recorder and chlorinator. Instrument control conductors shall be provided with the above equipment in conduits installed by the electrician.

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NEWBERG, OREGON

OTIS SPRINGS WATER SUPPLY PROJECT

Bid 7:30 PM - Monday, October 2, 1967

To all Planholders:

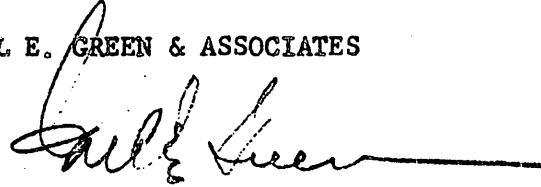
Addendum #1

Revision of Electrical Specifications on Above Project

1. Delete specs Pages ES-1 through ES-7 in their entirety and refer to notes on drawings.
2. P.E.S. Section of Specs - Delete 6.2, 6.3, 6.4, 6.5, and paragraph 3 of 6.6. Line 7 should read Model "B-4137-A". Delete 7.2 and 7.3. Change 8.1 to read "Contractor shall submit in triplicate, within fourteen days after award of contract, a list of all equipment and material he proposes to furnish. These shall be accompanied by manufacturers descriptive literature, performance curves, dimensional drawings, and functional operational literature. Manufacture or installation of any equipment prior to approval by the engineer shall be at the risk of the Contractor".
3. Autocon controls - It is not the intent of this addendum to disapprove Autocon equipment.
4. Electrical Sub-Contractor shall be responsible for the removal of existing conduits and conductors called for on the drawings.

CARL E. GREEN & ASSOCIATES

By

  
Carl E. Green

9-26-67

## ELECTRICAL SPECIFICATIONS

### 1.0 GENERAL CONDITIONS

- 1.1 The listing herein of an article, operation or method, requires that the Contractor shall provide each item listed of the quality or subject to the qualifications prescribed, according to the conditions stated, providing all necessary labor, equipment and incidentals.
- 1.2 The general conditions specified governing the general contractual agreement shall govern this work also.
- 1.3 Bidders shall view the site to determine job conditions, and all other factors affecting the execution of this work as shown on the plans and specified herein. All costs shall be included in the original proposal.
- 1.4 Obvious omissions from the drawings or specifications or differences between drawings and specifications shall be called to the Engineer's attention at least seven (7) days prior to bid date for his clarification. Failure to do so shall be construed as the willingness of this Contractor to supply all necessary materials and labor required for the completion of this work.

### 2.0 PERMITS, CODES AND INSPECTIONS

- 2.1 The Contractor shall comply with all Electrical Code and safety requirements of the State of Oregon and all applicable local regulations.
- 2.2 The Contractor shall obtain all permits, inspections, etc., required by Code. All fees shall be included in the contract price.
- 2.3 The Contractor shall furnish a certificate of approval from the Oregon State Electrical Inspector at completion of the work.
- 2.4 All materials and equipment shall be approved by the Underwriters' Laboratories, Inc., or by the inspection authority having jurisdiction.

### 3.0 GENERAL METHODS AND REQUIREMENTS

- 3.1 Conduits shall be concealed in the construction so far as is practical with conduits up to 1" permitted in the slabs placed as directed. Exposed conduits shall be run parallel or at right angles to structural building lines. Exposed conduits shall be neatly offset into boxes and fittings. Exposed outlet boxes and conduit fittings to be cast metal threaded hub type Appleton "Unilets" or Crouse Hinds "Condulets".

3.0 GENERAL METHODS AND REQUIREMENTS (continued)

- 3.2 Conduits shall be supported nominally every six feet along conduit runs and within eighteen inches (18") of each outlet fitting, ell or cabinet for both exposed and concealed wiring. Wooden plugs will not be permitted for fastening and wood screws will be permitted only for attachment to wooden members.
- 3.3 The entire installation shall be made in a neat, finished and safe manner.
- 3.4 Protection to electrical installation shall be provided to prevent damage during construction.
- 3.5 In general, the mounting heights shall be noted on the drawings. Where no height is indicated, the Contractor shall request clarification from the Engineer prior to roughing-in.
- 3.6 Electrical plans are diagrammatic indicating approximate location of outlets and controls. The Contractor shall refer to the construction details and drawings and coordinate the electrical work to assure proper roughing and avoid conflicts. Where conflicts appear or the requirements are not clear the Engineer shall be requested to provide proper installation instructions.
- 3.7 Minor changes in locations shall be made without added cost if ordered prior to roughing-in.
- 3.8 Cutting, patching, removal of debris, etc., shall be as directed by the Engineer. Trenching, backfilling and restoration of the site required by this work shall be included in the initial bid.
- 3.9 Guarantee the installation against defects in materials and workmanship which may occur under normal usage for a period of one year after acceptance. Such defects shall be promptly remedied without cost to the District.
- 3.10 Conduct such tests as may be necessary to demonstrate the continuity and proper operation of the system.
- 3.11 The Contractor shall submit one complete list of materials in five copies showing the type, size, rating, style and catalog numbers and manufacturer's names for each of the following items to assure compliance with these specifications. This information shall be submitted within thirty (30) days after the award of this contract.
  - 3.11.1 Wall Switches
  - 3.11.2 Plug receptacles - all types
  - 3.11.3 Motor control center.
  - 3.11.4 Light fixtures and lamps

### 3.0 GENERAL METHODS AND REQUIREMENTS

(continued)

- 3.12 Splices and taps for branch circuit work shall be soldered and taped with single wire pigtails left for connection of fixtures and devices. Approved pressure connectors or wire nuts may be used only for connecting fixture leads to the single wire pigtails in branch circuit work. Scotchlok connectors may be used in lieu of soldering installed in accord with manufacturer's instructions.
- 3.13 An engraved phenolic nameplate shall be installed on the outside of each panel: distribution panel, junction box, terminal cabinet, etc., to identify and indicate use.
- 3.14 The Contractor shall verify the physical size of each item of electrical equipment and match to the space available. The equipment shall be coordinated to the space by the Contractor.
- 3.15 The use of manufacturer's names and numbers in this specification is intended to indicate style, quality and usefulness. Manufacturers of equipment similar in design, quality and usefulness desiring approval on their equipment as a substitute shall submit their request to the Engineer in writing not less than seven (7) days prior to bid date. Approval will be by addenda.

