

# APPENDIX "A"

## CONSTRUCTION SPECIFICATIONS

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## FOR THE

### CLARK REGIONAL WASTEWATER DISTRICT

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## GENERAL SPECIAL PROVISIONS

The work on this project shall be accomplished in accordance with the Standard Specifications for Road, Bridge and Municipal Construction, 2010 edition, as issued by the Washington State Department of Transportation (WSDOT) and the American Public Works Association (APWA), Washington State Chapter (hereafter "Standard Specifications"). The Standard Specifications, as modified or supplemented by the Amendments to the Standard Specifications and these General Special Provisions, all of which are made a part of the Contract Documents, shall govern all of the Work.

- These General Special Provisions are made up of both General Special Provisions (GSPs) from various sources, which may have project-specific fill-ins; and project-specific Special Provisions. Each Provision either supplements, modifies, or replaces the comparable Standard Specification, or is a new Provision. The deletion, amendment, alteration, or addition to any subsection or portion of the Standard Specifications is meant to pertain only to that particular portion of the section, and in no way should it be interpreted that the balance of the section does Manual on Uniform Traffic Control Devices for Streets and Highways, currently adopted edition, with Washington State modifications, if any
- Standard Plans for Road, Bridge and Municipal Construction, WSDOT/APWA, current edition,
- Clark Regional Wastewater District Standard Drawings

Contractor shall obtain copies of these publications, at Contractor's own expense.

**General Special Provisions (and Bridges and Structures Special Provisions, if applicable)** are similar to Standard Specifications in that they typically apply to many projects. Usually, the only difference from one project to another is the inclusion of variable project data, inserted as a "fill-in".

**Clark Regional Wastewater District Special Provisions** are similar to Standard Specifications in that they typically apply to many projects. Usually, the only difference from one project to another is the inclusion of variable project data, inserted as a "fill-in".

**Project Specific Special Provisions** normally appear only in the contract for which they were developed.



# DIVISION NO. 1

## GENERAL REQUIREMENTS

### 1-01 DESCRIPTION

(CRWWD January 2010)

This Work consists of \*\*\* \_\_\_\_ \*\*\* for the Clark Regional Wastewater District, and other work, all in accordance with the attached Contract Plans and these Contract Provisions.

#### 1-01.3 Definitions

Section 1-01.3 is supplemented with the following:

*(September 12, 2008 APWA GSP)*

All references in the Standard Specifications to the terms "State", "Department of Transportation", "Washington State Transportation Commission", "Commission", "Secretary of Transportation", "Secretary", "Headquarters", and "State Treasurer" shall be revised to read "Contracting Agency".

All references to "State Materials Laboratory" shall be revised to read "Contracting Agency designated location".

The venue of all causes of action arising from the advertisement, award, execution, and performance of the contract shall be in the Superior Court of the County where the Contracting Agency's headquarters are located.

#### **Additive**

A supplemental unit of work or group of bid items, identified separately in the proposal, which may, at the discretion of the Contracting Agency, be awarded in addition to the base bid.

#### **Alternate**

One of two or more units of work or groups of bid items, identified separately in the proposal, from which the Contracting Agency may make a choice between different methods or material of construction for performing the same work.

#### **Contract Documents**

See definition for "Contract".

#### **Contract Time**

The period of time established by the terms and conditions of the contract within which the work must be physically completed.

#### **Dates**

##### ***Bid Opening Date***

The date on which the Contracting Agency publicly opens and reads the bids.

##### ***Award Date***

The date of the formal decision of the Contracting Agency to accept the lowest responsible and responsive bidder for the work.

***Contract Execution Date***

The date the Contracting Agency officially binds the agency to the contract.

***Notice to Proceed Date***

The date stated in the Notice to Proceed on which the contract time begins.

***Substantial Completion Date***

The day the Engineer determines the Contracting Agency has full and unrestricted use and benefit of the facilities, both from the operational and safety standpoint, and only minor incidental work, replacement of temporary substitute facilities, or correction or repair remains for the physical completion of the total contract.

***Physical Completion Date***

The day all of the work is physically completed on the project. All documentation required by the contract and required by law does not necessarily need to be furnished by the Contractor by this date.

***Completion Date***

The day all the work specified in the contract is completed and all the obligations of the Contractor under the contract are fulfilled by the Contractor. All documentation required by the contract and required by law must be furnished by the Contractor before establishment of this date.

***Final Acceptance Date***

The date on which the Contracting Agency accepts the work as complete.

**Notice of Award**

The written notice from the Contracting Agency to the successful bidder signifying the Contracting Agency's acceptance of the bid.

**Notice to Proceed**

The written notice from the Contracting Agency or Engineer to the Contractor authorizing and directing the Contractor to proceed with the work and establishing the date on which the contract time begins.

**Traffic**

Both vehicular and non-vehicular traffic, such as pedestrians, bicyclists, wheelchairs, and equestrian traffic.

(CRWWD January 2010)

**Building Sewer**

See Private Side Sewer.

**Conditional Acceptance**

See Substantial Completion.

**Clark Regional Wastewater District**

The Clark Regional Wastewater District (District) is a municipal corporation in the State of Washington operating under RCW Title 57.

The District offices are located at 8000 NE 52nd Court, Vancouver, Washington 98665. The mailing address is PO Box 8979, Vancouver, Washington 98668-8979.

**Owner**

The contracting agency or authorized representative.

**Private Side Sewer or Private Sewer Lateral**

The private side sewer is that part of the sewage system which extends from the building drain (plumbing) and which receives the discharge of the building drain two (2) feet outside the building and conveys it to a public sewer or public side sewer.

**Public Side Sewer**

A sewer that extends from a main to the right of way; or to six (6) feet beyond the edge of the public right of way into an adjacent utility easement; or to the edge of a public sanitary sewer easement.

**Main or Trunk**

A sewer that receives flow from one or more mains and may have direct side sewer connections.

**Interceptor**

A sewer that receives flow from a number of main or trunk sewers, force mains, etc. and generally has no side sewer connections.

**1-02 BID PROCEDURES AND CONDITIONS**

**1-02.1 Prequalification of Bidders**

*(March 25, 2009 APWA GSP)*

Delete this Section and replace it with the following:

Bidders must meet the minimum qualifications of RCW 39.04.350(1), as amended:

“Before award of a public works contract, a bidder must meet the following responsibility criteria to be considered a responsible bidder and qualified to be awarded a public works project. The bidder must:

- (a) At the time of bid submittal, have a certificate of registration in compliance with chapter 18.27 RCW;
- (b) Have a current state unified business identifier number;
- (c) If applicable, have industrial insurance coverage for the bidder's employees working in Washington as required in Title 51 RCW; an employment security department number as required in Title 50 RCW; and a state excise tax registration number as required in Title 82 RCW; and
- (d) Not be disqualified from bidding on any public works contract under RCW 39.06.010 or 39.12.065(3).”

**1-02.2 Plans and Specifications**

(October 1, 2005 APWA GSP)

Delete this section and replace it with the following:

Information as to where Bid Documents can be obtained or reviewed will be found in the Call for Bids (Advertisement for Bids) for the work.

After award of the contract, plans and specifications will be issued to the Contractor at no cost as detailed below:

To Prime Contractor	No. of Sets	Basis of Distribution
Reduced plans (11" x 17") and Contract Provisions	*** _ ****	Furnished automatically upon award.
Large plans (e.g., 22" x 34") and Contract Provisions	*** ***	Furnished only upon request.

Additional plans and Contract Provisions may be purchased by the Contractor by payment of the cost stated in the Call for Bids.

### **1-02.5 Proposal Forms**

(October 1, 2005 APWA GSP)

Delete this section and replace it with the following:

At the request of a bidder, the Contracting Agency will provide a proposal form for any project on which the bidder is eligible to bid.

The proposal form will identify the project and its location and describe the work. It will also list estimated quantities, units of measurement, the items of work, and the materials to be furnished at the unit bid prices. The bidder shall complete spaces on the proposal form that call for, but are not limited to, unit prices; extensions; summations; the total bid amount; signatures; date; and, where applicable, retail sales taxes and acknowledgment of addenda; the bidder's name, address, telephone number, and signature; the bidder's D/M/WBE commitment, if applicable; a State of Washington Contractor's Registration Number; and a Business License Number, if applicable. Bids shall be completed by typing or shall be printed in ink by hand, preferably in black ink. The required certifications are included as part of the proposal form.

The Contracting Agency reserves the right to arrange the proposal forms with alternates and additives, if such be to the advantage of the Contracting Agency. The bidder shall bid on all alternates and additives set forth in the proposal forms unless otherwise specified.

Any correction to a bid made by interlineation, alteration, or erasure, shall be initialed by the signer of the bid. The bidder shall make no stipulation on the Bid Form, nor qualify the bid in any manner.

A bid by a corporation shall be executed in the corporate name, by the president or a vice president (or other corporate officer accompanied by evidence of authority to sign).

A bid by a partnership shall be executed in the partnership name, and signed by a partner. A copy of the partnership agreement shall be submitted with the Bid Form if any D/M/WBE requirements are to be satisfied through such an agreement.

A bid by a joint venture shall be executed in the joint venture name and signed by a member of the joint venture. A copy of the joint venture agreement shall be submitted with the Bid Form if any D/M/WBE requirements are to be satisfied through such an agreement.

### **1-02.6 Preparation of Proposal**

*(October 10, 2008 APWA GSP)*

Supplement the second paragraph with the following:

4. If a minimum bid amount has been established for any item, the unit or lump sum price must equal or exceed the minimum amount stated.

### **1-02.7 Bid Deposit**

*(October 1, 2005 APWA GSP)*

Supplement this section with the following:

Bid bonds shall contain the following:

1. Contracting Agency-assigned number for the project;
2. Name of the project;
3. The Contracting Agency named as obligee;
4. The amount of the bid bond stated either as a dollar figure or as a percentage which represents five percent of the maximum bid amount that could be awarded;
5. Signature of the bidder's officer empowered to sign official statements. The signature of the person authorized to submit the bid should agree with the signature on the bond, and the title of the person must accompany the said signature;
6. The signature of the surety's officer empowered to sign the bond and the power of attorney.

If so stated in the Contract Provisions, bidder must use the bond form included in the Contract Provisions.

### **1-02.9 Delivery of Proposal**

(October 1, 2005 APWA GSP)

Revise the first paragraph to read:

Each proposal shall be submitted in a sealed envelope, with the Project Name and Project Number as stated in the Advertisement for Bids clearly marked on the outside of the envelope, or as otherwise stated in the Bid Documents, to ensure proper handling and delivery.

### **1-02.13 Irregular Proposals**

(March 25, 2009 APWA GSP)

Revise item 1 to read:

1. A proposal will be considered irregular and will be rejected if:
  - a. The Bidder is not prequalified when so required;
  - b. The authorized proposal form furnished by the Contracting Agency is not used or is altered;
  - c. The completed proposal form contains any unauthorized additions, deletions, alternate Bids, or conditions;
  - d. The Bidder adds provisions reserving the right to reject or accept the award, or enter into the Contract;
  - e. A price per unit cannot be determined from the Bid Proposal;
  - f. The Proposal form is not properly executed;
  - g. The Bidder fails to submit or properly complete a Subcontractor list, if applicable, as required in Section 1-02.6;
  - h. The Bidder fails to submit or properly complete a Disadvantaged, Minority or Women's Business Enterprise Certification, if applicable, as required in Section 1-02.6;
  - i. The Bid Proposal does not constitute a definite and unqualified offer to meet the material terms of the Bid invitation; or
  - j. More than one proposal is submitted for the same project from a Bidder under the same or different names.

### **1-02.14 Disqualification of Bidders**

(March 25, 2009 APWA GSP, Option B)

Delete this Section and replace it with the following:

A Bidder will be deemed not responsible if:

1. the Bidder does not meet the mandatory bidder responsibility criteria in RCW 39.04.350(1), as amended; or
2. evidence of collusion exists with any other Bidder or potential Bidder. Participants in collusion will be restricted from submitting further bids; or
3. the Bidder, in the opinion of the Contracting Agency, is not qualified for the work or to the full extent of the bid, or to the extent that the bid exceeds the authorized prequalification amount as may have been determined by a prequalification of the Bidder; or
4. an unsatisfactory performance record exists based on past or current Contracting Agency work or for work done for others, as judged from the

- standpoint of conduct of the work; workmanship; or progress; affirmative action; equal employment opportunity practices; termination for cause; or Disadvantaged Business Enterprise, Minority Business Enterprise, or Women's Business Enterprise utilization; or
5. there is uncompleted work (Contracting Agency or otherwise), which in the opinion of the Contracting Agency might hinder or prevent the prompt completion of the work bid upon; or
  6. the Bidder failed to settle bills for labor or materials on past or current contracts, unless there are extenuating circumstances acceptable to the Contracting Agency; or
  7. the Bidder has failed to complete a written public contract or has been convicted of a crime arising from a previous public contract, unless there are extenuating circumstances acceptable to the Contracting Agency; or
  8. the Bidder is unable, financially or otherwise, to perform the work, in the opinion of the Contracting Agency; or
  9. there are any other reasons deemed proper by the Contracting Agency.

As evidence that the Bidder meets the bidder responsibility criteria above, the apparent two lowest Bidders must submit to the Contracting Agency within 24 hours of the bid submittal deadline, documentation (sufficient in the sole judgment of the Contracting Agency) demonstrating compliance with all applicable responsibility criteria, including all documentation specifically listed in the supplemental criteria. The Contracting Agency reserves the right to request such documentation from other Bidders as well, and to request further documentation as needed to assess bidder responsibility.

The basis for evaluation of Bidder compliance with these supplemental criteria shall be any documents or facts obtained by Contracting Agency (whether from the Bidder or third parties) which any reasonable owner would rely on for determining such compliance, including but not limited to: (i) financial, historical, or operational data from the Bidder; (ii) information obtained directly by the Contracting Agency from owners for whom the Bidder has worked, or other public agencies or private enterprises; and (iii) any additional information obtained by the Contracting Agency which is believed to be relevant to the matter.

If the Contracting Agency determines the Bidder does not meet the bidder responsibility criteria above and is therefore not a responsible Bidder, the Contracting Agency shall notify the Bidder in writing, with the reasons for its determination. If the Bidder disagrees with this determination, it may appeal the determination within 24 hours of receipt of the Contracting Agency's determination by presenting its appeal to the Contracting Agency. The Contracting Agency will consider the appeal before issuing its final determination. If the final determination affirms that the Bidder is not responsible, the Contracting Agency will not execute a contract with any other Bidder until at least two business days after the Bidder determined to be not responsible has received the final determination.

## **1-02.15 Pre Award Information**

*(October 1, 2005 APWA GSP)*

Revise this section to read:

Before awarding any contract, the Contracting Agency may require one or more of these items or actions of the apparent lowest responsible bidder:

1. A complete statement of the origin, composition, and manufacture of any or all materials to be used,
2. Samples of these materials for quality and fitness tests,
3. A progress schedule (in a form the Contracting Agency requires) showing the order of and time required for the various phases of the work,
4. A breakdown of costs assigned to any bid item,
5. Attendance at a conference with the Engineer or representatives of the Engineer,
6. Obtain, and furnish a copy of, a business license to do business in the city or county where the work is located.
7. A copy of State of Washington Contractor's Registration, or
8. Any other information or action taken that is deemed necessary to ensure that the bidder is the lowest responsible bidder.

## **1-03 AWARD AND EXECUTION OF CONTRACT**

### **1-03.1 Consideration of Bids**

*(January 23, 2006 APWA GSP)*

Revise the first paragraph to read:

After opening and reading proposals, the Contracting Agency will check them for correctness of extensions of the prices per unit and the total price. If a discrepancy exists between the price per unit and the extended amount of any bid item, the price per unit will control. If a minimum bid amount has been established for any item and the bidder's unit or lump sum price is less than the minimum specified amount, the Contracting Agency will unilaterally revise the unit or lump sum price, to the minimum specified amount and recalculate the extension. The total of extensions, corrected where necessary, including sales taxes where applicable and such additives and/or alternates as selected by the Contracting Agency, will be used by the Contracting Agency for award purposes and to fix the Awarded Contract Price amount and the amount of the contract bond.

### **1-03.3 Execution of Contract**

*(October 1, 2005 APWA GSP)*

Revise this section to read:

Copies of the Contract Provisions, including the unsigned Form of Contract, will be available for signature by the successful bidder on the first business day following award. The number of copies to be executed by the Contractor will be determined by the Contracting Agency.