### 4.0 WORK EXCLUDED

The following items shall be provided by others. This work shall be conducted in a manner to cooperate with the installation of such equipment.

- 4.1 Motors, control devices and control wiring beyond provisions shown on the drawings.
- 4.2 Remote signal and control circuits beyond the provisions shown will be by others.

### 5.0 MATERIALS

- 5.1 Conduit shall be rigid galvanized in all locations.
- 5.2 Flexible metallic conduits will be permitted only for flexibility as at motors and controls in lengths up to nominally eighteen inches (18"). All flex to be jacketed waterproof type equal to Sealtite with T & B watertight fittings.
- 5.3 Wire shall be copper, all type "THW" insulated, minimum size No. 12 except for control circuits where No. 14 may be used.
- 5.4 Boxes shall be Cast galvanized Crouse Hinds "Condulets" or Appleton "Unilets", threaded hubs for exposed wiring. Concealed or embedded

5.0 MATERIALS

5.4 (continued)

boxes for interior work may be four inch (4") octagon for lighting, and four inch (4") square for receptacles and switch devices, galvanized pressed steel.

- 5.5 Tumbler Switches shall be 20 ampere, 120-277 volt weatherproof, Hubbell No. 17CM81.
- 5.6 Duplex Receptacles shall be 2 wire, 3 pole grounding type, weatherproof, Hubbell No. 52CM22 for standard boxes and 52CM21 for cast boxes.
- 5.7 Plates: Device covers shall be gasketed weatherproof type.
- 5.8 Lugs on all conductors No. 8 and larger except on molded cast breakers lugs shall be full pressure type, T. & B. 54,000 series or Burndy Hydent.
- 5.9 Panelboards shall be circuit breaker type NLAB incorporating the following features. Refer to Labelling and General Requirements for lugs above. The Panelboards shall be of the same manufacture as the main distribution.
  - 5.9.1 Panelboards shall be equipped with doors having self latching disc tumbler, Corbin locks No. 15767 with No. 60 key. No other key shall be employed.
  - 5.9.2 Minimum gutters are to be five inches (5") wide except where feeder conductors enter, as at the feed end, where six inches (6") shall be provided. Feeder conductors are to enter directly in line with lug terminals wherever possible.
  - 5.9.3 Separate feeder lugs and studs shall be provided for each feeder conductor.
  - 5.9.4 Unless otherwise specifically noted on the drawings single pole breakers shall be in the upper positions in the panels with multipole breakers in bottom positions. See panel numbering specified.

6.0 SERVICE AND DISTRIBUTION

- 6.1 The service shall be underground from the Power Company pole to the terminal cabinet and thence to the Main Distribution. This contract shall include conduit only from the pole to the terminal cabinet, the secondary conduit and conductors from the main panel to the cabinet and the terminal cabinet.

6.0 SERVICE AND DISTRIBUTION (continued)

- 6.2 Conduit shall be rigid galvanized down twenty-four inches (24") below finished grade with all joints red leaded during assembly, ell up the pole twelve inches (12") and cap. The extension of the conduit up the pole and the service conductors from the pole into the terminal cabinet will be by the Power Company.
- 6.3 The terminal cabinet size is shown on the drawing. The terminal blocks will be furnished by the Power Company and mounted in the cabinet by this Contractor.
- 6.4 The main distribution panel shall be circuit breaker type with hinged door. All bussing shall be copper factory installed. The panel shall be primed and finished with not less than two (2) coats of light gray enamel. Refer above to requirements for protection labeling and lugs. Breaker trips are as noted on the drawings. Coast or Fouch.

7.0 TELEPHONE PROVISIONS (7.1 and 7.2 NOT REQUIRED IN THIS CONTRACT)

- 7.1 A system of blank conduits shall be provided as indicated on the drawings for telephone use.
- 7.2 Conduit shall be rigid galvanized down twenty-four inches (24") below finished grade. Stub out from the building as shown on the drawings and cap.

8.0 ELECTRIC HEATING

- 8.1 Electric heating with controls shall be furnished and installed.
- 8.2 Equipment specifications and ratings are shown on the drawings.

9.0 TRANSFORMER

- 9.1 The transformer shall be dry type, air cooled in a ventilated metal cover with all terminals enclosed. See drawings for ratings. The unit shall be manufactured in strict accord with applicable NEMA-AIEE standards.
- 9.2 Coils are to be continuous wound, copper, Class B or F, insulated, as manufactured by Hevi Duty or Sorgel.

10.0 MOTOR CONTROL CENTER

- 10.1 Motor Control Center shall be furnished and installed complete with breakers, starters, H.O.A. switches and elapsed time meters. Control

10.0 MOTOR CONTROL CENTER

(continued)

10.1 (continued)

centers to be NEMA Class 1, Type B fixed construction with wiring from the starters to terminals in each compartment for power and control circuits.

10.2 Each starter or other item of electrical equipment shall be identified with an engraved phenolic nameplate to indicate the load or equipment served.

10.3 The starters shall be across the line type, full voltage magnetic with a reset pushbutton, H.O.A. switch and an elapsed time meter to indicate total running time of the item of equipment. Starters shall be equipped with a thermal overload device in each phase leg (3 required). Verify the characteristics of each motor installed and coordinate thermals for proper motor protection in accord with the motor manufacturer's recommendations. The responsibility of such coordination is this Contractor's responsibility. Control voltage 120 volt derived from a separate transformer in each starter compartment so that when the motor is disconnected the control circuit is disconnected also.

10.4 Breakers shall be type AB interlocked with the door handle so that the breaker must be in the open position before the door is opened. Each breaker must be bussed and connected to the main bus removable from the front. The breaker shall be able to be locked in the open position.

10.5 The control centers are to be as manufactured by I.T.E., Allen Bradley or Westinghouse.

11.0 EQUIPMENT CONNECTIONS

11.1 The water process equipment shall be connected complete by this Contractor including mounting and wiring of starters and final connections to the motors. Control wiring and connections unless shown on the electrical drawings will be by others.

11.2 Furnish and install all code required disconnects even though not shown on the electrical drawings. All disconnects to be quick break, type ND, weatherproof.

12.0 LIGHTING FIXTURES AND LAMPS

12.1 Lighting fixtures complete with lamps are to be furnished and installed at every outlet shown on the plans. Types and lamp sizes indicated by letters and wattages are shown at outlet symbols. A fixture typical for the location shall be installed at every outlet whether specifically noted or not.

12.0 LIGHTING FIXTURES AND LAMPS

(continued)

12.2 Lamps shall be 120 volt inside frosted, incandescent, Sylvania, Westinghouse or General Electric.

12.3 All fixtures must bear the Underwriters' approval label.

12.4 Fixture Types shall be:

12.4.1 "A" Incandescent RLM standard dome reflector suspended from short nipple and aligner cover. Abolite or Miller.

12.4.2 "B" Cast aluminum bracket fixture, prismatic glass, asymmetric light pattern. Holophane No. 420.

BASIS OF PAYMENT -

Item

Basis

- |                                              |                                                                                                                                                                                                                                                                                         |
|----------------------------------------------|-----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| 1. <u>Site Preparation &amp; Demolition</u>  | - All costs incidental to preparing the existing structures for the new work and any and all miscellaneous cost not clearly indicated in other bid items.                                                                                                                               |
| 2. <u>Structural &amp; Trench Excavation</u> | - Lump sum to furnish all materials, labor, services and equipment and performing all operations required for the excavation, filling and backfilling for structures, pipelines, conduits and the compacting of backfill and disposal of any or all excess excavated material included. |
| 3. <u>Class 4 Concrete Foundation</u>        | - Per cubic yard in place; includes forming, bracing, finishing, stripping and cleanup.                                                                                                                                                                                                 |
| 4. <u>Class 6 Concrete</u>                   | - Per cubic yard in place; includes forming, bracing, finishing, curing and any expansion strips, in floors, curbs, walks, pump foundations, pipe supports, etc.                                                                                                                        |
| 5. <u>Reinforcing Steel &amp; Fabric</u>     | - Per pound furnished and in place, in all Class 6 concrete and concrete masonry.                                                                                                                                                                                                       |
| 6. <u>Misc. Iron &amp; Metal Work</u>        | - Lump sum for all miscellaneous metal furnished and in place, includes, manhole casting, covers, galvanized ladders, straps, fasteners and anchors.                                                                                                                                    |
| 7. <u>Structural Masonry</u>                 | - Lump sum for all material and labor to construct the building per design. Price includes placing of metal reinforcement, furnishing and placing of concrete in bond beams and vertical rod encasement and the setting of roof anchors.                                                |
| 8. <u>Carpentry</u>                          | - Lump sum for all material, labor and tools, including all rough hardware, nails, clips, and anchors. Price includes cost of setting door frames, louvers and hatches.                                                                                                                 |
| 9. <u>Doors, Louvers, Hatches</u>            | - Lump sum for all material, including hardware, locks and fasteners. Price includes hanging doors.                                                                                                                                                                                     |

BASIS OF PAYMENT -

| <u>Item</u>                                    | <u>Basis</u>                                                                                                                                                                                                                                                              |
|------------------------------------------------|---------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| 10. <u>Roofing and Sheet Metal</u>             | - Lump sum for complete roof per specifications, including all labor and roofing materials and flashing.                                                                                                                                                                  |
| 11. <u>8" Cast Iron Pipe</u>                   | - Per net lineal foot, furnished and installed, including companion flanges, bolts, and gaskets where required.                                                                                                                                                           |
| 12. <u>Cast Iron Fittings</u>                  | - Per pound of net casting weight for flanged and M.J. fittings furnished and installed, including all bolts and accessories.                                                                                                                                             |
| 13. <u>6" Flanged Gate Valves</u>              | - Per each, furnished and installed, including hand wheel, bolts and accessories.                                                                                                                                                                                         |
| 14. <u>8" M. J. Gate Valve</u>                 | - Per each, furnished and installed, including valve box, bolts and accessories.                                                                                                                                                                                          |
| 15. <u>6" Pump Check Valves</u>                | - Per each, furnished and installed. Price includes 1 inch air release valve for each unit together with all bolts, gaskets, accessories and drainage piping if necessary. Valve adjustment instructions shall be furnished.                                              |
| 16. <u>Flexible Couplings</u>                  | - Lump sum for all sizes and kinds of flexible or transition pipe couplings shown or required to make up a complete piping system per design, together with all bolts, gaskets and accessories.                                                                           |
| 17. <u>Drains, Drain Piping &amp; Fixtures</u> | - Lump sum for all pipe, drainage fittings, tubing, floor drain and copper connections to pumps and valves, including all labor and tools required for drilling holes in existing concrete walls and floors.                                                              |
| 18. <u>8" Main Line Flow Meter</u>             | - Lump sum to furnish and install complete unit. Price includes mounting tube with standard pipe flanges. Magnetic drive with five wire leads together with manhole enclosure with cast iron M.H. frame and cover, wiring instructions and literature shall be furnished. |
| 19. <u>Chlorinator Booster Pump and Piping</u> | - Lump sum to furnish and install booster pump on concrete base, including all galvanized pipe, copper tubing, valves, strainers, corp. stops to make up a complete operating unit per design.                                                                            |