Within 10 calendar days after the award date, the successful bidder shall return the signed Contracting Agency-prepared contract, an insurance certification as required by Section 1-07.18, and a satisfactory bond as required by law and Section 1-03.4. Before execution of the contract by the Contracting Agency, the successful bidder shall provide any pre-award information the Contracting Agency may require under Section 1-02.15.

Until the Contracting Agency executes a contract, no proposal shall bind the Contracting Agency nor shall any work begin within the project limits or within Contracting Agency-furnished sites. The Contractor shall bear all risks for any work begun outside such areas and for any materials ordered before the contract is executed by the Contracting Agency.

If the bidder experiences circumstances beyond their control that prevents return of the contract documents within the calendar days after the award date stated above, the Contracting Agency may grant up to a maximum of 10 additional calendar days for return of the documents, provided the Contracting Agency deems the circumstances warrant it.

### **1-03.4 Contract Bond**

*(October 1, 2005 APWA GSP)*

Revise the first paragraph to read:

The successful bidder shall provide an executed contract bond for the full contract amount. This contract bond shall:

1. Be on a Contracting Agency-furnished form;
2. Be signed by an approved surety (or sureties) that:
  - a. Is registered with the Washington State Insurance Commissioner, and
  - b. Appears on the current Authorized Insurance List in the State of Washington published by the Office of the Insurance Commissioner,
3. Be conditioned upon the faithful performance of the contract by the Contractor within the prescribed time;
4. Guarantee that the surety shall indemnify, defend, and protect the Contracting Agency against any claim of direct or indirect loss resulting from the failure:
  - a. Of the Contractor (or any of the employees, subcontractors, or lower tier subcontractors of the Contractor) to faithfully perform the contract, or
  - b. Of the Contractor (or the subcontractors or lower tier subcontractors of the Contractor) to pay all laborers, mechanics, subcontractors, lower tier subcontractors, material person, or any other person who provides supplies or provisions for carrying out the work;
5. Be accompanied by a power of attorney for the Surety's officer empowered to sign the bond; and
6. Be signed by an officer of the Contractor empowered to sign official statements (sole proprietor or partner).

If the Contractor is a corporation, the bond must be signed by the president or vice-president, unless accompanied by written proof of the authority of the individual signing the bond to bind the corporation (i.e., corporate resolution, power of attorney or a letter to such effect by the president or vice-president).

Add the following new section:

**1-03.4(1) Retainage in Lieu of Contract Bond**

*(October 10, 2008 APWA GSP)*

For contracts of \$35,000 or less, the Contractor may, at the Contractor's option, authorize the Contracting Agency to retain fifty percent (50%) of the contract amount in lieu of furnishing a performance and/or payment bond. If the Contractor elects this option, the retainage shall be held for a period of thirty (30) days after the date of final acceptance, or until receipt of all necessary releases from the Departments of Revenue and of Labor and Industries and settlement of any liens filed under RCW 60.28, whichever is later. The Contractor must advise the Contracting Agency in writing of the Contractor's election to authorize retainage in lieu of a bond, at the time of execution of the Contract.

In choosing this option, the Contractor agrees that if the Contractor, its heirs, executors, administrators, successors, or assigns, shall in all things stand to and abide by, and well and truly keep and perform the covenants, conditions and agreements in the Contract, and shall faithfully perform all the provisions of such contract and shall also well and truly perform and fulfill all the undertakings, covenants, terms, conditions and agreements of any and all duly authorized modifications of the Contract that may hereafter be made, at the time and in the manner therein specified, and shall pay all laborers, mechanics, subcontractors, and material suppliers, and all persons who shall supply such person or persons, or subcontractors, with provisions and supplies for the carrying on of such work, on his or her part, and shall indemnify and save harmless the Contracting Agency, its officers and agents from any claim for such payment, then the funds retained in lieu of a performance bond shall be released at the time provided above; otherwise, the funds shall be retained until the Contractor fulfills the said obligations.

**1-04 SCOPE OF THE WORK**

**1-04.2 Coordination of Contract Documents, Plans, Special Provisions, Specifications, and Addenda**

*(October 1, 2005 APWA GSP)*

Revise the second paragraph to read:

Any inconsistency in the parts of the contract shall be resolved by following this order of precedence (e.g., 1 presiding over 2, 2 over 3, 3 over 4, and so forth):

1. Addenda,
2. Proposal Form,
3. Special Provisions, including APWA General Special Provisions, if they are included,
4. Contract Plans,
5. Amendments to the Standard Specifications,
6. WSDOT Standard Specifications for Road, Bridge and Municipal Construction,
7. Contracting Agency's Standard Plans (if any), and

8. WSDOT Standard Plans for Road, Bridge, and Municipal Construction.

**1-04.6 Variation in Estimated Quantities**

*(May 25, 2006 APWA GSP)*

Supplement this Section with the following:

The quantities for \*\*\* have been entered into the Proposal only to provide a common proposal for bidders. Actual quantities will be determined in the field as the work progresses, and will be paid at the original bid price, regardless of final quantity. These bid items shall not be subject to the provisions of 1-04.6 of the Standard Specifications.

**1-05 CONTROL OF WORK**

**1-05.3 Plans and Working Drawings**

Section 1-05.3 is supplemented with the following:

*(CRWWD January 2010)*

The Contractor shall have a copy of the current Clark Regional Wastewater District Specifications and Standard Plans on the project site.

**1-05.4 Conformity With and Deviations from Plans and Stakes**

Add the following new sub-section:

**1-05.4(1) Roadway and Utility Surveys**

*(October 1, 2005 APWA GSP)*

The Engineer shall furnish to the Contractor one time only all principal lines, grades, and measurements the Engineer deems necessary for completion of the work. These shall generally consist of one initial set of:

1. Slope stakes for establishing grading;
2. Curb grade stakes;
3. Centerline finish grade stakes for pavement sections wider than 25 feet; and
4. Offset points to establish line and grade for underground utilities such as water, sewers, and storm drains.

On alley construction projects with minor grade changes, the Engineer shall provide only offset hubs on one side of the alley to establish the alignment and grade.

*(CRWWD January 2010)*

The Contractor shall provide sufficient, safe, adequate space for the surveyors to set points and elevations, and shall use caution whenever it is necessary to have equipment working at the same time and in the same vicinity as the surveyors. Unsafe conditions will be reported to the Engineer. The surveyors may be withdrawn until corrective action is taken to the satisfaction of the Engineer.

The Engineer will determine what stakes are necessary to construct the project and at what intervals they shall be staked for each type of work. The Contractor shall assume full responsibility for the interpretation of these stakes and measurements from these hubs, stakes, or marks. If the Contractor notices any discrepancies in line or grade, he shall bring them to the immediate attention of the Engineer, prior to constructing the affected work.

The Contractor shall submit written staking requests to the inspector at least three (3) working days prior to commencement of any staking operations.

### **1-05.7 Removal of Defective and Unauthorized Work**

*(October 1, 2005 APWA GSP)*

Supplement this section with the following:

If the Contractor fails to remedy defective or unauthorized work within the time specified in a written notice from the Engineer, or fails to perform any part of the work required by the Contract Documents, the Engineer may correct and remedy such work as may be identified in the written notice, with Contracting Agency forces or by such other means as the Contracting Agency may deem necessary.

If the Contractor fails to comply with a written order to remedy what the Engineer determines to be an emergency situation, the Engineer may have the defective and unauthorized work corrected immediately, have the rejected work removed and replaced, or have work the Contractor refuses to perform completed by using Contracting Agency or other forces. An emergency situation is any situation when, in the opinion of the Engineer, a delay in its remedy could be potentially unsafe, or might cause serious risk of loss or damage to the public.

Direct or indirect costs incurred by the Contracting Agency attributable to correcting and remedying defective or unauthorized work, or work the Contractor failed or refused to perform, shall be paid by the Contractor. Payment will be deducted by the Engineer from monies due, or to become due, the Contractor. Such direct and indirect costs shall include in particular, but without limitation, compensation for additional professional services required, and costs for repair and replacement of work of others destroyed or damaged by correction, removal, or replacement of the Contractor's unauthorized work.

No adjustment in contract time or compensation will be allowed because of the delay in the performance of the work attributable to the exercise of the Contracting Agency's rights provided by this Section.

The rights exercised under the provisions of this section shall not diminish the Contracting Agency's right to pursue any other avenue for additional remedy or damages with respect to the Contractor's failure to perform the work as required.

### **1-05.10 Guarantees**

Section 1-05.10 is supplemented with the following:

(CRWWD January 2010)

The Work shall be guaranteed for a period of one (1) year from the date of the District letter of acceptance for the Work. Prior to the expiration of the one (1) year guarantee, the District will conduct a guarantee inspection and, if defects are found by the District, those items required to be repaired shall have a new guarantee of one (1) year from the acceptance of the correction of the defects by the Contractor and acceptance of the correction of the defects in writing by the District. The maximum time for a project warranty shall be two (2) years from the original acceptance date of the Work. For side sewer installations, the guarantee period shall be a minimum of 2 years.

### **1-05.11 Final Inspection**

Section 1-05.11 is revised to read:

(\*\*\*\*\*)

#### **Substantial Completion Date**

When the Contractor considers the work to be substantially complete, the Contractor shall so notify the Engineer and request the Engineer establish the Substantial Completion Date. The Contractor's request shall list the specific items of work that remain to be completed in order to reach physical completion. The Engineer will schedule an inspection of the work with the Contractor to determine the status of completion. The Engineer may also establish the Substantial Completion Date unilaterally.

If, after this inspection, the Engineer concurs with the Contractor that the work is substantially complete and ready for its intended use, the Engineer, by written notice to the Contractor, will set the Substantial Completion Date. If, after this inspection the Engineer does not consider the work substantially complete and ready for its intended use, the Engineer will, by written notice, so notify the Contractor giving the reasons therefore.

Upon receipt of written notice concurring in or denying substantial completion, whichever is applicable, the Contractor shall pursue vigorously, diligently and without unauthorized interruption, the work necessary to reach Substantial and Physical Completion. The Contractor shall provide the Engineer with a revised schedule indicating when the Contractor expects to reach substantial and physical completion of the work.

The above process shall be repeated until the Engineer establishes the Substantial Completion Date and the Contractor considers the work physically complete and ready for final inspection.

#### **Final Inspection and Physical Completion Date**

When the Contractor considers the work physically complete and ready for final inspection the Contractor, by written notice, shall request the Engineer to schedule a final inspection. The Engineer will set a date for final inspection. The Engineer and the Contractor will then make a final inspection and the Engineer will notify the Contractor in writing of all particulars in which the final inspection reveals the work incomplete or unacceptable. The Contractor shall immediately take such corrective measures as are necessary to remedy the listed deficiencies. Corrective work shall be pursued vigorously, diligently, and without interruption until physical completion of

the listed deficiencies. This process will continue until the Engineer is satisfied the listed deficiencies have been corrected.

If action to correct the listed deficiencies is not initiated within 7 days after receipt of the written notice listing the deficiencies, the Engineer may, upon written notice to the Contractor, take whatever steps are necessary to correct those deficiencies pursuant to Section 1-05.7.

The Contractor will not be allowed an extension of contract time because of a delay in the performance of the work attributable to the exercise of the Engineer's right hereunder.

Upon correction of all deficiencies, the Engineer will notify the Contractor and the Contracting Agency, in writing, of the date upon which the work was considered physically complete. That date shall constitute the Physical Completion Date of the contract, but shall not imply acceptance of the work or that all the obligations of the Contractor under the contract have been fulfilled.

### **Operational Testing**

It is the intent of the Contracting Agency to have at the Physical Completion Date a complete and operable system. Therefore when the work involves the installation of machinery or other mechanical equipment; street lighting, electrical distribution or signal systems; irrigation systems; buildings; or other similar work it may be desirable for the Engineer to have the Contractor operate and test the work for a period of time after final inspection but prior to the physical completion date. Whenever items of work are listed in the Contract Provisions for operational testing they shall be fully tested under operating conditions for the time period specified to ensure their acceptability prior to the Physical Completion Date. During and following the test period, the Contractor shall correct any items of workmanship, materials, or equipment which prove faulty, or that are not in first class operating condition. Equipment, electrical controls, meters, or other devices and equipment to be tested during this period shall be tested under the observation of the Engineer, so that the Engineer may determine their suitability for the purpose for which they were installed. The Physical Completion Date cannot be established until testing and corrections have been completed to the satisfaction of the Engineer.

The costs for power, gas, labor, material, supplies, and everything else needed to successfully complete operational testing, shall be included in the unit contract prices related to the system being tested, unless specifically set forth otherwise in the proposal.

Operational and test periods, when required by the Engineer, shall not affect a manufacturer's guaranties or warranties furnished under the terms of the contract.

### **1-05.13 Superintendents, Labor and Equipment of Contractor**

*(March 25, 2009 APWA GSP)*

Revise the seventh paragraph to read:

Whenever the Contracting Agency evaluates the Contractor's qualifications pursuant to Section 1-02.14, it will take these performance reports into account.

### **1-05.15 Method of Serving Notices**

*(March 25, 2009 APWA GSP)*

Revise the second paragraph to read:

All correspondence from the Contractor shall be directed to the Project Engineer. All correspondence from the Contractor constituting any notification, notice of protest, notice of dispute, or other correspondence constituting notification required to be furnished under the Contract, must be in paper format, hand delivered or sent via mail delivery service to the Project Engineer's office. Electronic copies such as e-mails or electronically delivered copies of correspondence will not constitute such notice and will not comply with the requirements of the Contract.

Add the following new section:

### **1-05.16 Water and Power**

*(October 1, 2005 APWA GSP)*

The Contractor shall make necessary arrangements, and shall bear the costs for power and water necessary for the performance of the work, unless the contract includes power and water as a pay item.

Add the following new section:

### **1-05.17 Oral Agreements**

*(October 1, 2005 APWA GSP)*

No oral agreement or conversation with any officer, agent, or employee of the Contracting Agency, either before or after execution of the contract, shall affect or modify any of the terms or obligations contained in any of the documents comprising the contract. Such oral agreement or conversation shall be considered as unofficial information and in no way binding upon the Contracting Agency, unless subsequently put in writing and signed by the Contracting Agency.

## **1-06 CONTROL OF MATERIAL**

### **1-06.1 Approval of Materials Prior to Use**

Section 1-06.1 is supplemented as follows:

(CRWWD January 2010)

All notifications to the Engineer shall be at least seven (7) calendar days prior to use.

### **1-06.2 Acceptance of Materials**

#### **1-06.2(1) Samples and Tests for Acceptance**

Section 1-06.2(1) is supplemented as follows:

(CRWWD January 2010)

Material sampling for testing may be performed up to and including the point of incorporation of the respective material into the project. The definition of “qualified testing personnel and calibrated or verified equipment” shall not be referenced to the WAQTC requirements.

The Contractor shall provide passing material test results and maximum density data to the Engineer for all sources and materials proposed for backfill, crushed surfacing, and HMA at least seven (7) calendar days prior to incorporating into the work.

The Contractor shall provide passing test results performed by an independent testing firm for compaction of all bedding, trench backfill, crushed surfacing, and hot mix asphalt within seven (7) calendar days of installation.

If a material fails to meet specifications, and a re-test is performed on material from the same source the re-testing shall be at the Contractor’s expense.

#### **1-06.2(2) Statistical Evaluation of Materials for Acceptance**

(CRWWD January 2010)

Section 1-06.2(2) shall not apply to this project.

### **1-07 LEGAL RELATIONS AND RESPONSIBILITY TO THE PUBLIC**

#### **1-07.1 Laws to be Observed**

*(October 1, 2005 APWA GSP)*

Supplement this section with the following:

In cases of conflict between different safety regulations, the more stringent regulation shall apply.

The Washington State Department of Labor and Industries shall be the sole and paramount administrative agency responsible for the administration of the provisions of the Washington Industrial Safety and Health Act of 1973 (WISHA).

The Contractor shall maintain at the project site office, or other well known place at the project site, all articles necessary for providing first aid to the injured. The Contractor shall establish, publish, and make known to all employees, procedures for ensuring immediate removal to a hospital, or doctor’s care, persons, including employees, who may have been injured on the project site. Employees should not be permitted to work on the project site before the Contractor has established and made known procedures for removal of injured persons to a hospital or a doctor’s care.