BASIS OF PAYMENT

| <u>Item</u>                                               | <u>Basis</u>                                                                                                                                                                                                                        |
|-----------------------------------------------------------|-------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| 20. <u>Chlorinator Controller and Wiring</u>              | - Lump sum to furnish and install complete unit, including signal wiring to motor and to chlorinator together with any required conduits not otherwise provided. Instruction literature shall be furnished.                         |
| 21. <u>Flow Indicator, Totalizer, Recorder and Wiring</u> | - Lump sum to furnish and install complete unit, including signal wiring to meter and any necessary conduits not otherwise provided, together with one years supply of charts and ink and all descriptive and operating literature. |
| 22. <u>Chlorination Solution Piping</u>                   | - Lump sum to furnish and install all chlorination solution piping, diffuser assembly and accessories complete.                                                                                                                     |
| 23. <u>Furnish and Install Pumps and Motors</u>           | - Per each unit. Furnished and installed complete in place includes any and all costs for testing, adjusting and running in time.                                                                                                   |
| 24. <u>Motor Control Center and Pump Control System</u>   | - Lump sum to furnish and install complete power control unit together with the pump control system.                                                                                                                                |
| 25. <u>220-440 Volt Wiring and Heating</u>                | - Lump sum to furnish all materials and labor for complete wiring of the 220-440 volt system, including meter facility, underground service, main circuit breaker and service entrance switch and the heating units.                |
| 26. <u>110 Volt Wiring &amp; Fixtures</u>                 | - Lump sum to furnish all materials and labor for complete wiring of the 110 volt system including fixtures and conduits for signal wiring.                                                                                         |
| 27. <u>Painting</u>                                       | - Lump sum to furnish all materials and labor to apply selected finishes and colors per specifications.                                                                                                                             |

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PROPOSAL

OTIS SPRINGS WATER WORKS IMPROVEMENTS

Mayor and City Council  
City of Newberg, Oregon

Gentlemen:

The undersigned bidder declares that he has carefully examined the plans and specifications, has visited the site, and made such investigations as are necessary to determine the character of the work and the conditions to be encountered, and that if this Proposal is accepted he will contract with the City for the work described in these Specifications in a form of contract hereto appended, will provide all necessary equipment, labor, materials, tools and apparatus required and as specified, and under the requirements of the Engineer, at the prices hereinafter written.

The undersigned bidder further understands that time is of the essence of this Contract as well as good workmanship and good materials, and he agrees to complete the work in all respects within 100 calendar days after signing of Contract. Should the Bidder fail to complete the work within the time limits set forth above, liquidated damages shall be deducted from moneys otherwise due the Contractor at the rate of Eighty Dollars (\$80.00) per calendar day.

Accompanying this Proposal is a certified check, cashier's check or bid bond drawn on United Pacific Insurance Company of Tacoma, Washington in the amount of 5% of Bid Guaranteeing that the Bidder shall enter into a contract for the work if so awarded by the City.

OTIS SPRINGS PUMPING STATION  
& CHLORINATION ALTERATIONS

| <u>Item</u>                                                                                                                                                    | <u>Unit Price</u> | <u>Estimated Quantity</u> | <u>Amount</u>    |
|----------------------------------------------------------------------------------------------------------------------------------------------------------------|-------------------|---------------------------|------------------|
| 1. <u>Site Preparation &amp; Demolition - the lump</u><br><u>sum of</u> <u>Seven Hundred and Seventy Five</u><br><u>and no/100</u> Dollars (\$ <u>775.00</u> ) |                   | 1.s.                      | \$ <u>775.00</u> |
| 2. <u>Structural and Trench Excavation, the lump</u><br><u>of</u> <u>One Thousand Five Hundred and no/100</u><br>Dollars (\$ <u>1500.00</u> )                  |                   | 1.s.                      | <u>1,500.00</u>  |
| 3. <u>Class 4 Concrete, Foundation - the sum of</u><br><u>Forty and no/100</u> Dollars (\$ <u>40.00</u> )                                                      |                   | 10                        | <u>400.00</u>    |
|                                                                                                                                                                | per cu. yd.       |                           |                  |
| 4. <u>Class 6 Concrete, Floors, &amp; Walks &amp; Curbs-</u><br><u>the sum of</u> <u>Sixty and no/100</u> Dollars (\$ <u>60.00</u> )                           |                   | 5                         | <u>300.00</u>    |
|                                                                                                                                                                | per cu. yd.       |                           |                  |
| 5. <u>Reinforcing Steel &amp; Fabric - the sum of</u><br><u>Twenty Cents</u> Dollars (\$ <u>.20</u> )                                                          |                   | 1,000                     | <u>200.00</u>    |
|                                                                                                                                                                | per lb.           |                           |                  |
| 6. <u>Misc. Iron &amp; Metal Work - the lump sum of</u><br><u>Four Hundred Fifty and no/100</u><br>Dollars (\$ <u>450.00</u> )                                 |                   | 1.s.                      | <u>450.00</u>    |
| 7. <u>Structural Masonry - the lump sum of</u><br><u>Six Hundred Seventy Five and no/100</u><br>Dollars (\$ <u>675.00</u> )                                    |                   | 1.s.                      | <u>675.00</u>    |
| 7a. <u>Sub Contractor</u> <u>Name</u> <u>Address</u><br><u>Bronley</u> <u>Portland, Oregon</u>                                                                 |                   |                           |                  |

| Item                                                                                                                                                                                       | Estimated Quantity | Amount                                     |
|--------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|--------------------|--------------------------------------------|
| 8. <u>Carpentry</u> , the lump sum of _____<br><u>Four Hundred and no/100</u> Dollars (\$ <u>400.00</u> )                                                                                  | 1.s.               | \$ <u>400.00</u>                           |
| 9. <u>Doors, Louvers, Hatches</u> , the lump sum of <u>Five</u><br><u>Hundred Fifty Two and no/100</u> Dollars (\$ <u>552.00</u> )                                                         | 1.s.               | <u>552.00</u>                              |
| 10. <u>Roofing &amp; Sheet metal</u> , the lump sum of _____<br><u>Two Hundred Fifty and no/100</u> Dollars (\$ <u>250.00</u> )                                                            | 1.s.               | <u>250.00</u>                              |
| 11. <u>8" Cast Iron Pipe</u> , the sum of _____<br><u>Six and no/100</u> Dollars (\$ <u>6.00</u> )<br>Lin. ft.                                                                             | 22                 | <u>132.00</u>                              |
| 12. <u>Cast Iron Fittings</u> , the sum of _____<br><u>Fifty Cents</u> Dollars (\$ <u>.50</u> )<br>per lb.                                                                                 | 600                | <u>300.00</u>                              |
| 13. <u>6" Flanged Gate Valves</u> , the sum of _____<br><u>Eighty Five and no/100</u> Dollars (\$ <u>85.00</u> )<br>each                                                                   | 2                  | <u>170.00</u>                              |
| 14. <u>8" M.J. Gate Valve</u> , the sum of <u>One Hundred</u><br><u>Twenty Five and no/100</u> Dollars (\$ <u>125.00</u> )<br>each                                                         | 1                  | <u>125.00</u>                              |
| 15. <u>6" Pump Check Valves</u><br>a. Manufacturer <u>Clay</u><br>Designation <u>81-B</u><br>the sum of _____<br><u>Four Hundred Twenty and no/100</u> Dollars (\$ <u>420.00</u> )<br>each | 2                  | <u>840.00</u><br><del>420.00</del><br>2103 |
| 15. b. Manufacturer _____<br>Designation _____<br>the sum of _____<br>_____ Dollars (\$ _____ )<br>each                                                                                    | 2                  | <u>--</u>                                  |

| Item |                                                                                                                                                                                                    | Estimated<br>Quantity | Amount        |
|------|----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|-----------------------|---------------|
| 15.  | c. Manufacturer _____<br>Designation _____<br><br>the sum of _____<br><br>_____ Dollars (\$ _____ )<br>each                                                                                        | 2                     | \$ ____       |
| 16.  | <u>6" &amp; 8" Flexible &amp; Transition Couplings,</u><br><br>the lump sum of _____<br><br><b>Two Hundred Fifty and no/100 Dollars (\$ 250.00 )</b>                                               | 1.s.                  | <b>250.00</b> |
| 17.  | <u>Drains, Drain Piping &amp; Fixtures,</u> the lump<br>sum of _____<br><br><b>Two Hundred Fifty and no/100 Dollars (\$ 250.00 )</b>                                                               | 1.s.                  | <b>250.00</b> |
| 18.  | <u>8" Mainline Flow Meter Assembly-</u><br><br>a. Manufacturer <b>Hersey Sparling</b><br>Designation _____<br><br>The lump sum of _____<br><br><b>Nine Hundred and no/100 Dollars (\$ 900.00 )</b> | 1.s.                  | <b>900.00</b> |
|      | b. Manufacturer _____<br>Designation _____<br><br>The lump sum of _____<br><br>_____ Dollars (\$ _____ )                                                                                           | 1.s.                  | __            |
| 19.  | <u>Chlorinator <del>sewerage</del> Piping</u><br><br>a. Pump Manufacturer _____<br>Designation _____<br><br>The lump sum of _____<br><br><b>Seventy Five and no/100 Dollars (\$ 75.00 )</b>        | 1.s.                  | <b>75.00</b>  |
|      | b. Pump Manufacturer _____<br>Designation _____<br><br>The lump sum of _____<br><br>_____ Dollars (\$ _____ )                                                                                      | 1.s.                  | __            |