The Contractor shall have sole responsibility for the safety, efficiency, and adequacy of the Contractor’s plant, appliances, and methods, and for any damage or injury resulting from their failure, or improper maintenance, use, or operation. The Contractor shall be solely and completely responsible for the conditions of the project



site, including safety for all persons and property in the performance of the work. This requirement shall apply continuously, and not be limited to normal working hours. The required or implied duty of the Engineer to conduct construction review of the Contractor's performance does not, and shall not, be intended to include review and adequacy of the Contractor's safety measures in, on, or near the project site.

## **1-07.2 State Sales Tax**

Delete this section, including its sub-sections, in its entirety and replace it with the following:

### **1-07.2 State Sales Tax**

*(October 1, 2005 APWA GSP)*

#### **1-07.2(1) General**

The Washington State Department of Revenue has issued special rules on the State sales tax. Sections 1-07.2(1) through 1-07.2(4) are meant to clarify those rules. The Contractor should contact the Washington State Department of Revenue for answers to questions in this area. The Contracting Agency will not adjust its payment if the Contractor bases a bid on a misunderstood tax liability.

The Contractor shall include all Contractor-paid taxes in the unit bid prices or other contract amounts. In some cases, however, state retail sales tax will not be included. Section 1-07.2(3) describes this exception.

The Contracting Agency will pay the retained percentage only if the Contractor has obtained from the Washington State Department of Revenue a certificate showing that all contract-related taxes have been paid (RCW 60.28.050). The Contracting Agency may deduct from its payments to the Contractor any amount the Contractor may owe the Washington State Department of Revenue, whether the amount owed relates to this contract or not. Any amount so deducted will be paid into the proper State fund.

#### **1-07.2(2) State Sales Tax — Rule 171**

WAC 458-20-171, and its related rules, apply to building, repairing, or improving streets, roads, etc., which are owned by a municipal corporation, or political subdivision of the state, or by the United States, and which are used primarily for foot or vehicular traffic. This includes storm or combined sewer systems within and included as a part of the street or road drainage system and power lines when such are part of the roadway lighting system. For work performed in such cases, the Contractor shall include Washington State Retail Sales Taxes in the various unit bid item prices, or other contract amounts, including those that the Contractor pays on the purchase of the materials, equipment, or supplies used or consumed in doing the work.

#### **1-07.2(3) State Sales Tax — Rule 170**

WAC 458-20-170, and its related rules, apply to the constructing and repairing of new or existing buildings, or other structures, upon real property. This includes, but is not limited to, the construction of streets, roads, highways, etc., owned by the state of Washington; water mains and their appurtenances; sanitary sewers and sewage disposal systems unless such sewers and disposal systems are within, and a part of, a street or road drainage system; telephone, telegraph, electrical power distribution lines, or other conduits or lines in or above streets or roads, unless such power lines become a part of a street or road lighting system; and installing or attaching of any article of tangible personal property in or to real property, whether or not such personal property becomes a part of the realty by virtue of installation.

For work performed in such cases, the Contractor shall collect from the Contracting Agency, retail sales tax on the full contract price. The Contracting Agency will automatically add this sales tax to each payment to the Contractor. For this reason, the Contractor shall not include the retail sales tax in the unit bid item prices, or in any other contract amount subject to Rule 170, with the following exception.

Exception: The Contracting Agency will not add in sales tax for a payment the Contractor or a subcontractor makes on the purchase or rental of tools, machinery, equipment, or consumable supplies not integrated into the project. Such sales taxes shall be included in the unit bid item prices or in any other contract amount.

#### **1-07.2(4) Services**

The Contractor shall not collect retail sales tax from the Contracting Agency on any contract wholly for professional or other services (as defined in Washington State Department of Revenue Rules 138 and 244).

#### **1-07.4 Sanitation**

Section 1-07.4 is supplemented with the following:

(CRWWD January 2010)

##### **Portable Toilet Facility**

The Contractor shall supply at least one portable toilet on the job site at all times when the Contractor has any employees on the job site performing contract work. Portable toilets shall be serviced on a weekly basis.

This item shall be included in the bid item for mobilization. An amount approximating the actual cost per week will be subtracted from the bid item for mobilization for each week the portable toilet is not supplied on the job site or serviced on a weekly basis.

#### **1-07.6 Permits and Licenses**

Section 1-07.6 is supplement with the following:

(CRWWD January 2010)

The Contractor shall furnish one copy of all required permits to the Engineer and shall have a copy of all required permits on the project site at all times and available for inspection upon request of the Engineer.

### **1-07.7 Load Limits**

Section 1-07.7 is supplemented with the following:

(CRWWD January 2010)

The Contractor shall, at the Contractor's expense, make all arrangements for the use of haul routes including all necessary local permits.

### **1-07.13 Contractor's Responsibility for Work**

#### **1-07.13(4) Repair of Damage**

Section 1-07.13(4) is revised to read:

(CRWWD January 2010)

The Contractor shall promptly repair all damage to either temporary or permanent work as directed by the Engineer. For damage qualifying for relief under Sections 1-07.13(1), 1-07.13(2) or 1-07.13(3), payment will be made in accordance with Section 1-04.4. Payment will be limited to repair of damaged work only. No payment will be made for delay or disruption of work.

### **1-07.17 Utilities and Similar Facilities**

Section 1-07.17 is supplemented with the following:

(CRWWD January 2010)

Locations and dimensions of existing utilities shown on the Plans are in accordance with available information. Existing subsurface utilities on the Plans are based on field design locate data provided by the individual utilities through the Utility Notification Center. The actual location could deviate from that which is shown.

The District will not be held responsible for locations of existing utilities marked on the plans. The Contractor shall be responsible for verifying depths and locations of all existing utilities.

The following addresses and telephone numbers of utility companies known or suspected of having facilities within the project limits are supplied for the Contractor's convenience:

**Clark Regional Wastewater District**

8000 NE 52nd Court  
PO Box 8979  
Vancouver, WA 98668-8979  
(360) 750-5876

**City of Vancouver**

Engineering, Marine Park  
4500 Columbia Way  
Vancouver, WA 98668  
(360) 487-7130  
24 Hour: (360) 693-9302

(for emergencies)

**City of Battle Ground**

1308 S.E. Grace Ave.  
Battle Ground, WA 98604  
Telephone: (360) 342-5070

**Clark Public Utilities**

Electric and Water Department  
PO Box 8900  
8600 NE 117<sup>th</sup> Avenue  
Vancouver, WA  
Electric: (360) 992-8819

Water: (360) 992-8022

**Clark County**  
Operations Department  
4700 NE 78th Street  
Vancouver, WA 98665  
(360) 397-2446

**Washington State Department of Transportation**  
Southwest Region  
11018 NE 51st Circle  
PO Box 1709  
Vancouver, WA 98668-1709  
(360) 905-2299

**Comcast Cable Services**  
Vancouver/Clark County  
6916 NE 40<sup>th</sup> Street  
Vancouver, WA 98661  
(360) 891-3204

**Northwest Natural**  
6600 NE 112th Court, Suite 101  
Bldg. F  
Vancouver, WA 98662  
(360) 571-5465

**Qwest Communications**

Engineering Department  
4501 NE Minnehaha Building II  
Vancouver, WA 98663  
(360) 699-3546

**Williams Gas Pipeline-West**  
NW Pipeline Corporation  
8907 NE 219th Street  
Battle Ground, WA 98604  
(360) 687-3156

**Washington State University**  
14204 NE Salmon Creek Ave  
Vancouver, WA 98686  
(360) 546-9000

**AT&T**  
AT&T Cable Maintenance  
11241 Willows RD N.E. Suite 130  
Redmond WA 98052  
(425) 896-9830

**Century Tel**  
805 Broadway Street  
Vancouver, WA 98660-3213  
(360) 905-5800

**TDS Telecom**  
210 East 4 Street  
PO Box 218  
La Center, WA 98629  
(360) 263-2191

The Contractor shall call the Northwest Utility Notification Center (One Call Center), for field location of utilities. The telephone number for the One Call Center for this project is 1-800-424-5555. No excavation shall begin until all known facilities, in the vicinity of the excavation area, have been located and marked.

### **1-07.18 Public Liability and Property Damage Insurance**

Delete this section in its entirety, and replace it with the following:

**1-07.18 Insurance**  
*(May 10, 2006 APWA GSP)*

#### **1-07.18(1) General Requirements**

- A. The Contractor shall obtain the insurance described in this section from insurers approved by the State Insurance Commissioner pursuant to RCW Title 48. The insurance must be provided by an insurer with a rating of A-:

VII or higher in the A.M. Best's Key Rating Guide, which is licensed to do business in the state of Washington (or issued as a surplus line by a Washington Surplus lines broker). The Contracting Agency reserves the right to approve or reject the insurance provided, based on the insurer (including financial condition), terms and coverage, the Certificate of Insurance, and/or endorsements.

- B. The Contractor shall keep this insurance in force during the term of the contract and for thirty (30) days after the Physical Completion date, unless otherwise indicated (see C. below).
- C. If any insurance policy is written on a claims made form, its retroactive date, and that of all subsequent renewals, shall be no later than the effective date of this Contract. The policy shall state that coverage is claims made, and state the retroactive date. Claims-made form coverage shall be maintained by the Contractor for a minimum of 36 months following the Final Completion or earlier termination of this contract, and the Contractor shall annually provide the Contracting Agency with proof of renewal. If renewal of the claims made form of coverage becomes unavailable, or economically prohibitive, the Contractor shall purchase an extended reporting period ("tail") or execute another form of guarantee acceptable to the Contracting Agency to assure financial responsibility for liability for services performed.
- D. The insurance policies shall contain a "cross liability" provision.
- E. The Contractor's and all subcontractors' insurance coverage shall be primary and non-contributory insurance as respects the Contracting Agency's insurance, self-insurance, or insurance pool coverage.
- F. All insurance policies and Certificates of Insurance shall include a requirement providing for a minimum of 30 days prior written notice to the Contracting Agency of any cancellation in any insurance policy.
- G. Upon request, the Contractor shall forward to the Contracting Agency a full and certified copy of the insurance policy(s).
- H. The Contractor shall not begin work under the contract until the required insurance has been obtained and approved by the Contracting Agency.
- I. Failure on the part of the Contractor to maintain the insurance as required shall constitute a material breach of contract, upon which the Contracting Agency may, after giving five business days notice to the Contractor to correct the breach, immediately terminate the contract or, at its discretion, procure or renew such insurance and pay any and all premiums in connection therewith, with any sums so expended to be repaid to the Contracting Agency on demand, or at the sole discretion of the Contracting Agency, offset against funds due the Contractor from the Contracting Agency.
- J. All costs for insurance shall be incidental to and included in the unit or lump sum prices of the contract and no additional payment will be made.

**1-07.18(2) Additional Insured**

All insurance policies, with the exception of Professional Liability and Workers Compensation, shall name the following listed entities as additional insured(s):

- the Contracting Agency and its officers, elected officials, employees, agents, and volunteers

The above-listed entities shall be additional insured(s) for the full available limits of liability maintained by the Contractor, whether primary, excess, contingent or otherwise, irrespective of whether such limits maintained by the Contractor are greater than those required by this Contract, and irrespective of whether the Certificate of Insurance provided by the Contractor pursuant to 1-07.18(3) describes limits lower than those maintained by the Contractor.

**1-07.18(3) Subcontractors**

Contractor shall ensure that each subcontractor of every tier obtains and maintains at a minimum the insurance coverages listed in 1-07.18(5)A and 1-07.18(5)B. Upon request of the Contracting Agency, the Contractor shall provide evidence of such insurance.

**1-07.18(4) Evidence of Insurance**

The Contractor shall deliver to the Contracting Agency a Certificate(s) of Insurance and endorsements for each policy of insurance meeting the requirements set forth herein when the Contractor delivers the signed Contract for the work. The certificate and endorsements must conform to the following requirements:

1. An ACORD certificate or a form determined by the Contracting Agency to be equivalent.
2. Copies of all endorsements naming Contracting Agency and all other entities listed in 1-07.18(2) as Additional Insured(s), showing the policy number. The Contractor may submit a copy of any blanket additional insured clause from its policies instead of a separate endorsement. A statement of additional insured status on an ACORD Certificate of Insurance shall not satisfy this requirement.
3. Any other amendatory endorsements to show the coverage required herein.

**1-07.18(5) Coverages and Limits**

The insurance shall provide the minimum coverages and limits set forth below. Providing coverage in these stated minimum limits shall not be construed to relieve the Contractor from liability in excess of such limits. All deductibles and self-insured retentions must be disclosed and are subject to approval by the Contracting Agency. The cost of any claim payments falling within the deductible shall be the responsibility of the Contractor.

**1-07.18(5)A Commercial General Liability**

A policy of Commercial General Liability Insurance, including:

Per project aggregate

Premises/Operations Liability  
 Products/Completed Operations – for a period of one year following final acceptance of the work.  
 Personal/Advertising Injury  
 Contractual Liability  
 Independent Contractors Liability  
 Stop Gap / Employers' Liability  
 Explosion, Collapse, or Underground Property Damage (XCU)  
 Blasting (only required when the Contractor's work under this Contract includes exposures to which this specified coverage responds)

Such policy must provide the following minimum limits:

\$1,000,000	Each Occurrence
\$2,000,000	General Aggregate
\$1,000,000	Products & Completed Operations Aggregate
\$1,000,000	Personal & Advertising Injury, each offence

Stop Gap / Employers' Liability

\$1,000,000	Each Accident
\$1,000,000	Disease - Policy Limit
\$1,000,000	Disease - Each Employee

**1-07.18(5)B Automobile Liability**

Automobile Liability for owned, non-owned, hired, and leased vehicles, with an MCS 90 endorsement and a CA 9948 endorsement attached if "pollutants" are to be transported. Such policy(ies) must provide the following minimum limit:

\$1,000,000	combined single limit
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**1-07.18(5)C Workers' Compensation**

The Contractor shall comply with Workers' Compensation coverage as required by the Industrial Insurance laws of the state of Washington.

**1-07.18(5)D Coverage for Working On, Over, or Near Navigable Waters**

*(May 10, 2006 APWA GSP)*

This contract involves work on or adjacent to navigable water, as defined by the U.S. Department of Labor. The Contractor therefore shall provide proof of insurance coverage in compliance with the statutory requirements of the U.S. Longshore and Harbor Workers' Compensation Act (administered by the U.S. Department of Labor).

If the Contractor is working from barges or any other watercraft, owned or non-owned, the Contractor must maintain Protection and Indemnity (P&I) insurance providing coverage for actions of the crew to third parties to the same limits stated under Section 1-07.18(5)A for Commercial General Liability Insurance.

The Contractor must also provide proof of insurance coverage in compliance

with the statutory requirements of the Merchant Marine Act of 1920 (the "Jones Act").

**1-07.18(5)E All Risk Builder's Risk**  
(May 10, 2006 APWA GSP)

Contractor shall purchase and maintain Builders Risk insurance covering interests of the Contracting Agency, the Contractor, Subcontractors, and Sub-subcontractors in the work. Builders Risk insurance shall be on a all-risk policy form and shall insure against the perils of fire and extended coverage and physical loss or damage including flood, earthquake, theft, vandalism, malicious mischief and collapse. The Builders Risk insurance shall include coverage for temporary buildings, debris removal, and damage to materials in transit or stored off-site. Such insurance shall cover "soft costs" including but not limited to design costs, licensing fees, and architect's and engineer's fees. Builders Risk insurance shall be written in the amount of the completed value of the project, with no coinsurance provisions.

The Builders Risk insurance covering the work shall have a deductible of \$5,000 for each occurrence, which will be the responsibility of the Contractor. Higher deductibles for flood, earthquake and all other perils may be accepted by the Contracting Agency upon written request by the Contractor and written acceptance by the Contracting Agency. Any increased deductibles accepted by the Contracting Agency will remain the responsibility of the Contractor.

The Builders Risk insurance shall be maintained until final acceptance of the work by the Contracting Agency.

The Contractor and the Contracting Agency waive all rights against each other any of their Subcontractors, Sub-subcontractors, agents and employees, each of the other, for damages caused by fire or other perils to the extent covered by Builders Risk insurance or other property insurance applicable to the work. The policies shall provide such waivers by endorsement or otherwise.

**1-07.18(5)F Excess or Umbrella Liability**  
(May 10, 2006 APWA GSP)

The Contractor shall provide Excess or Umbrella Liability coverage at limits of 1 million per occurrence and annual aggregate. This excess or umbrella liability coverage shall apply, at a minimum, to both the Commercial General and Auto insurance policy coverage.

This requirement may be satisfied instead through the Contractor's primary Commercial General and Automobile Liability coverage, or any combination thereof.

**1-07.18(5)G Pollution Liability**  
(May 10, 2006 APWA GSP)





Street right of way lines, limits of easements, and limits of construction permits are indicated in the Plans. The Contractor's construction activities shall be confined within these limits, unless arrangements for use of private property are made.

Generally, the Contracting Agency will have obtained, prior to bid opening, all rights of way and easements, both permanent and temporary, necessary for carrying out the work. Exceptions to this are noted in the Bid Documents or will be brought to the Contractor's attention by a duly issued Addendum.

Whenever any of the work is accomplished on or through property other than public right of way, the Contractor shall meet and fulfill all covenants and stipulations of any easement agreement obtained by the Contracting Agency from the owner of the private property. Copies of the easement agreements may be included in the Contract Provisions or made available to the Contractor as soon as practical after they have been obtained by the Engineer.

Whenever easements or rights of entry have not been acquired prior to advertising, these areas are so noted in the Plans. The Contractor shall not proceed with any portion of the work in areas where right of way, easements or rights of entry have not been acquired until the Engineer certifies to the Contractor that the right of way or easement is available or that the right of entry has been received. If the Contractor is delayed due to acts of omission on the part of the Contracting Agency in obtaining easements, rights of entry or right of way, the Contractor will be entitled to an extension of time. The Contractor agrees that such delay shall not be a breach of contract.

Each property owner shall be given 48 hours notice prior to entry by the Contractor. This includes entry onto easements and private property where private improvements must be adjusted.

The Contractor shall be responsible for providing, without expense or liability to the Contracting Agency, any additional land and access thereto that the Contractor may desire for temporary construction facilities, storage of materials, or other Contractor needs.

However, before using any private property, whether adjoining the work or not, the Contractor shall file with the Engineer a written permission of the private property owner, and, upon vacating the premises, a written release from the property owner of each property disturbed or otherwise interfered with by reasons of construction pursued under this contract. The statement shall be signed by the private property owner, or proper authority acting for the owner of the private property affected, stating that permission has been granted to use the property and all necessary permits have been obtained or, in the case of a release, that the restoration of the property has been satisfactorily accomplished. The statement shall include the parcel number, address, and date of signature. Written releases must be filed with the Engineer before the Completion Date will be established.

## **1-08 PROSECUTION AND PROGRESS**

Add the following new section:

**1-08.0 Preliminary Matters**

*(May 25, 2006 APWA GSP)*

Add the following new section:

**1-08.0(1) Preconstruction Conference**

*(October 10, 2008 APWA GSP)*

Prior to the Contractor beginning the work, a preconstruction conference will be held between the Contractor, the Engineer and such other interested parties as may be invited. The purpose of the preconstruction conference will be:

1. To review the initial progress schedule;
2. To establish a working understanding among the various parties associated or affected by the work;
3. To establish and review procedures for progress payment, notifications, approvals, submittals, etc;
4. To establish normal working hours for the work;
5. To review safety standards and traffic control; and
6. To discuss such other related items as may be pertinent to the work.

The Contractor shall prepare and submit at the preconstruction conference the following:

1. A breakdown of all lump sum items;
2. A preliminary schedule of working drawing submittals; and
3. A list of material sources for approval if applicable.

*(CRWWD January 2010)*

The Contractor shall request the preconstruction conference a minimum of 10 calendar days prior to the start of construction. The actual date of the preconstruction conference will depend on availability of District staff and the various parties associated with the work.

Add the following new section:

**1-08.0(2) Hours of Work**

*(CRWWD January 2010)*

Except in the case of emergency or unless otherwise approved by the Contracting Agency, the normal straight time working hours for the contract shall be any consecutive 8-hour period between 8:00 a.m. and 5:00 p.m. of a working day with a maximum 1-hour lunch break and Monday through Friday work week. The normal straight time 8-hour working period for the contract shall be established at the preconstruction conference or prior to the Contractor commencing the work.

If a Contractor desires to perform work on holidays, Saturdays, Sundays, or before 8:00 a.m. or after 5:00 p.m. on any day, the Contractor shall apply in writing to the Engineer for permission to work such times. Permission to work longer than an 8-hour period between 8:00 a.m. and 5:00 p.m. is not required. Such requests shall

be submitted to the Engineer no later than noon on the working day prior to the day for which the Contractor is requesting permission to work.

The Contractor shall comply with local ordinances, including Chapter 9.14 of the Clark County Code governing Public Disturbance Noises. Normal hours of work are limited from 7:00 AM to 10:00 PM. The Contractor has full responsibility for confining his operations to these hours and obtaining any needed waivers. Permission to work outside these hours may be granted on a case-by-case basis upon application to the Clark County Public Works Director, through the Engineer. Approval to continue work during these hours may be revoked at any time the Contractor exceeds the noise control regulations or complaints are received from the public or adjoining property owners regarding the noise or light glare from the Contractor's operations. The Contractor shall have no claim for damages or delays should such permission be revoked for these reasons.

Permission to work Saturdays, Sundays, holidays or other than the agreed upon normal straight time working hours Monday through Friday may be given subject to certain other conditions set forth by the Contracting Agency or Engineer. These conditions may include but are not limited to: requiring the Engineer or such assistants as the Engineer may deem necessary to be present during the work; requiring the Contractor to reimburse the Contracting Agency for the costs in excess of straight-time costs for Contracting Agency employees who worked during such times, on non Federal aid projects; considering the work performed on Saturdays, Sundays, and holidays as working days with regards to the contract time. Assistants may include, but are not limited to, survey crews; inspectors; and other Contracting Agency employees when in the opinion of the Engineer, such work necessitates their presence.

Add the following new section:

**1-08.0(3) Reimbursement for Overtime Work of Contracting Agency Employees**

(CRWWD January 2010)

Where the Contractor elects to work on a Saturday, Sunday, or holiday, or longer than an 8-hour work shift on a regular working day, as defined in the Standard Specifications, such work shall be considered as overtime work. On all such overtime work an inspector will be present, and a survey crew may be required at the discretion of the Engineer. In such case, the Contracting Agency may deduct from amounts due or to become due to the Contractor for the costs in excess of the straight-time costs for employees of the Contracting Agency required to work overtime hours.

The minimum overtime pay is two (2) hours at one and one-half (1½) time District rates on weekdays (before or after normal work hours), Saturday, Sunday, or holidays.

The Contractor by these specifications does hereby authorize the Engineer to deduct such costs from the amount due or to become due to the Contractor.

**1-08.3(2)A Type A Progress Schedule**

(October 10, 2008 APWA GSP)

Revise this section to read:

The Contractor shall submit 3 copies of a Type A Progress Schedule no later than at the preconstruction conference, or some other mutually agreed upon submittal time. The schedule may be a critical path method (CPM) schedule, bar chart, or other standard schedule format. Regardless of which format used, the schedule shall identify the critical path. The Engineer will evaluate the Type A Progress Schedule and approve or return the schedule for corrections within 15 calendar days of receiving the submittal.

Revise this section including the title to read:

#### **1-08.4 Notice to Proceed and Prosecution of the Work**

(October 1, 2005 APWA GSP)

Notice to Proceed will be given after the contract has been executed and the contract bond and evidence of insurance have been approved and filed by the Contracting Agency. The Contractor shall not commence with the work until the Notice to Proceed has been given by the Engineer. The Contractor shall commence construction activities on the project site within ten days of the Notice to Proceed Date, unless otherwise approved in writing. The Contractor shall diligently pursue the work to the physical completion date within the time specified in the contract. Voluntary shutdown or slowing of operations by the Contractor shall not relieve the Contractor of the responsibility to complete the work within the time(s) specified in the contract.

#### **1-08.5 Time for Completion**

(June 28, 2007 APWA GSP, Option A)

Revise the third and fourth paragraphs to read:

Contract time shall begin on the first working day following the Notice to Proceed Date.

Each working day shall be charged to the contract as it occurs, until the contract work is physically complete. If substantial completion has been granted and all the authorized working days have been used, charging of working days will cease.

Each week the Engineer will provide the Contractor a statement that shows the number of working days: (1) charged to the contract the week before; (2) specified for the physical completion of the contract; and (3) remaining for the physical completion of the contract. The statement will also show the nonworking days and any partial or whole day the Engineer declares as unworkable. Within 10 calendar days after the date of each statement, the Contractor shall file a written protest of any alleged discrepancies in it. To be considered by the Engineer, the protest shall

be in sufficient detail to enable the Engineer to ascertain the basis and amount of time disputed. By not filing such detailed protest in that period, the Contractor shall be deemed as having accepted the statement as correct. If the Contractor elects to work 10 hours a day and 4 days a week (a 4-10 schedule) and the fifth day of the week in which a 4-10 shift is worked would ordinarily be charged as a working day then the fifth day of that week will be charged as a working day whether or not the Contractor works on that day.

Revise the sixth paragraph to read:

The Engineer will give the Contractor written notice of the completion date of the contract after all the Contractor's obligations under the contract have been performed by the Contractor. The following events must occur before the Completion Date can be established:

1. The physical work on the project must be complete; and
2. The Contractor must furnish all documentation required by the contract and required by law, to allow the Contracting Agency to process final acceptance of the contract. The following documents must be received by the Project Engineer prior to establishing a completion date:
  - a. Certified Payrolls (Federal-aid Projects)
  - b. Material Acceptance Certification Documents
  - c. Annual Report of Amounts Paid as MBE/WBE Participants or Quarterly Report of Amounts Credited as DBE Participation, as required by the Contract Provisions.
  - d. Final Contract Voucher Certification
  - e. Property owner releases per Section 1-07.24

Section 1-08.5 is supplemented with the following:

(CRWWD January 2010)

This project shall be physically completed within \*\*\* \_\_\_\_ \*\*\* working days.

## **1-09 MEASUREMENT AND PAYMENT**

### **1-09.9 Payments**

*(October 10, 2008 APWA GSP)*

Revise the first paragraph to read:

The basis of payment will be the actual quantities of Work performed according to the Contract and as specified for payment.

For items Bid as lump sum, with a bid price of more than or equal to \$20,000, the Contractor shall submit a breakdown of their lump sum price in sufficient detail for the Project Engineer to determine the value of the Work performed on a monthly basis. Lump sum breakdowns shall be provided to the Project Engineer no later than the date of the preconstruction conference.

Delete the third paragraph and replace it with the following:

Progress payments for completed work and material on hand will be based upon progress estimates prepared by the Engineer. A progress estimate cutoff date will be established at the preconstruction conference.

The initial progress estimate will be made not later than 30 days after the Contractor commences the work, and successive progress estimates will be made every month thereafter until the Completion Date. Progress estimates made during progress of the work are tentative, and made only for the purpose of determining progress payment. The progress estimates are subject to change at any time prior to the calculation of the Final Payment.

The value of the progress estimate will be the sum of the following:

1. Unit Price Items in the Bid Form — the approximate quantity of acceptable units of work completed multiplied by the unit price.
2. Lump Sum Items in the Bid Form — partial payment for lump sum Bid items will be a percentage of the price in the Proposal based on the Engineer's determination of the amount of Work performed, with consideration given to, but not exclusively based on, the Contractor's lump sum breakdown for that item.
3. Materials on Hand — 100 percent of invoiced cost of material delivered to Job site or other storage area approved by the Engineer.
4. Change Orders — entitlement for approved extra cost or completed extra work as determined by the Engineer.

Progress payments will be made in accordance with the progress estimate less:

1. Retainage per Section 1-09.9(1);
2. The amount of Progress Payments previously made; and
3. Funds withheld by the Contracting Agency for disbursement in accordance with the Contract Documents.

Progress payments for work performed shall not be evidence of acceptable performance or an admission by the Contracting Agency that any work has been satisfactorily completed. The determination of payments under the contract will be final in accordance with Section 1-05.1.

### **1-09.13(3) Claims \$250,000 or Less**

*(October 1, 2005 APWA GSP)*

Delete this Section and replace it with the following:

The Contractor and the Contracting Agency mutually agree that those claims that total \$250,000 or less, submitted in accordance with Section 1-09.11 and not resolved by nonbinding ADR processes, shall be resolved through litigation unless the parties mutually agree in writing to resolve the claim through binding arbitration.

### **1-09.13(3)A Administration of Arbitration**

*(October 1, 2005 APWA GSP)*

Revise the third paragraph to read:

The Contracting Agency and the Contractor mutually agree to be bound by the decision of the arbitrator, and judgment upon the award rendered by the arbitrator may be entered in the Superior Court of the county in which the Contracting Agency's headquarters are located. The decision of the arbitrator and the specific basis for the decision shall be in writing. The arbitrator shall use the contract as a basis for decisions.

## **1-10 TEMPORARY TRAFFIC CONTROL**

### **1-10.1(2) Description**

Section 1.10.1(2) is supplemented with the following:

(CRWWD January 2010)

The Contractor shall provide temporary traffic control for all required inspections until the District issues physical completion.

### **1-10.2(2) Traffic Control Plans**

Section 1.10.2(2) is supplemented with the following:

(CRWWD January 2010)

The Contractor's proposed traffic control plan(s) or any proposed modified plan(s) shall be submitted to the Engineer, and the appropriate agency, for review and approval at least seven (7) calendar days in advance of the time the new plan is to be implemented. No work can commence on the project until the traffic control plans submitted by the Contractor have been approved and all required traffic control devices are in place. All traffic control plans shall conform to Section 1-10.2(3).

Traffic control plans shall at a minimum be site specific, to scale, showing all project details and all details necessary to handle traffic through the construction area. These shall include, but not be limited to, traffic flow, beginning and ending tapers, travel lanes and widths, effects on intersections, signs, flagger locations, duration, location and type of all traffic control devices. In addition, the traffic control plan shall indicate the intended method of informing adjacent properties of any required detour.

When the Work occurs within the Clark County right of way, the traffic control plan shall be approved in writing by Clark County and a copy provided to the Engineer at least three (3) working days before start of Work.

When the Work occurs within a State of Washington right of way, the traffic control plan shall be approved by WSDOT and a copy provided to the Engineer at least three (3) working days before start of Work.

When the Work occurs on a route used by the Vancouver, Evergreen, Battle Ground, Hockinson, or Ridgefield School Districts or C-Tran, the Contractor shall notify the affected agency(ies) at least five (5) working days before construction commences on the Work. The same notification will be given to Clark County



Regional Emergency Services (CRESA). The Contractor shall coordinate all work with the affected agency(ies) weekly.

<p>C-Tran Fixed Route Services Manager PO Box 2529 Vancouver, WA 98668-2529 (360) 696-4494</p>	<p>The Ridgefield School District KWRL Cooperative Transport Center PO Box 370 Woodland, WA 98674 (360) 225-6105</p>
<p>The Evergreen School District Transportation Department Safety Trainer PO Box 8910 Vancouver, WA 98668-8910 (360) 604-4950</p>	<p>The Battle Ground School District Assistant Administrator Operations Service PO Box 200 Battle Ground, WA 98604-0200 (360) 885-6677</p>
<p>The Vancouver School District Transportation Department 2501 Stapleton Road Vancouver, WA 98661 (360) 697-7237</p>	<p>Clark County Regional Emergency Services Agency (CRESA) 710 West 13th Street Vancouver, WA 98660 (360) 737-1911</p>
<p>Hockinson School District 17912 NE 159th St Brush Prairie, WA 98606-9613 (360) 448-6400</p>	<p>Clark County Public Works Operations Center 4700 NE 78th St Vancouver, WA 98665 (360) 397-2446</p>

## **DIVISION NO. 2**

### **EARTHWORK**

#### **2-02 REMOVAL OF STRUCTURES AND OBSTRUCTIONS**

##### **2-02.1 Description**

Section 2-02.1 is supplemented with the following:

(CRWWD January 2010)

This Work also includes removing and disposing of, or salvaging, existing manholes, vaults, and other structures as shown on the Plans. The Work also includes the backfilling of trenches, holes, or pits that result from such removal.

##### **2-02.4 Measurement**

Section 2-02.4 is supplemented with the following:

(CRWWD January 2010)

When listed as a pay item, removal of manholes, vaults, and other structures will be measured per each.