| <u>Item</u> |                                                                                                                  | <u>Estimated<br/>Quantity</u> | <u>Amount</u>   |
|-------------|------------------------------------------------------------------------------------------------------------------|-------------------------------|-----------------|
| 20.         | <u>Chlorinator Controller &amp; Wiring.</u>                                                                      |                               |                 |
|             | a. Controller Mfg. <u>Wallace &amp; Tiernan</u><br>Designation _____                                             |                               |                 |
|             | The lump sum of <u>One Thousand Five Hundred</u><br><u>and no/100</u> Dollars ( <u>\$1,500.00</u> )              | 1.s.                          | <u>1,500.00</u> |
|             | b. Controller Mfg. _____<br>Designation _____                                                                    |                               |                 |
|             | The lump sum of _____<br>_____ Dollars (\$ _____)                                                                | 1.s.                          | <u>..</u>       |
| 21.         | <u>Flow Indicator, Totalizer, Recorder &amp; Wiring.</u>                                                         |                               |                 |
|             | a. Instrument Mfg. <u>Hersey Sparline</u><br>Designation <u>Indicating Totalizing &amp; Recording</u>            |                               |                 |
|             | The lump sum of <u>One Thousand Seventy</u><br><u>and no/100</u> Dollars ( <u>\$1,070.00</u> )                   | 1.s.                          | <u>1,070.00</u> |
|             | b. Instrument Mfg. _____<br>Designation _____                                                                    |                               |                 |
|             | The lump sum of _____<br>_____ Dollars (\$ _____)                                                                | 1.s.                          | <u>..</u>       |
| 22.         | <u>Chlorine Solution Piping, the lump sum of</u><br><u>One Hundred and no/100</u> Dollars ( <u>\$ 100.00</u> )   | 1.s.                          | <u>100.00</u>   |
| 23.         | <u>Furnish &amp; Install Pumps &amp; Motors.</u>                                                                 |                               |                 |
|             | a. Manufacturer <u>Johnston - Pump, Pipe &amp; power</u><br>Designation <u>BACB</u>                              |                               |                 |
|             | The lump sum of <u>One Thousand Six Hundred</u><br><u>Fifty and no/100</u> Dollars ( <u>\$1,650.00</u> )<br>each | 2                             | <u>3,300.00</u> |
|             | b. Manufacturer _____<br>Designation _____                                                                       |                               |                 |
|             | The lump sum of _____<br>_____ Dollars (\$ _____)<br>each                                                        | 2                             | <u>..</u>       |

| <u>Item</u>                                                                                                                                                                                                                            | <u>Estimated<br/>Quantity</u> | <u>Amount</u>          |
|----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|-------------------------------|------------------------|
| 23. c. Manufacturer _____<br>Designation _____<br><br>The lump sum of _____<br>_____ Dollars (\$ _____) each                                                                                                                           | 2                             | ..                     |
| 24. <u>Motor Control Center &amp; Pump Control System</u><br><br>A. Manufacture <u>Cutler - Hammer</u><br>Designation _____<br><br>The lump sum of _____<br><b><u>Two Thousand and no/100</u></b> Dollars (\$ <b><u>2,000.00</u></b> ) | 1.s.                          | <b><u>2,000.00</u></b> |
| b. Manufacture _____<br>Designation _____<br><br>The lump sum of _____<br>_____ Dollars (\$ _____)                                                                                                                                     | 1.s.                          | ..                     |
| c. Manufacture _____<br>Designation _____<br><br>The lump sum of _____<br>_____ Dollars (\$ _____)                                                                                                                                     | 1.s.                          | ..                     |
| 25. <u>220-440 Volt Wiring &amp; Heating, the lump sum of</u><br><b><u>One Thousand and no/100</u></b> Dollars (\$ <b><u>1,000.00</u></b> )                                                                                            | 1.s.                          | <b><u>1,000.00</u></b> |
| 26. <u>110 Volt Wiring &amp; Fixtures, the lump sum of</u><br><b><u>One Thousand One Hundred Seventy Five</u></b><br><b><u>and no/100</u></b> Dollars (\$ <b><u>1,175.00</u></b> )                                                     | 1.s.                          | <b><u>1,175.00</u></b> |
| 26a Sub-Contractor _____ Name _____ Address _____<br>_____                                                                                                                                                                             |                               |                        |
| 27a. <u>Painting, Interior-Exterior Masonry, the lump</u><br>sum of _____<br><b><u>Two Hundred Forty and no/100</u></b> Dollars (\$ <b><u>240.00</u></b> )                                                                             | 1.s.                          | <b><u>240.00</u></b>   |

| <u>Item</u>        |                                                                                                                                                             | <u>Estimated<br/>Quantity</u> | <u>Amount</u>    |
|--------------------|-------------------------------------------------------------------------------------------------------------------------------------------------------------|-------------------------------|------------------|
| 27b.               | <u>Painting Interior-Exterior Wood Surfaces,</u><br>the lump sum of _____<br><b>100</b><br><u>One Hundred Twenty Five and no/</u> Dollars (\$ <u>125.00</u> | 1.s.                          | <u>125.00</u>    |
| 27c.               | <u>Painting all Metal Surfaces,</u> the lump sum of<br><b>no/100</b><br><u>One Hundred Seventy Five and</u> Dollars (\$ <u>175.00</u>                       | 1.s.                          | <u>175.00</u>    |
| TOTAL ALL PAINTING |                                                                                                                                                             |                               | \$ <u>340.00</u> |

|      |                         |                         |                |
|------|-------------------------|-------------------------|----------------|
| 27d. | <u>Sub Contractor</u>   | <u>Name</u>             | <u>Address</u> |
|      | <u>Shields Painting</u> | <u>Portland, Oregon</u> |                |

TOTAL Based Upon Low Bids of  
Various Alternate Item of  
Equipment

\$ 19,229.00

If this Proposal shall be accepted by the Owner, and the undersigned shall fail to execute a satisfactory contract and bond as stated in the Instructions to Bidders hereto attached within ten days (10) (Sundays excepted) from the date of notification, then the Owner may at its option determine that the undersigned has abandoned the contract and thereupon this Proposal shall be null and void, and the cashier's or certified check accompanying this Proposal shall be forfeited to and become the property of the Owner; otherwise the check accompanying this Proposal shall be returned to the undersigned.

The full name and residence of all persons and parties interested in the foregoing bid as principals are as follows:

| <u>Name</u>         | <u>Address</u>              |
|---------------------|-----------------------------|
| <u>Neil Van Zyl</u> | <u>13547 S. E. Clay St.</u> |
|                     | <u>Portland, Oregon</u>     |
|                     |                             |

The name and business address of the Surety Company which will furnish the required bond insuring the construction is:

United Pacific Insurance Company

The undersigned bidder has heretofore completed the following pieces of work of a similar nature to that contemplated:

| <u>Job</u>             | <u>Location</u>          | <u>Date</u> |
|------------------------|--------------------------|-------------|
| <u>Pump Station</u>    | <u>Salem, Oregon</u>     | <u>1967</u> |
| <u>Treatment Plant</u> | <u>Camas, Washington</u> | <u>1965</u> |
| <u>Treatment Plant</u> | <u>Beaverton, Oregon</u> | <u>1966</u> |

Name of Bidder Neil Van Zyl ( ) Corporation  
Address of Bidder 13547 S. E. Clay St. ( ) Partnership  
Portland, Oregon (X) Individual

Signature of Authorized Agent

Title Owner

Date October 2, 1967

AGREEMENT

OTIS SPRINGS PUMPING STATION CONSTRUCTION  
CITY OF NEWBERG, OREGON

The CITY OF NEWBERG, OREGON, hereinafter called "Owner", and

Neil Van Zyl, hereinafter called "Contractor"

agree as follows:

1. Commencement and Completion of Work. The Contractor shall commence work in the field within ten (10) calendar days after written notice from Owner to proceed with construction, and he shall complete the work within the number of calendar days thereafter as listed hereunder.

Pumping Station Construction 100 calendar days

2. Performance of Work. The Contractor shall furnish all labor, material, equipment and instrumentalities to perform all work necessary or incidentally required for full compliance with the specifications and contract documents issued to the Contractor and included with his Proposal for the improvements shown in detail on the following plans:

PLAN LIST

OTIS SPRINGS PUMPING STATION

| <u>No.</u> | <u>Title</u>                             | <u>Drawing No.</u> |
|------------|------------------------------------------|--------------------|
| 1.         | Plan Piping and Sections                 | 11 - A - 46        |
| 2.         | Building Elevations and<br>Misc. Details | 11 - A - 47        |
| 3.         | Pumping Station Electrical               | 11 - A - 48        |

2-5-68  
Reso # 8-232-60 Day Ext  
to 4/4-68.

The Plans above described, Instructions to Bidders, General Conditions, all other Specifications, and Contractor's Proposal dated the 2nd day of October, 1967, are hereby made a part of this Contract as though set forth herein. If such documents and this Contract are in any respect in conflict or inconsistent, the provisions of this Contract shall control. All of said documents and this Contract are sometimes herein referred to as the "Contract Documents."

3. Status of Contractor. The Contractor shall at all times during the existence of this Contract be an independent contractor, and Contractor shall under no circumstances and in no event be deemed or considered as an agent or employee of the Owner in any of its operations pursuant to the provisions of this Contract.

4. Bond and Insurance. The Contractor shall not begin work under this Contract until he has:

- a. Furnished the Owner a public works faithful performance bond meeting the requirements of ORS 279.510 and paragraph 3 of the General Conditions, incorporated by reference herein, in an amount equal to 100% of the total contract price for the work; and
- b. Obtain all other insurance required by the General Conditions, and
- c. Required all insurance companies issuing any policy of insurance to Contractor which Contractor is required to procure hereunder to certify to Owner in writing that such policies have been issued and are in force and will not be canceled or annulled except upon ten (10) days notice in writing to the Owner.

Both the bond and the insurance above required shall be issued by a company or companies and be in a form acceptable to the Owner and its attorney. Contractor shall not cancel any policies of insurance required hereunder either before or after completion of the work without the consent in writing of the Owner.

5. Indemnity. The Contractor shall indemnify and save the Owner harmless from any and all claims, costs, expenses, losses, or liabilities of every kind, including attorney's fees, arising out of or in any manner connected directly or indirectly with the activities of the Contractor under this Contract, including claims for infringement of any patent rights.

6. Compliance with Applicable Laws. The Contractor shall comply with all applicable federal, state and local laws and regulations, including but not

limited to O.R.S. Chapt. 627, O.R.S. Chapt. 264, O.R.S. Chapt. 279 and O.R.S. Chapt. 655.

The Contractor shall make prompt payment to the Internal Revenue Service and the State of Oregon for all income taxes withheld from payrolls, F.I.C.A. payments, all employer's taxes and contributions, and any and all other taxes imposed with respect to or in connection with the work, all in accordance with paragraph 25 of the General Conditions.

7. Payment for Labor and Materials. The Contractor shall promptly make all payments to all persons supplying the Contractor with labor, materials, supplies, equipment, etc. for the prosecution of the work or in connection therewith and shall not permit any claim or lien for labor or services to be made, filed, or prosecuted against the Owner with respect thereto. Any such payment not made by the Contractor when due may be made by the Owner and such amounts deducted from any moneys due the Contractor under this Contract. Such payment shall not relieve the Contractor or his surety with respect to any unpaid claims.

8. Assignment. The Contractor may not assign or sublet this Contract or any part thereof without the prior written consent of the Owner.

9. Stopping Work, Taking Over Work and Termination of Contract. If, in the opinion of the Engineer, the Contractor or any of his subcontractors is using defective material or improperly performing the work and neglects or refuses to take up or reconstruct, at his own expense, such work as shall have been rejected by the Engineer as defective, or in conflict with the Plans or other Contract Documents, or unsuitable, then the Engineer may give written notice to the Contractor and his surety that all work be stopped, and any work performed after such notice shall not be accepted.