##### **2-02.5 Payment**

Section 2-02.5 is supplemented with the following:

Payment will be made in accordance with Section 1-04.1, for the following Bid item when it is included in the Proposal:

(CRWWD January 2010)

“Removal of \_\_\_\_\_”, each.

The unit Contract price per each for removal of structures of the kind specified shall be full pay for all costs in connection with removing, disposing of, or salvaging the materials as shown on the Plans, and backfilling of trenches, holes, or pits that result from such removal.

#### **2-03 ROADWAY EXCAVATION AND EMBANKMENT**

##### **2-03.3 Construction Requirements**

###### **2-03.3(7) Disposal of Surplus Material**

###### **2-03.3(7)C Contractor-Provided Disposal Site**

Replace the first paragraph with:

(CRWWD January 2010)

The Contracting Agency has not provided a waste site for the disposal of excess materials and debris. The Contractor shall arrange for disposal of excess excavation or other materials at no expense to the Contracting Agency.

## **2-09 STRUCTURE EXCAVATION**

### **2-09.3 Construction Requirements**

#### **2-09.3(1) General Requirements**

##### **2-09.3(1)C Removal of Unstable Base Material**

The first sentence of the second paragraph is revised to read:

(CRWWD January 2010)

Gravel backfill for replacement of unstable base material shall meet the requirements of Section 9-03.9(1) or 9-03.12 as directed by the Engineer.

##### **2-09.3(1)D Disposal of Excavated Material**

The second paragraph is revised to read:

(CRWWD January 2010)

All costs associated with disposing of excavated material shall be a necessary part of the Work and included in the unit contract price for the structure.

##### **2-09.3(1)E Backfilling**

The first paragraph is revised to read:

(CRWWD January 2010)

All costs associated with furnishing and installing backfill material of openings dug for structures shall be a necessary part of the Work and included in the unit contract price for the structure.

Backfill materials and compaction shall conform to the Plans, District Standard Drawings, and Clark County utility permit when in County right of way or WSDOT franchise requirements when in WSDOT right of way, whichever is more restrictive.

### **2-09.4 Measurement**

Section 2-09.4 is supplemented with the following:

(CRWWD January 2010)

There shall be no measurement for structure excavation. Compensation for structure excavation, hauling and disposal of excavated material, and for backfilling shall be included in the payment for the various items for which the excavation is done.

### **2-09.5 Payment**

Section 2-09.5 is deleted in its entirety and replaced with the following:

(CRWWD January 2010)

No separate payment will be made for structure excavation, haul, disposal of structure excavation, or backfilling for pipes or structures.

## **DIVISION NO. 4**

### **BASES**

#### **4-04 BALLAST AND CRUSHED SURFACING**

##### **4-04.4 Measurement**

The first paragraph is revised to read:

(CRWWD January 2010)

Measurement of crushed surfacing will be per cubic yard, compacted in place, and according to the neat-line plan dimensions, unless changes are approved by the Engineer.

## **DIVISION NO. 5**

### **SURFACE TREATMENTS AND PAVEMENTS**

#### **5-04 HOT MIX ASPHALT (HMA)**

##### **5-04.3 Construction Requirements**

##### **5-04.3 Construction Requirements**

##### **5-04.3(5) Conditioning of Existing Surface**

##### **5-04.3(5)E Pavement Repair**

Section 5-04.3(5)E is supplemented with the following:

(CRWWD January 2010)

##### **Sawcuts**

For trenches and other drainage and utility work, make sawcuts as follows:

Prior to placing pavement, the Contractor shall remove the existing edge by sawing the existing pavement vertically and in a straight line along the cut lines indicated. The cut shall be a sufficient distance from the area of excavation to remove broken or damaged pavement and to expose voids under the pavement.

Pavement edges on opposite sides of trenches shall be cut parallel to each other unless otherwise directed.

Pavement repair and restoration for installation of Structures shall be roughly rectangular or square. Where side sewers join the mainline pipe at a right angle, both corners of the pavement edge shall make an approximate angle with the mainline axis of either 90 degrees or 45 degrees.

##### **Pavement Repair & Trench Restoration**

Pavement repair and trench restoration shall be in accordance with the utility permit(s) and the following:

Where traffic will pass over backfilled trenches before they are paved, the top of the trench shall be maintained in a condition that will allow normal vehicular movement to safely continue. Access driveways must be provided where needed. Cleanup operations shall follow immediately behind backfilling, and the work site shall be kept in a safe, orderly condition at all times.

After completing the structure or pipe installation, backfilling, and compaction, the Contractor shall place crushed surfacing base course or CDF and HMA Cl. ½" PG 64-22 per the Plan details and utility permit(s).

1. Pavement shall be placed in two or more lifts. The compacted depth of each lift shall be no less than 0.15 foot or no greater than 0.30 foot for HMA Cl. ½" PG 64-22.

2. A trench width of less than 5 feet may be hand raked.
3. Widths five (5) feet to eight (8) feet shall be placed with a Layton box or equal, and widths greater than eight (8) feet that are less than two hundred (200) feet in length shall be placed with a Layton box or self-propelled paving machine.
4. A width greater than eight (8) feet and over two hundred (200) feet in length shall be placed with a self-propelled paving machine.
5. Compaction requirements: The in place pavement density shall be at least 92% of theoretical maximum per WSDOT Test Method 705.

Pavement surface smoothness will be measured for acceptance according to Section 5-04.3(13).

#### **5-04.3(7) Preparation of Aggregates**

##### **5-04.3(7)A Mix Design**

Section is supplemented with the following:

(CRWWD January 2010)

The Contractor shall submit a mix design that has been previously verified by WSDOT State Materials Lab.

Mix design verification is valid for one year from the date of verification. At the discretion of the Engineer, agencies may accept mix designs verified beyond the verification year with certification from the Contractor that the materials and sources are the same as those shown on the original mix design.

#### **5-04.4 Measurement**

Section 5-04.4 is supplemented with the following:

(CRWWD January 2010)

No separate measurement will be made for supplying and placing asphalt for tack coat, HMA for preleveling, joint sealing, and any materials to provide a smooth transition from a paved to unpaved surface.

Sawcuts made for restoration of trenches, drainage items, utilities or other work shall be included in the work involved, and no separate measurement will be made.

## **DIVISION NO. 7**

### **DRAINAGE STRUCTURES, CULVERTS, STORM SEWERS, SANITARY SEWERS, WATER MAINS, AND CONDUITS**

#### **7-05 MANHOLES, INLETS, CATCH BASINS, AND DRYWELLS**

##### **7-05.2 Materials**

Section 7-05.2 material list is supplemented with the following:

(CRWWD January 2010)

Manhole External Seals	9-04.12
Manhole Boots	9-04.13
Penetration Seal	9-05.14
Manhole Coating	9-26.4
Manhole Inflow Dishes	9-05.15(4)
Vented Manhole Inflow Dishes	9-05.15(4)A
Locator Station	9-05.30(3)

##### **7-05.3 Construction Requirements**

Section 7-05.3 is supplemented with the following:

(CRWWD January 2010)

Manholes shall not have the edges of manhole casting and cover within three (3) feet of the curb gutter without written approval of the Engineer. All castings within three (3) feet of the curb gutter shall have inflow dishes.

The fourth paragraph is revised to read:

Flow channels in manholes shall be shaped and sloped to provide a smooth transition between the inlet and outlet sanitary sewer lines and minimize turbulence. The channels shall conform accurately to the sewer grade and the channel height shall be one-half of the pipe diameter and the channel width shall be equivalent to the pipe diameter. Finished channels shall be within plus or minus one-quarter ( $\pm 1/4$ ) of an inch horizontally and plus or minus one-eighth ( $\pm 1/8$ ) of an inch vertically.

The fifth paragraph is revised to read:

Ladder rungs shall be grouted in the precast concrete walls. Rungs shall be uniformly spaced at 12-inches and be vertically aligned. No rungs shall be installed in adjustment rings or within four inches of the top of a cone section. The maximum distance between the finished rim elevation and the first ladder rung shall not exceed twenty one (21) inches. Damaged or missing rungs shall be replaced by a qualified manufacturer's representative.

The sixth paragraph is revised to read:

All penetrations into manholes shall be made with a coring saw designed to provide a smooth opening for the installation a flexible pipe to manhole connector.

The following new paragraph is added after the eighth paragraph:

All joints and all openings cut through the walls shall be filled with mortar and watertight. Mortar shall completely fill all joints and openings to provide a smooth trowel finish.

The following new sentence is added to the end of tenth paragraph:

Manhole boots shall be installed at all connections to manholes four-inches and larger in diameter. Penetration seals shall be installed at all connections smaller than four inches in diameter.

The following new sentence is added to the end of eleventh paragraph:

Manhole boots shall be installed at all connections to manholes four-inches and larger in diameter. Penetration seals shall be installed at all connections smaller than four inches in diameter.

Paragraph thirteen shall be revised to read:

Manholes shall be watertight. Manhole external seal shall be installed over all joints of precast sanitary manhole sections. The Contractor shall have available on site, and strictly follow, the manufacturer's installation instructions.

All manhole joints and openings shall be filled with mortar. All manhole interiors (including joints) shall have the void between the pipe and the boot and openings filled with mortar and trowelled to a smooth finish.

Mortar shall meet the requirements of Section 9-20.4 Mortar, or approved equal, and shall be trowel applied.

The second sentence of paragraph 16 is deleted and replaced with:

Cast-in-place manhole bases are not allowed.

### **7-05.3(1) Adjusting Manholes and Catch Basins to Grade**

Section 7-05.3(1) is supplemented with the following:

(CRWWD January 2010)

Adjustment of the manhole cover casting shall be made with District approved steel or fiber reinforced concrete adjustment rings unless previously approved in writing by the District. All castings will be set to finished grade with mortar. Rocks, wood shims and similar materials shall not be used to adjust castings or risers.



The top of existing manholes, drywells, and catch basins within the paved area, shall be adjusted by the following methods to the required elevation. The Contractor shall obtain the Engineer's approval as to the method of adjustment:

Method 1. Adding or removing grade rings; or

Method 2. Replacing cones with a flat top and adjustment rings, or replacing manhole sections with longer or shorter sections and final adjustment of the rim.

The tops of new manholes and drywells within the paved area, shall be adjusted as shown on the Plans.

### **7-05.3(3) Connections to Existing Manholes**

The following new sentence is added to the end of the first paragraph:

(CRWWD January 2010)

All connections to existing manholes shall be cored and booted. The manhole shall be core drilled with a coring machine and a manhole boot shall be installed. If a stub exists without a boot, the Contractor shall remove the stub and install a boot as per the requirements of this section.

The Contractor shall remove, replace, or adjust existing stub outs as required to achieve the grades shown on the Plans.

Section 7-05.3 is supplemented with the following new sections:

(CRWWD January 2010)

### **7-05.3(5) Vacuum Test for Manholes**

The Contractor shall provide for vacuum testing of manholes. Testing will be required for fifty (50) percent of the manholes in the Work but not less than one (1) manhole. The manholes to be tested will be selected by the Inspector. If any of the manholes fail the vacuum test, two additional manholes shall be tested for each failed manhole. In addition, the failed manhole must be repaired and pass the vacuum test. Vacuum testing will occur following all adjustment and final paving.

The Contractor shall provide a minimum of two (2) working days notice to the Inspector to schedule manhole vacuum testing observation.

Sanitary sewer manholes shall be vacuum tested by evacuating the manhole to minus ten (-10) inches of mercury (Hg). After the minus ten (-10) inches of mercury (Hg) has been attained, the vacuum test will continue for one (1) minute. The loss of vacuum shall be less than one (1) inch of mercury (Hg).

(CRWWD January 2010)

### **7-05.3(6) Manhole Coating**

#### **7-05.3(6)A General**

Where shown in the Plans, or where directed by the Engineer, interior manhole coating shall be applied in accordance with the manufacturer's requirements by applicators who are certified by the product manufacturer.

#### **7-05.3(6)B Quality Control**

Do not paint when ambient temperature is below 55 degrees F or during periods of high humidity.

Provide adequate ventilation and heating.

Grind concrete surfaces free from fins and sack all surfaces to fill voids.

Apply not less than the number of coats or minimum dry film thickness (DFT) specified.

During application a wet film thickness gauge, Standard Practice for Measurement of Wet Film Thickness of Organic Coatings by Notched Gauges, shall be used to ensure a monolithic coating and uniform thickness during application.

Measurement of bond strength of the protective coating to the substrate shall be measured in accordance with ASTM D4541. Any areas detected to have inadequate bond strength shall be evaluated by the Project Engineer. Further bond tests may be performed in that area to determine the extent of potentially deficient bonded area and repairs shall be made by Applicator in strict accordance with manufacturer's recommendations.

A final visual inspection shall be made by the Engineer and manufacturer's representative. Any deficiencies in the finished coating shall be marked and repaired according to the procedures set forth herein by Applicator.

#### **7-05.3(6)C Examination**

Appropriate actions shall be taken to comply with local, state and federal regulatory and other applicable agencies with regard to environment, health and safety. Any active flows shall be dammed, plugged or diverted as required to ensure that the liquid flow is maintained below the surfaces to be coated. Flows should be totally plugged and/or diverted when coating the invert. All extraneous flows into the manhole/access port or vaults at or above the area coated shall be plugged and/or diverted until the epoxy has set hard to the touch. As an option, hot air may be added to the manhole/access port to accelerate set time of the coating. Installation of the protective coating shall not commence until the concrete substrate has properly cured in accordance with these specifications.

#### **7-05.3(6)D Surface Preparation**

Applicator shall inspect all surfaces specified to receive a protective coating prior to surface preparation. All concrete or mortar that is not sound or has been damaged by chemical exposure shall be removed to a sound concrete surface or replaced. Applicator shall notify Owner of any noticeable disparity in the surfaces which may interfere with the proper preparation or application of the repair mortar and protective coating.

All contaminants including: oils, grease, incompatible existing coatings, waxes, form release, curing compounds, efflorescence, sealers, salts, or other contaminants shall be removed and hauled off site.

Surface preparation method(s) shall be based upon the conditions of the substrate, service environment and the manufacturer's recommendations and requirements of the epoxy protective coating to be applied. At a minimum, surfaces to receive protective coating shall be cleaned and abraded to produce a sound surface with adequate profile and porosity to provide a strong bond between the protective coating and substrate. Generally this can be achieved with a low pressure water cleaning using equipment capable of 5,000 psi at 4 gpm. Other methods such as high pressure water jetting (refer to NACE Standard No. 5/SSPS SP12), abrasive blasting, shotblasting, grinding, or scarifying may also be used. Detergent water cleaning and hot water blasting may be necessary to remove oils, grease, or other hydrocarbon residues from the concrete. Whichever method(s) are used, they shall be performed in a manner that provides a uniform, sound clean neutralized surface that is not excessively damaged.

Where required by these specifications, additional structural grout shall be applied to the manholes to rebuild the wall thickness to original condition. Grout shall be as recommended by the epoxy lining manufacturer and installed according to the manufacturer's recommendations. The area between the manhole/access port and the manhole/access port ring and the areas between the riser and grade rings, and any other area that might exhibit movement or cracking due to expansion and contraction, shall be grouted with a flexible or elastomeric grout or gel.

Test prepared surfaces after cleaning but prior to application of the epoxy coating to determine if a specific pH or moisture content of the concrete is in accordance to the manufacturer's recommendations.

All surfaces must be inspected by the Engineer or his representative during and after preparation and before the repair material is applied.

#### **7-05.3(6)E Application of Protective Coatings**

Application procedures shall conform to the recommendations of the protective coating manufacturer, including material handling, mixing, environmental controls during application, safety, and spray equipment. The spray equipment shall be specifically designed to accurately ratio and apply the specified protective coating materials and shall be regularly maintained and in proper working order. The protective coating material must be spray applied by a Certified Applicator of the protective coating manufacturer.

Temperature of the surface to be coated should be maintained between 40 degrees Fahrenheit and 120 degrees Fahrenheit during application. Prior to and during application, care should be taken to avoid exposure of direct sunlight or other intense heat source to the structure being coated. Where varying surface temperatures do exist, care should be taken to apply the coating when the temperature is falling versus rising (i.e. late afternoon into evening vs. morning into afternoon).

Specified surfaces shall be coated by spray application of a moisture tolerant, solvent free, 100% solids, epoxy protective coating as further described herein. Spray application shall be to a minimum wet film thickness of 80 mils and an average wet film thicknesses of 125 mils. Airless spray application equipment approved by the coating manufacturer shall be used to apply each coat of the protective coating. Air assisted spray application equipment may be acceptable, especially for thinner coats (<10 mils), only if the air source is filtered to completely remove all oil and water. If necessary, subsequent top coating or additional coats of the protective coating should occur as soon as the basecoat becomes tack free, ideally within 12 hours, but no later than the recoat window for the specified products. Additional surface preparation procedures will be required if this recoat window is exceeded.

#### **7-05.4 Measurement**

The first paragraph is revised to read:

(CRWWD January 2010)  
Manholes will be measured per each.

Section 7-05.4 is supplemented with the following:

(CRWWD January 2010)  
Trench Safety System will be measured as a separate item per Section 7-08.4 of these provisions.

Manhole coating will be measured per vertical foot from the lowest invert elevation to the rim elevation within each manhole coated.

#### **7-05.5 Payment**

Section 7-05.5 is supplemented with the following:

(CRWWD January 2010)  
"Manhole \_\_\_ In. Diam. Type \_\_\_", per each.  
The unit contract price per each for "Manhole \_\_\_ In. Diam. Type 1" shall be full compensation to furnish a completed installation, including excavating, bedding, furnishing and installing the manhole including all seals, channelizing, mortar, backfilling, compacting, adjusting to grade, extending or cutting and connecting existing sanitary sewer pipes to new manholes, inflow dishes, and testing.

"Manhole Coating", per vertical foot.  
The unit contract price per vertical foot for "Manhole Coating" shall be full compensation to furnish all materials, equipment and labor necessary to provide a

complete coating of the interior of the manhole, including the channel, in accordance to Section 7-05.3(6).

Where pipe connections are to be made to existing sanitary manholes all work and material involved, including fittings, removing existing stubs when required, coring, and booting, will be included in the item "Connection to Drainage Structure", per each.

## **7-08 GENERAL PIPE INSTALLATION REQUIREMENTS**

### **7-08.2 Materials**

Section 7-08.2 is supplemented with the following:

(CRWWD January 2010)	
Gravel Borrow	9-03.14(1)
Crushed Surfacing Base Course	9-03.9(3)
Quarry Spalls	9-13.6
Ballast	9-03.9(1)

### **7-08.3 Construction Requirements**

#### **7-08.3(1) Excavation and Preparation of Trench**

##### **7-08.3(1)A Trenches**

The following is added to the second paragraph:

(CRWWD January 2010)  
Trenching machines are not allowed unless approved in writing by the District. If trenching machines are allowed by the District (and County if in County right of way or WSDOT if in WSDOT right of way), as a minimum, all edges will be saw cut at least one (1) foot beyond where any sloughing has occurred under the existing pavement or as determined by the owner of the right of way.

The last line in the third paragraph is deleted.

The last sentence of the sixth paragraph is revised to read:

(CRWWD January 2010)  
The trench foundation shall be backfilled to the bottom of the pipe zone with gravel backfill for pipe zone bedding, crushed surfacing base course, ballast, or quarry spalls with a maximum size of four (4) inch, as directed by the Engineer, and compacted to form a uniformly dense, unyielding foundation.

The following new paragraph is added to the end of the tenth paragraph:

(CRWWD January 2010)  
Water from dewatering shall not be allowed to enter into the new or existing sanitary sewer system. If dewatering is necessary, a dewatering plan shall be reviewed by the District and approved by Clark County and included with the approved erosion control plan as described in section 8-01.1. The Contractor shall be responsible for complying with all dewatering requirements as described in RCW 18.104.

Under unusual circumstances, the Contractor can request, in writing, that the District allow disposal of water to sanitary sewers using one of the following forms and paying the specified fees to the District:

1. Clark Regional Wastewater District PRETREATMENT Letter of Discharge for Contaminated Groundwater; or
2. Clark Regional Wastewater District PRETREATMENT Letter of Discharge of Chlorinated Disinfecting Water from New Water Mains.

The Contractor must outline all of the options explored and reasons for rejection of each option. The District will respond in writing and the District's decision will be final.

#### **7-08.3(1)B Shoring**

Section 7-08.3(1)B is supplemented with the following:

(CRWWD January 2010)  
Shoring shall be designated as "Trench Safety System".

#### **7-08.3(1)C Bedding the Pipe**

Section 7-08.3(1)C is supplemented with the following:

(CRWWD January 2010)  
Pipe zone bedding material shall be crushed surfacing base course for pipe depths greater than 13 feet measured from the pipe invert elevation to the final grade.

#### **7-08.3(2) Laying Pipe**

##### **7-08.3(2)B Pipe Laying – General**

Section 7-08.3(2)B is supplemented with the following:

(CRWWD January 2010)  
All sags in sewer pipe 10-inches and less in diameter shall not exceed one-half ( $\frac{1}{2}$ ) of an inch. All sags in sewer pipe 12-inches and greater in diameter shall not exceed three-quarters ( $\frac{3}{4}$ ) of an inch. No more than one sag of any depth shall occur between two manholes.

#### **7-08.3(3) Backfilling**

Section 7-08.3(3) is supplemented with the following:

The second paragraph is revised to read:

(CRWWD January 2010)  
Pipe zone backfill shall be gravel backfill for pipe zone bedding, or crushed surfacing base course for pipe depths greater than 13 feet measured from the pipe invert elevation to the final grade, unless otherwise shown on the Plans.

The last two sentences in the fourth paragraph are revised to read:

(CRWWD January 2010)

Material for backfill above the pipe zone shall be gravel borrow unless otherwise shown on the Plans or approved by the Engineer.

The following new paragraph is added to this section:

(CRWWD January 2010)

The Contractor shall submit maximum density and optimum moisture content data as required in section 2-03.3(14)D at least seven (7) calendar days prior to any backfilling operations. Test results shall not be more than two (2) months old.

The following new paragraphs are added to this section:

(CRWWD January 2010)

Clay dams shall be installed where shown on the Plans. The Contractor shall submit the material to be used and the method of installation in accordance to Section 1-06.

(CRWWD January 2010)

Where indicated on the Plans, a continuous toning wire shall be attached to the top of the sewer pipe. A minimum of a three (3) foot coil of wire shall be left in each access point (manholes, cleanouts, vaults, etc). The toning wire shall be tested for and have continuity prior to acceptance.

#### **7-08.4 Measurement**

Section 7-08.4 is supplemented with the following:

(CRWWD January 2010)

Trench safety system will be measured per linear foot, for trench over four feet in depth where an adequate trench safety system is provided.

There will be no separate measurement for trench excavation, backfill placed to the finished grade of the trench, and plugging existing pipe in the installation of drain, culvert, storm sewer, waterline and sanitary sewer pipes.

(CRWWD January 2010)

Clay Dams will be measured per each.

#### **7-08.5 Payment**

Section 7-08.5 is supplemented with the following:

(CRWWD January 2010)

“Trench Safety System”, per linear foot.

The unit contract price per linear foot for “Trench Safety System” shall be full compensation for all work involved to furnish and install trench safety systems per local, state, and federal requirements.

The costs of trench safety systems shall not be considered as incidental to any other contract item. Any bid under \$1 per linear foot will be considered unrealistic. If the Contractor's bid is less than the minimum specified amount, the Contracting Agency will unilaterally revise the bid amount to the minimum specified amount and recalculate the Contractor's total bid amount. The corrected total bid amount will be used by the Contracting Agency for award purposes and to fix the amount of the contract bond.

(CRWWD January 2010)

"Clay Dams", per each.

The unit contract price per each for "Clay Dams" shall be full compensation for all materials, labor and equipment to provide a complete installation.

## **7-09 WATER MAINS**

### **7-09.1 Description**

Section 7-09.1 is supplemented as follows:

(CRWWD January 2010)

This Work consists of constructing sanitary pressure mains in accordance with the Plans, these Standard Specifications, the Special Provisions, and the Standard Plans, at the location shown on the Plans.

### **7-09.1(1) Definitions**

Section 7-09.1(1) is supplemented as follows:

(CRWWD January 2010)

All references to "water main" shall also mean "sanitary pressure main".

### **7-09.2 Materials**

Section 7-09.2 materials list is supplemented as follows:

(CRWWD January 2010)

Toning Wire and Splices	9-05.30(1)
Air/Vacuum Valve	9-30.3(7)A

### **7-09.3 Construction Requirements**

#### **7-09.3(7) Trench Excavation**

Section 7-09.3(7) is revised to read:

(CRWWD January 2010)

Trench excavation shall be in accordance to Section 7-08.

#### **7-09.3(20) Detectable Marking Tape**

Section 7-09.3(20) is supplemented as follows:

(CRWWD January 2010)



Detectable marking tape shall be installed over nonmetallic pressure sewer lines. The tape shall be placed approximately eighteen (18) inches above the top of the line and shall extend its full length.

### **7-09.3(21) Concrete Thrust Blocking**

Section 7-09.3(21) is supplemented as follows:

*(CRWWD January 2010)*

Concrete thrust blocking shall be used for restraining existing pipe and existing pipe joints only. Joint restraints shall be used for all new construction.

Concrete thrust blocking shall be poured in place.

*(CRWWD January 2010)*

Section 7-09.3 is supplemented with the following new subsection:

#### **7-09.3(21)A Joint Restraints**

Joint restraints shall be installed at all bends, tees, dead ends, and crosses and where shown on the Plans. The fitting and the first adjacent pipe joint shall be restrained with joint restraints. Additional pipe joints shall be restrained where shown on the Plans. In addition to the fitting, all pipe joints between fittings for vertical offsets shall be restrained.

### **7-09.3(23) Hydrostatic Pressure Test**

Section 7-09.3(23) is supplemented as follows:

*(CRWWD January 2010)*

Delete first sentence of first paragraph and replace with:

All sanitary pressure mains and appurtenances shall be tested at one hundred fifty (150) pounds per square inch for fifteen (15) minutes with no pressure loss.

The seventh, eighth, and ninth paragraphs beginning with "The quantity of water..." and ending with "15-minute test period." is revised to read:

There shall be no loss in pressure during the 15 minute test period.

Delete the first sentence of the twelfth paragraph beginning with "Tests shall be made with..." and replace with:

Testing shall be done against the pump station gate valve or a pressure main in-line valve.

#### **7-09.3(23)A Testing Extensions From Existing Mains**

Section 7-09.3(23)A is supplemented as follows:

*(CRWWD January 2010)*

Delete ", pre-chlorinated" from the first sentence of the first paragraph.

Delete “, pre-chlorinated” from the last sentence of the third paragraph.

#### **7-09.3(24) Disinfection of Water Mains**

Section 7-09.3(24) is deleted.

*(CRWWD January 2010)*

Section 7-09.3 is supplemented with the following new subsections:

#### **7-09.3(25) Pigging**

The contractor shall be responsible for pigging all new sanitary pressure mains. Pigging shall be done with a medium density polyurethane pig the same diameter as the main, and shall be done as many times as necessary until the resulting flow is free from gravel, rock and debris.

#### **7-09.3(26) Toning Wire and Splices**

A continuous toning wire shall be attached to the top of the pressure service line. A minimum of a three (3) foot coil of wire shall be left in each access point (vaults, locate stations, AVVs, etc). The toning wire shall be tested for and have continuity prior to acceptance.

#### **7-09.3(27) Locate Stations**

Locate stations shall be constructed at the locations shown on the Plans and in accordance to the Standard Plans.

#### **7-09.3(28) Pressure Cleanouts**

Pressure cleanouts shall be constructed at the locations shown on the Plans and in accordance to the Standard Plans.

#### **7-09.3(29) Air/Vacuum Valve Assemblies**

Air/vacuum valve assemblies shall be installed at the locations shown on the Plans and in accordance to the Standard Plans.

### **7-09.4 Measurement**

Section 7-09.4 is supplemented as follows:

*(CRWWD January 2010)*

Locate stations will be measured per each.

Pressure cleanouts will be measured per each.

Air/Vacuum valve assemblies will be measured per each.

### **7-09.5 Payment**

Section 7-09.5 is supplemented as follows:

*(CRWWD January 2010)*

“ \_\_\_\_\_ Sanitary Pressure Main \_\_\_\_\_ In. Diam.”, per linear foot.

The unit Contract price per linear foot for each size and kind of “\_\_\_\_\_Sanitary Pressure Main \_\_\_\_\_In. Diam.” shall be full pay for all Work to complete the installation of the sanitary pressure main including but not limited to trench excavation, bedding, laying and jointing pipe and fittings, backfilling, concrete thrust blocking, joint restraints, testing, pigging, toning wire, marking tape, and cleanup.

“Locate Station”, per each.

The unit Contract price for “Locate Station” shall be full pay for all work to furnish and construct the locate station in-place, including but not limited to excavating, backfilling, pipe and fittings, valve box and cover, and cleanup.

“Pressure Cleanout”, per each.

The unit Contract price per each for “Pressure Cleanout” shall be full compensation for all work to furnish and construct the cleanout complete in-place, including excavating, backfilling, pipe, cover, plugs, fittings, and connections.

“Air/Vacuum Valve Assembly”, per each.

The unit Contract price per each for “Air/Vacuum Valve Assembly” shall be full compensation for all work to furnish and construct the assembly complete in-place, including the manhole, excavating, backfilling, the valve, pipe, cover, plugs, fittings, and connections.

## **7-10 VACANT**

Section 7-10 including the title is revised to read:

(CRWWD January 2010)

## **7-10 STEP SYSTEMS**

### **7-10.1 Description**

This Work consists of constructing single family residential septic tank effluent pump (STEP) systems in accordance with the Plans, these Specifications, and the Standard Plans, at the locations shown on the Plans.

### **7-10.2 Materials**

#### **7-10.2(1) General**

Materials shall meet the requirements of the following sections:

Toning Wire and Splices	9-05.30(1)
Gravel Backfill for Pipe Zone Bedding	9-03.12(3)
Gravel Borrow	9-03.14(1)
Manhole Boots	9-04.13
Saddles	9-30.6(1)
Detectable Marking Tape	9-15.18
ABS Composite Sewer Pipe	9-05.14

#### Polyvinyl Chloride Pipe and Fittings

The pressure service lines for single-family residences shall be PVC Pipe Schedule 40 conforming to ASTM D1785 specifications.

Solvent welded socket type fittings shall be PVC Schedule 40 conforming to ASTM D2466 specifications.

Threaded fittings shall be PVC Schedule 80 conforming to ASTM D2464 specifications.

Solvent cement joints shall be made in a two step process with primer manufactured for thermoplastic piping systems and solvent cement conforming to ASTM D 2564.

#### Check Valves

Service line check valves shall be wye pattern swing check valves rated at 150 psi meeting ASTM B61 or B62 with a bronze seat, Stockham B-321B, William Powell 596, or approved equal.

#### Gate Valves

Service line gate valves shall be bronze body and bronze mounted solid wedge disc with a non-rising stem rated at 200 psi. Connections shall be with threaded (NPT) or IPS hub. Gate valves shall be Stockham B-103, Shalliam Powel 507, or approved equal.

#### Corporation Stops

Corporation stops shall be full port, bronze, for use with saddles. Corporation stops shall have male iron pipe thread inlets and outlet connections compatible with PVC Schedule 40 pipe. Ford Full Port Corp Stop FB1102 or approved equal.

#### Valve Boxes

Valve boxes shall be approximately twelve (12) inches deep, twenty-one (21) inches long and fifteen and one-half (15½) inches wide at the base. Two knockouts shall be provided at the base of the base box, a minimum of two (2) inch by two (2) inch size. Valve box extensions shall match the valve box base and the total height shall not exceed two (2) feet. Valve boxes shall be Carson Industries, Inc. Model 1419 and Model 1419 extension or approved equals.

Valve box covers shall be non-hinged with a bolt down cover clearly marked with "SEWER". Valve box covers shall be Carson Industries, Inc. Flush Cover Model 1419-3 or approved equal.

### **7-10.2(2) Pumps**

Pumps shall be simplex installation and shall be as follows or as otherwise approved by the District in writing:

Pump Designation (Residential Only)	Minimum Head @ Shutoff	Minimum Head @ 20 GPM	Required Pump
Meadow Glade Low Head	72 feet	55 feet	Gould WE10H
Meadow Glade High Head	105 feet	90 feet	Gould WE1512 HH
Hockinson	105 feet	90 feet	Gould WE1512 HH

Pumps shall be cast iron submersible septic tank effluent pumps suitable for submersion in septic tank effluent and capable of passing a one-half (½) inch solid. All nuts, bolts, and miscellaneous hardware in contact with pumped material and inside the tank shall be stainless steel (Type 316), unless otherwise indicated on Plans.