If the Contractor shall fail to commence the work within the time specified or to prosecute said work continuously with sufficient workmen and equipment to insure its completion within the time specified in the Contract Documents for completion, or if he should fail to make prompt payment to subcontractors or for material or labor, or otherwise be guilty of a violation of this Contract, the Owner may serve notice upon the Contractor and his surety of the Owner's intention to terminate the Contract. Such notice shall state the reasons for such intention to terminate the Contract and, unless within five (5) days after serving of such notice upon the Contractor, the violations or delays shall cease and be corrected or arrangements acceptable to the Owner are made for correction, the Contract shall cease and terminate. This Contract shall also cease and terminate automatically without any notice if the Contractor should be adjudged a bankrupt, if he should make a general assignment for the benefit of his creditors, or if a receiver should be appointed on account of his insolvency.

In the event of any such termination, the Owner shall immediately serve notice thereof upon the surety and the Contractor, and the surety shall have the right to take over and perform the Contract; provided, however, that if the surety does not commence performance thereof within five (5) days from the date the

notice of such termination is mailed to such surety, the Owner may, without process of law, take over the work and prosecute the same to completion, by contract or otherwise, and in so doing the Owner may take possession of and utilize, in completing the work, such materials, supplies, and equipment as may be on the site of the work and necessary therefor. Neither by the taking over of the work nor by its completion in accordance with the terms of this provision shall the Owner forfeit its right to recover damages from the Contractor or from the Contractor's surety for the former's breach of this Contract. Should the expense incurred by the Owner in taking over and completing the work be less than the sum that would have become payable under this Contract if said work had been completed by the Contractor, then such savings shall accrue solely to the Owner and the Contractor shall have no claim thereto, and should such expense exceed said sum, the Contractor and the Contractor's surety shall be liable to the Owner for the amount of such excess. Upon taking over the work by the Owner as herein provided, no further payment shall be made to the Contractor until the work is completed and accepted, and any moneys due or that become due the Contractor under this Contract for work, materials, and equipment furnished prior to its termination will be withheld and may be applied by the Owner in payment therefor, in payment of any damages sustained by the Contractor's breach, and to the payment of any excess cost to the Owner of completing said work. After completion and acceptance of the work, any balance remaining due the Contractor after payments above described shall be paid to the Contractor.

#### 10. Payments

a. The Contractor shall be paid monthly, based on the prices set forth in his Proposal dated:

October 2, 19 67

and the Owner's Engineer's monthly estimates, less ten percent (10%) retainage, all in accordance with the provisions of paragraph 27 of the General Conditions.

b. Final payment shall be made within thirty (30) days after the work is fully completed, approved in writing by the Owner's Engineer and accepted by the Owner; the Owner has been furnished with satisfactory evidence that all payrolls and bills have been paid as provided for in paragraph 26 of the General Conditions and the Owner's Engineer has furnished a certificate to that effect; and the Contractor has furnished the Owner an executed release, in substance and form as required by the Owner, releasing and waiving all claims against the Owner arising out of or in any way connected with this Contract or the work performed hereunder.

#### 11. Extension, Delays and Liquidated Damages

a. As stated in the General Conditions, time is of the essence of this Contract, and the Contractor agrees to perform the work called for in the Contract Documents within the time and in the manner specified or within the time of such extensions as may be granted thereunder.

b. No extensions of time for the completion of the work or otherwise shall be allowed or claimed by the Contractor for any cause whatsoever unless the Contractor shall have made a written request upon the Owner for such extension within seventy-two (72) hours after the cause of such extension occurred, and unless the Owner has agreed in writing that such extension shall be made. Any requests for time extensions shall specify the reason or reasons for such requests, which reason or reasons shall conform to those specified in paragraph 14 of the General Conditions. When the Owner agrees in writing to any time extension, the Engineer shall concurrently therewith determine the time of such extension, which shall be reasonable under the circumstances, and notify the Contractor and the Owner thereof in writing.

c. If the Contractor fails to perform the work called for in the Contract Documents within the time and in the manner therein specified or within the time of such extensions as may be granted thereunder, he shall pay to the Owner, or the Owner may deduct from payments otherwise due him, liquidated damages in the amount of \$100 per calendar day.

The foregoing damages are not penalties, but will partially reimburse the Owner for the delayed use of the facilities, interest or invested capital and additional engineering costs.

12. Notices. Any notice or other document required or permitted under this contract shall be deemed given when actually delivered or when deposited in the United States as Certified Mail and addressed as follows:

TO: City of Newberg  
City Hall  
414 East First Street  
Newberg, Oregon 97132

To the Contractor: **Neil Van Zyl**  
**13547 S. E. Clay**  
**Portland, Oregon 97233**

or to such other address as may be specified from time to time by either of the parties in writing.

13. Attorney's Fees. If suit or action is instituted in connection with any controversy arising out of this Contract, the prevailing party shall be entitled to recover, in addition to costs, such sum as the court may adjudge reasonable as attorney's fees.

IN WITNESS WHEREOF, the parties hereto have caused this Contract to  
be duly executed this 23rd ~~17th~~ day of October, 1967.

CITY OF NEWBERG, OREGON

By Durell Belanger  
Durell Belanger, Mayor

Attest: M. C. Gilbert  
M. C. Gilbert, City Recorder

Approved as to Form:

Herbert Swift  
Herbert Swift, City Attorney

NEIL VAN ZYL  
CONTRACTOR

By Neil Van Zyl  
Neil Van Zyl  
Title Owner