Motors shall be single phase 240 volt with permanently split capacitor located in the motor housing. Motors shall not exceed a two (2) horsepower rating and shall be capable of starting and running on a 20-ampere circuit. Motors shall be non-overloading throughout the range of the manufacturer's pump curve. The cable splice to the motor lead shall be watertight. Motor casing shall be oil filled. Lower bearings shall be ball thrust bearings. Upper bearings shall be radial bearings. Pumps shall be compatible with the specified electrical control panel.

Pump power cords shall use copper wire with type STOW insulation color coded consistently throughout the power supply system in accordance to Section 7-10.2(7). Cord grips shall be non-metallic resistant to septic tank corrosive atmospheres or type 18-9 stainless steel. The cords shall be suitable for use with two (2) horsepower, 240-volt motors including locked rotor conditions.

All pumps shall be installed with one-half (½) inch polypropylene lifting ropes connected to 304 stainless steel hooks at the top of the riser as shown on the Standard Plan.

### 7-10.2(3) Tanks

The manufacturing plant for precast concrete units shall be certified by the Precast/Prestressed Concrete Institute's Plant Certification Program for the type of precast member to be produced, or the National Precast Concrete Association's Plant Certification Program or be an International Congress Building Officials or International Code Council Evaluation Services recognized fabricator of structural precast concrete products, and shall be approved by WSDOT as a Certified Precast Concrete Fabricator prior to the start of production.

Tanks shall be certified by the manufacturer prior to shipment and the Contractor shall provide the District with the manufacturer's certification.

Tanks shall be a minimum 1,500 gallons nominal capacity as follows:

1. Fiberglass as manufactured by Fiber Septic Systems of Yakima, WA (509-965-8437); or

2. Fiberglass as manufactured by FSI of Red Bluff, California available through US Filter of Vancouver, WA (360-256-6151); or
3. Concrete as manufactured by and available through D and K, Inc. Concrete Products of Vancouver, WA (360-573-4020); or
4. Approved equal.

#### **7-10.2(4) Discharge Hose and Valve Assembly**

The discharge hose and valve assembly consists of PVC pipe, a check valve, a bleeder valve, a discharge hose, fittings and other parts as shown on the Standard Plans.

The discharge hose and valve assembly shall be Orenco Systems, Inc. HV125CASX-H, or approved equal. Stem length shall be as required for the tank depth. The discharge hose shall be Orenco Systems Inc. HVX125 or approved equal.

The drop pipe from the STEP pumps shall be threaded and coupled and conform to American Standard tapered pipe thread specifications.

The discharge hose shall be flexible PVC suction discharge hose. Discharge hose clamps shall be two-ear stainless steel clamp as manufactured by Oetiker Inc., or approved equal.

The check valve shall be threaded PVC spring check valve. Spring shall be made of stainless steel.

The bleeder valve shall be a rubber Morrison bleeder valve as manufactured by Campbell Manufacturing, model BOR-4, or approved equal.

Fittings shall be solvent weld unless otherwise indicated on the Plans.

#### **7-10.2(5) Float Assembly**

The float assembly shall consist of four (4) mercury float switches with non-metallic cord grips, waterproof and explosion-proof splices, PVC mounting frame and other miscellaneous parts as required.

Level sensors shall be mercury switches (UL or CSA listed) S.J. Elector Systems, Incorporated, mini-sensor control switch model 10MPC N.O. or 10MWE N.O., or approved equal. Level sensors shall have copper wire and shall operate compulsively with a three (3) inch tether.

#### **7-10.2(6) Conductors**

Conductors shall be stranded, uncoated copper conforming to ASTM B3 and B8 with color-coded type THHN insulation.

Color-coding for the float control conductors from the control panel to the tank junction box shall be:

<b>Color</b>	<b>Use</b>
Red	OFF
Yellow	HIGH LEVEL ALARM
Gray	REDUNDANT OFF
Blue	ON
Green	GROUND
Black	MOTOR CONDUCTOR (If routed with float wires)
Green	MOTOR GROUND (If routed with float wires)

**7-10.2(7) Electrical Conduit, Fittings, Junction Box and Splices**

Electrical conduit shall be rigid nonmetallic conduit and fittings conforming to National Electrical Code, NEMA Specification TC-2 and UL651. Electrical conduit fittings shall be Schedule 40 PVC.

Electrical junction boxes shall be nonmetallic conforming to NEMA 4X. Hardware parts shall be 316 stainless steel. Gaskets shall be neoprene. Junction boxes shall have a minimum interior volume of 78 cubic inches. Junction boxes shall be Scepter, Inc. JB446 with JBA14 adapters, or approved equal.

**7-10.2(8) Control Panels**

The simplex control panel shall be in accordance with the pump manufacturer's requirements and shall comply with the following:

- A. The control panels shall be as manufactured by Orenco Systems, Inc., or approved equal.
- B. The control panel shall be lockable. The District will provide a lock for District owned or District maintained systems.
- C. The control panel assemblies shall be UL listed for industrial control equipment.
- D. All panels shall be rated for a two (2) horsepower motor at 240-volts.
- E. The control panel enclosure shall be eight (8) inch by ten (10) inch, fiberglass (UL508) with type 316 stainless steel hinges on the left side conforming to NEMA Specification 4X. The body shall be beveled to keep water away from the door gasket.

It shall have a tamper resistant door fastened with type 316 stainless steel screws. The door shall have a maximum of four (4) set screws. The control panel enclosure shall be Vynckier VJ series, or approved equal.

- F. The motor contactor shall be an integral 35 millimeter symmetrical DIN track mounted with a 3-pole and one (1) N.O. auxiliary contact, General Electric CLO1A310T mod 1, or approved equal.
- G. The audible alarm buzzer shall penetrate the bottom of the control panel and produce a 68-80 dB pulsating alarm at a distance of two (2) feet from the panel. The unit shall be salt spray resistant, with fully insulated terminal connectors. An audible alarm and a push to silence button with an integral visual red light shall be mounted on the face of the control panel door. The button shall be NEMA 4X rated with a red seven-eighths (7/8) inch diameter oil tight lens, IDEC model ALW29910-R, or approved equal. A mechanically fastened, engraved "PUSH TO SILENCE" tag shall be mounted by the push to silence button. The push to silence button will activate an audio alarm reset relay with a DIN rail mount socket base, rated at 120 volts, IDEC model RH1BU, or approved equal. The visual alarm shall remain activated following the silencing of the audible alarm by the push to silence button.
- H. The wiring terminations shall be screw tightening (not punch down). A terminal strip shall be provided with a 35 millimeter symmetrical DIN track mounting. The track shall be steel, fastened with 304 stainless steel rivets or 304 stainless steel machine screws and locking nuts.
- I. The motor breaker shall be a double pole, 20-ampere DIN track mounted, Westinghouse Quicklag model QCR2020, or approved equal, and be fed by the #12 conductors supplying the control panel.
- J. The control circuit breaker shall be a single pole, 20-ampere DIN track mount type, Westinghouse Quicklag QCR1010, or approved equal, and fed by the #12 conductors supplying the control panel.
- K. The control panel conductors shall be copper and a minimum #12 AWG. The Contractor shall provide loops to line 1 and line 2 to facilitate amperage readings.
- L. The running time hour meter shall be a non-resettable 7-digit (99,999.99) meter.
- M. The Hand/Off/Auto switch shall be a double throw toggle switch rated at 240-volts and 20-amperes.
- N. The level control shall be provided with "PUMP OFF", "PUMP ON" and "HIGH LEVEL ALARM" switches. The "PUMP OFF" function shall be by two float switches with normally open contacts connected in series for the "PUMP OFF" redundant switching.
- O. The inside of the panel shall contain one safety label (Height = 1¼ " x Width = 3"), red background with white lettering, with the words "WARNING: ELECTRICAL POWER IS STILL PRESENT WITH INTERNAL CIRCUIT BREAKER TURNED OFF". Material shall be Scotchcal 3690 with a 1 mil overlam cold-seal, with a semi gloss, white finish (0.0016 thickness) with a



clear coat (0.0010 thickness). Screen print shall be a lam cold-seal. Location in panel shall be as determined by the District.

- P. The outside of the panel shall contain one label (Height = 1½ " x Width = 3½") aluminum anodized adhesive 3M #468 with a satin finish (0.0200 thickness) and a clear finish (0.0050 thickness). Label shall have the words: "IF ALARM SOUNDS CALL 750-5876". Label shall be located directly above the red alarm button.

### **7-10.3 Construction Requirements**

#### **7-10.3(1) General**

Where shown on the Plans, STEP systems shall be installed in accordance with the Standard Plans and by a Contractor approved by the District to install STEP systems.

The STEP system shall be located and configured as shown on the Plans. The Contractor shall request in writing, permission to vary from the Plans. The District will respond in writing. Alternate configurations may require different materials to address vehicle loading, drainage, or other considerations at the sole discretion of the District.

##### **Preconstruction Conference**

Prior to the Contractor beginning the work, a preconstruction conference will be held between the Contractor, the Engineer and such other interested parties as may be invited. The purpose of the preconstruction conference will be:

1. To review the construction schedule;
2. To establish a working understanding among the various parties associated or affected by the work;
3. To establish and review procedures for notifications, approvals, submittals, etc;
4. To establish normal working hours for the work;
5. To review safety standards; and
6. To discuss such other related items as may be pertinent to the work.

The Contractor shall submit material sources prior to the preconstruction conference.

The Contractor shall request the preconstruction conference a minimum of 10 calendar days prior to the start of construction. The actual date of the preconstruction conference will depend on availability of District staff and the various parties associated with the work.

The preconstruction conference may be held at the construction site for single-family residences. It will be held in conjunction with the Clark County preconstruction conference or scheduled at the District offices for all other projects.

#### **7-10.3(2) Testing**

After the tank is placed, and prior to backfilling, the tank shall be filled to a point above the base of the riser. There shall be no more than a one (1) inch loss of water depth over a 24-hour period. Concrete tanks may be filled for a period of 24 hours to allow for absorption prior to testing.

Hydrostatic pressure testing for pressure sewer services shall be done following installation and prior to acceptance in the presence of the District Inspector. The lines shall be tested in accordance with Section 7-09.3(23) Hydrostatic Test at 150 psi for 15 minutes with no loss of pressure.

### **7-10.3(3) Pressure Service Lines**

Pressure service line construction shall be in conformance to Section 7-09.3 except as modified below.

The pressure service lines shall not be backfilled prior to inspection.

The District will install taps on existing mains. A "Request for Tap" form must be completed by the Contractor, fees paid, and a two (2) working day notice be given to the District to allow the tap to be scheduled.

The pressure service line from the main to the valve box shall be installed at a minimum depth of 36-inches below finished grade or the flow line of a ditch. The pressure service line from the valve box to the STEP tank shall be 24-inches below finished grade or the flow line of a ditch.

A continuous toning wire shall be attached to the top of the pressure service line. A minimum of a three (3) foot coil of wire shall be left in each access point (junction boxes, vaults, locate stations, air/vacuum valves, etc).

Detectable marking tape shall be installed one (1) foot above the top of the pressure service line.

### **7-10.3(4) Tanks**

STEP tanks shall be installed in accordance with the Plans, Standard Plans, and the manufacturer's instructions. . The tank shall be installed where it will not collect surface water. All lids and access risers shall be set such that surface waters will flow away from them.

The outlet access openings shall accommodate a twenty-four (24) inch diameter riser.

The entrance of the inlet or outlet tee shall pass through a Ty-seal type of neoprene grommet for fiberglass tanks or a manhole boot for concrete tanks that shall provide a watertight seal, but allow flexibility to the building sewer.

The inlet tee shall be Schedule 40 ABS. The Contractor shall install the four (4) inch Schedule 40 ABS service line from the tank to the house. The house shall be

connected (if it is for an existing house) or the new service line shall be stubbed and plugged in the location staked.

Twenty-four (24) inch risers shall be installed at each tank end. The risers shall be of the same material as the tank and submitted for District review and approval. For concrete tanks, risers shall be ribbed PVC as manufactured by Orenco Systems, Inc., Model RR24 with riser-to-lid adapters, Model RLA24, or approved equal.

The risers shall have a minimum inside diameter of twenty-three and one-half (23½) inches and shall be a maximum of thirty-six (36) inches tall. Any change in length of the riser shall be approved.

An eight (8) inch diameter Schedule 40 PVC riser pipe shall be installed over the inlet tee and be fastened to the tank with a water-tight connection as specified for the twenty-four (24) inch riser.

The lid shall extend at least one-half (½) inch over the riser and be capable of supporting a 2,500-pound wheel load. The lids shall have a non-skid finish, a neoprene sponge gasket, and shall be fastened to the riser with four (4) allen head stainless steel bolts. Neoprene grommets shall be supplied for all penetrations.

Anti-flotation measures shall be installed according to manufacturer recommendation.

Fiberglass tank(s) shall be bedded in and backfilled with pea gravel consisting of clean washed gravel, rounded with no crushed material. The maximum size shall be one quarter (¼) inch in diameter, well graded with no more than 2% passing the No. 200 sieve.

Concrete tanks shall be bedded in and backfilled with Crushed Surfacing Base Course per Section 9-03.9(3). Compaction shall be at 90% of the maximum density for the material as established by Section 2-03.3(14)D.

The tank supplier shall supply a written five (5) year warranty to the Owner.

The tanks shall be installed in non-traffic areas whenever possible. For installation in traffic areas, a traffic-bearing lid will be required. The traffic-bearing lid shall be cast iron marked "Sanitary Sewer", have two (2) pick holes and be rated at H-20 loading. No part of the ring shall cover or bear on the riser or cover.

### **7-10.3(5) Electrical**

#### **7-10.3(5)A General**

- A. All electrical work shall be completed by an electrician licensed by the State of Washington.
- B. All work shall be inspected and approved by the State of Washington Labor and Industries.

- C. The Contractor shall install a complete electrical installation, including connection to the electrical house panel.
- D. The Contractor shall provide a 20-ampere, 240-volt, single phase, four (4) wire circuit with one (1) ground conductor; one (1) neutral conductor and two (2) power conductors.
- E. All connections and installation shall be in accordance with the National Electrical Code, State of Washington Department of Labor and Industries requirements and these specifications.
- F. All underground power installations shall be placed in a one (1) inch minimum Schedule 40 PVC conduit at a minimum depth of twenty-four (24) inches.
- G. Components shall be listed or recognized by an accepted testing laboratory (UL, CSA or FM).
- H. All electrical equipment shall be rated for local temperature ranges.
- I. All exposed electrical terminals shall be fully insulated.

**7-10.3(5)B Safety Disconnect Panel**

- A. The safety disconnect panel shall be lockable, rated at thirty (30) amperes, 240-volts, non-fused, waterproof with an external disconnect handle. The safety disconnect panel shall be Cutler Hammer model DG221URB, or approved equal.
- B. The disconnect panel power shall be supplied by a #12/3 NMB conductor with ground if the total length of conductor from house power panel to the pump motor is one hundred (100) feet or less.
- C. If the total length of conductor from the Customer's house electrical panel is more than one hundred (100) feet from the house power panel to the pump motor, the conductor gage shall be increased in accordance with the National Electrical Code as adopted by the State of Washington.
- D. The safety disconnect panel shall be locked. The District will provide a lock for District owned or District maintained systems.

**7-10.3(5)C Electric Service Mounting**

- A. The safety disconnect panel and the control panel shall be located and configured as shown on the Plans. The Contractor shall request in writing, permission to vary from the Plans.
- B. The District will respond in writing. Alternate configurations may require different materials to address vehicle loading, drainage, or other

considerations at the sole discretion of the District. The Contractor shall bear any added costs that result from the change.

- C. The safety disconnect panel shall be mounted to the right of the control panel with a minimum six (6) inch and a maximum twelve (12) inch clearance between the panels; and
- D. The safety disconnect panel and the control panel shall be mounted at the same height. There shall be a distance between four (4) and five (5) feet between the top of the panels and the mounting base; and
- E. The Contractor may locate the control panel on a separate pressure treated 4x4 post, buried 24-inches in the ground, adjacent to the building at the height discussed in (b) above.
- F. No structure, fence or landscaping or other material shall be installed, placed or stored that block access to the STEP tank, valve box, disconnect panel, control panel or block the view of the control panel or disconnect panel from the street.

#### **7-10.4 Measurement**

STEP Systems will be measured per each.

No measurement will be made for clearing and grubbing, removal of existing street improvements, protection of existing utilities and services, excavation, pipe zone backfill, pipe zone bedding, trench backfill, and compaction of backfill.

Removal and replacement of unsuitable material will be measured per cubic yard.

#### **7-10.5 Payment**

Payment will be made in accordance with Section 1-04.1 for each of the following Bid items that are included in the Proposal:

“STEP System”, per each.

The unit Contract price per each for STEP systems shall be full pay for furnishing, hauling, and assembling in place the completed installation including all fittings, special fittings, joint materials, bedding and backfill material, motor, pump, tank, electrical, testing, turn-on, and other Work to for the completion of the installation in accordance to Plans and Contract Provisions.

“Removal and Replacement of Unsuitable Material”, per cubic yard.

The unit Contract price per cubic yard for “Removal and Replacement of Unsuitable Material” shall be full pay for all Work to remove unsuitable material and replace and compact suitable material as specified in Section 7-08.3(1)A.

## 7-11 VACANT

Section 7-11 including the title is revised to read:

(CRWWD January 2010)

## 7-11 COMMERCIAL (DUPLEX) STEP SYSTEMS

### 7-11.1 Description

This Work consists of constructing Duplex Commercial septic tank effluent pump (STEP) systems in accordance with the Plans, these Specifications, and the Standard Plans, at the locations shown on the Plans.

### 7-11.2 Materials

#### 7-11.2(1) General

Materials shall meet the requirements of the following sections:

Gravel Backfill for Pipe Zone Bedding	9-03.12(3)
Crushed Surfacing	9-03.9(3)
Gravel Borrow	9-03.14(1)
Manhole Boots	9-04.13
Penetration Seal	9-04.14
ABS Composite Sewer Pipe	9-05.14
Toning Wire and Splices	9-05.30(1)
Detectable Marking Tape	9-15.18
Saddles	9-30.6(1)

#### Polyvinyl Chloride Pipe and Fittings

The pressure service lines for commercial duplex systems shall be PVC Pipe Schedule 40 conforming to ASTM D1785 specifications.

Solvent welded socket type fittings shall be PVC Schedule 40 conforming to ASTM D2466 specifications.

Threaded fittings shall be PVC Schedule 80 conforming to ASTM D2464 specifications.

Solvent cement joints shall be made in a two step process with primer manufactured for thermoplastic piping systems and solvent cement conforming to ASTM D 2564.

#### Check Valves

Check valves shall be, non shock swing or spring loaded and be operational in the horizontal or vertical positions. They shall be wye pattern swing check valves rated at 200 psi CWP (cold working pressure), meeting ASTM B61, B62 and B584 with a bronze seat.

#### Gate Valves

Service line gate valves shall be bronze body and bronze mounted solid wedge disc with a non-rising stem rated at 200 psi CWP. Connections shall be with threaded (NPT) or IPS hub. Gate valves shall be full port valves meeting ASTM B584 standards.

#### Corporation Stops

Corporation stops shall be full port, bronze, for use with saddles. Corporation stops shall have male iron pipe thread inlets and outlet connections compatible with PVC Schedule 40 pipe. Ford Full Port Corp Stop FB1102 or approved equal.

#### Commercial STEP Duplex Valve Box

Valve boxes shall be concrete vaults equivalent to a Utility Vault UV 644-LA, a minimum of approximately thirty-six (36) inches deep, forty-eight (48) inches wide and seventy-two (72) inches long. They shall be capable of withstanding an H-20 loading. Pipe penetrations shall be sealed with the appropriately sized core and boot or penetration seal. Valve box extensions shall match the valve box base and the total height shall not exceed three (3) feet. Valve boxes shall be by Utility Vault of the appropriate size or approved equal.

Valve boxes shall contain check valves, gate valves, flow meter, and all necessary piping and fittings for a complete installation.

Valve box covers shall be locking, hinged and clearly marked with "SEWER". Valve box covers shall be appropriately sized and shall be a Utility Vault Inc. H-20 Gate and Frame or approved equal.

When service connections are needed for a commercial connection to a STEP system they shall be installed in accordance with the approved plans as specified in Sec. 7-10.2(1) of these standard specifications.

#### Power Supply

Permanent and unrestricted 240 volt (208 volt power not acceptable) single or two phase power shall be supplied to the pump station safety disconnect by the property owner. Emergency Generator power may be required, as shown on the approved plans, where public sanitary sewer service is being provided with the installation. The owner must sign an acknowledgement/agreement that they are responsible to supply power to the pumping system and that the District cannot be held responsible if the sewer system does not work due to a power supply failure

#### Flow meters

Flow meters will be installed in the STEP Duplex Valve Box. They shall be a Toshiba electromagnetic flow meter Model LF400 series of a size shown on the approved plans or approved equal.

#### Inspection

The CRWWD electrician must provide final approval, in writing, to the District Inspector assigned to the project before the District inspector can issue final acceptance for the STEP installation.

**7-11.2(2) Pumps**

Pumps shall be duplex installation and shall be as follows or as otherwise approved by the District in writing:

Pump Designation (Residential Only)	Minimum Head @ Shutoff	Minimum Head @ 20 GPM	Required Pump
Meadow Glade Low Head	72 feet	55 feet	Gould WE10H
Meadow Glade High Head	105 feet	90 feet	Gould WE1512 HH
Hockinson	105 feet	90 feet	Gould WE1512 HH

Pumps shall be cast iron submersible pumps suitable for submersion in septic tank effluent and capable of passing a one-half (1/2) inch solid. All nuts, bolts, and miscellaneous hardware in contact with pumped material and inside the tank shall be stainless steel (Type 316), unless otherwise indicated on Plans.

Motors shall be single phase 240 volt with permanently split capacitor located in the motor housing. Motors shall not exceed a two (2) horsepower rating without the written consent of the District and shall be capable of starting and running on a supplied electric service. Motors shall be non-overloading throughout the range of the manufacturer’s pump curve. The motor lead shall be plug connected with the mating receptacle at the pump disconnect panel. Motor casing shall be oil filled. Lower bearings shall be ball thrust bearings. Upper bearings shall be radial bearings.

Pumps shall be compatible with the specified electrical control panel.

Pump power cords shall use copper wire with type STOW insulation color coded consistently throughout the power supply system in accordance with Section 7-10.2(7). Cord grips shall be non-metallic resistant to septic tank corrosive atmospheres or type 18-9 stainless steel. The cords shall be suitable for use with two (2) horsepower, 240-volt motors including locked rotor conditions.

All pumps shall be installed with one-half (1/2) inch polypropylene lifting ropes connected to 304 stainless steel hooks at the top of the riser as shown on the Standard Plan.

**7-11.2(3) Tanks**

Tanks shall be a minimum 1,500 gallons nominal capacity as follows:

1. Fiberglass as manufactured by Fiber Septic Systems of Yakima, WA (509-965-8437); or
2. Fiberglass as manufactured by FSI of Red Bluff, California available through US Filter of Vancouver, WA (360-256-6151); or
3. Concrete as manufactured by and available through D and K, Inc. Concrete Products of Vancouver, WA (360-573-4020); or



4. Single-Wall FRP Tanks as manufactured by the Xerxes Corporation, Bruce Coe Milwaukie, OR bcoe@xerxes.com Ph: 503-653-1604 or
5. Approved equal.

#### **7-11.2(3)A Precast Concrete Tanks**

The manufacturing plant for precast concrete units shall be certified by the Precast/Prestressed Concrete Institute's Plant Certification Program for the type of precast member to be produced, or the National Precast Concrete Association's Plant Certification Program or be an International Congress Building Officials or International Code Council Evaluation Services recognized fabricator of structural precast concrete products, and shall be approved by WSDOT as a Certified Precast Concrete Fabricator prior to the start of production.

Tanks shall be certified by the manufacturer prior to shipment and the Contractor shall provide the District with the manufacturer's certification.

#### **7-11.2(3)B Fiberglass Reinforced Tanks**

Tank manufacturer shall be in the business of manufacturing tanks to Underwriters Laboratories (UL) Standard 1316 with materials conforming to the requirements of ANSI/AWWA D120-02 Thermosetting Fiberglass-Reinforced Plastic Tanks.

Single-Wall Fiberglass Reinforced Plastic (FRP) Underground Storage Tanks shall conform to the following:

- A. Loading Conditions – Tank shall meet the following design criteria:
  1. Internal Load – Tank shall withstand a 5-psig air-pressure test (3 psig for a 12'-diameter tank) with 5:1 safety factor. When tank is designed for onsite testing, contractor shall individually test tank for leakage prior to installation. Maximum test pressure is 5 psig (3 psig for a 12'-diameter tank).
  2. Surface Loads – Tank shall withstand surface H-20 axle loads when properly installed according to tank manufacturer's current Installation Manual and Operating Guidelines.
  3. External Hydrostatic Pressure – Tank shall be capable of being buried in ground with 7' of overburden over the top of the tank, the hole fully flooded and a safety factor of 5:1 against general buckling.
4. Tank shall support accessory equipment – such as inlet and outlet piping, effluent filter chamber, ladders and baffles – when installed according to tank manufacturer's current Installation Manual and Operating Guidelines.
- B. Product Storage
  1. Tank shall be capable of storing wastewater products limited to the collection and storage of human solid or liquid organic sewage.
  2. Tank shall be vented to atmospheric pressure.
  3. Tank shall be capable of storing products identified in the manufacturer's current standard limited warranty.

C. Materials

1. Tank shall be manufactured with 100% resin and glass-fiber reinforcement, No sand fillers.
2. Resin used in tank and accessories shall be premium isophthalic polyester.

**7-11.2(3)C Piping and Fittings**

A. Piping

1. Schedule 40 PVC or ABS pipe shall be used for inlet and outlet piping.
2. When a PVC or ABS pipe is affixed to the tank, a fiberglass lay-up is used.
3. All piping shall be factory-sealed to enable field tightness testing with at least one pipe opening provided with a threaded fitting for connecting a pressure-test manifold.

B. Access Openings

1. All access openings 24"-diameter or larger shall be manufactured of FRP.
2. Location(s) shall be as shown on tank drawings.
3. Optional riser extensions shall be FRP or PVC.
3. With tanks designed for onsite tightness testing, all access openings shall be factory-sealed to enable field tightness testing.

C. Optional Anchor Straps

1. Straps shall be FRP anchor straps as supplied by tank manufacturer.
2. Number and location of straps shall be specified in current literature by tank manufacturer.

D. Optional Ladders

1. Ladders shall be the standard ladder as supplied by tank manufacturer.

E. Optional Fittings

1. All threaded fittings shall be constructed of stainless steel or FRP.
2. All standard threaded fittings shall be half-couplings and shall be 2"-, 4"- or 6"-diameter. Reducers are to be used for smaller sizes where shown and provided by contractor.

F. Optional Internal Pump Platforms

1. Pump platforms shall be FRP or hanging PVC vaults.
2. Contact tank manufacturer with pump details, such as dimensions and weight.

**7-11.2(3)D Testing and Installation**

The tank shall be tested according to the manufacturer's Installation Manual and Operating Guidelines in effect at time of installation.

Prior to installation, a tank-tightness test consisting of a 5-psig air-pressure/soap test shall be performed (3 psig for 12'-diameter tanks) per the tank testing procedures outlined in the manufacturer's Installation Manual and Operating Guidelines in effect at time of installation.

### **7-11.2(3)E Warranty**

Warranty shall be manufacturer's limited warranty for underground septic tanks in effect at time of purchase (5 year minimum).

### **7-11.2(4) Discharge Hose and Valve Assembly**

The discharge hose consists of PVC pipe, a flexible discharge hose, bleeder valve, union, fittings and other parts as shown on the Standard Plans.

The 'Commercial STEP Duplex Valve Box' and valve assembly shall be as shown in the standard drawings or approved equal.

The drop pipe from the STEP pumps shall be threaded and coupled and conform to American Standard tapered pipe thread specifications.

The discharge hose shall be flexible suction discharge hose. Discharge hose clamps when necessary shall be two-ear stainless steel clamps as manufactured by Oetiker Inc., or approved equal.

The check valve shall be a threaded bronze spring check valve. Springs shall be made of stainless steel.

The bleeder valve shall be a rubber Morrison bleeder valve as manufactured by Campbell Manufacturing, model BOR-4, or approved equal.

Fittings shall be solvent weld unless otherwise indicated on the Plans.

### **7-11.2(5) Level Control System**

The District will allow one of three types of level controls in commercial STEP applications:

1. Ultrasonics (Hydro Ranger 200) by Siemens Corp.
2. A Multitrode probe made by Multitrode Inc., or
3. The A1000I pressure transducer available from Siemens Corp.

A Hydro Ranger 200 Ultrasonic level measurement instrument using a XPS-15 transducer as manufactured by Militronics, Inc. shall be provided to deliver a four (4) to twenty (20) milliampere signal to the PLC.

Alarm and control panel wiring shall not be spliced.

One mercury float switch shall be provided to control the backup high level alarm for the sewage pump system. The float switches shall be polyurethane foam resin bodies encapsulating mercury tube switches. The float switches shall be Anchor Scientific Inc., roto-float, Type S - Suspended, UL listed for pilot duty and industrial control equipment, or equal. The cable shall be 18-2 SJOW/A rated at 600 volts. Provide intrinsically safe relays. The mercury float switches shall be dedicated to the following functions:

- a. High level alarm
- b. Emergency On - PLC Bypass

The Contractor shall provide a programmable logic controller (PLC) for operation of the sewage pump station and a program for the PLC. The PLC shall be Automation Direct D0-06AA, or approved equal. The PLC shall be programmed for operation, tested, and a complete set of documentation, and programming provided to the District in both paper copy and electronic format (CD). The PLC shall control the following pump operations:

- a. Pumps off
- b. Lead pump on
- c. Lag pump on
- d. Long run time alarm
- e. High level alarm

The inputs and outputs for the PLC shall be as follows:

Fixed outputs on PLC:

AC(L)	H1 (JUMPER TO C0)
G	(JUMPER TO LG)
AC(N)	NEUTRAL
LG	GROUND
24v	+ 24
0V	-24
C0	(JUMPER TO C1)
Y0	PUMP #1
Y1	PUMP #2
Y2	HIGH ALARM LT. DOOR
C1	(JUMPER TO C2)
C2	(JUMPER TO C3)
Y7	LOW ALARM LT
Y10	PHASE FAIL OUTPUT
Y11	SPARE OUTPUT
Y12	ALARM BEACON OUTPUT
Y13	MTR #1 EXCESSIVE RUN TIME OUTPUT
C3	
Y14	MTR #2 EXCESSIVE RUN TIME OUTPUT
Y15	SPARE OUTPUT
Y16	SPARE OUTPUT
Y17	OUTPUT READ BY MASTER PLC FOR HEARTBEAT (ON BY SPECIAL RELAY ALWAYS ON)
N.C.	

Fixed Outputs on PLC:

CO	(JUMPER TO C1)
X0	PUMP 1 HAND TO PLC (SWITCH ALSO WIRED DIRECT TO MOTOR)
X1	PUMP 1 AUTO
X2	PUMP 2 HAND TO PLC (SWITCH ALSO WIRED DIRECT TO MOTOR)
X3	PUMP 2 AUTO
C1	(JUMPER TO C2)

X4 HIGH LEVEL ALARM FLOAT INPUT  
 X5 BACKUP ON FLOAT INPUT  
 X7 SPARE INPUT  
 C2 (JUMPER TO C3)  
 X10 PHASE FAIL MONITOR INPUT  
 X11 RESET INPUT  
 C3 (JUMPER TO C4)  
 X16 SPARE INPUT  
 X17 SPARE INPUT  
 C4 NEUTRAL  
 X20 SPARE INPUT  
 X21 SPARE INPUT  
 X22 SPARE INPUT  
 X23 SPARE INPUT  
 N.C.  
 N.C.

Slot 1 F0-04AD-1 4 channel analog input:

1. (+-) 4-20MA INPUT FROM HYDRO-RANGER 200 (TIE COMMON NEG 24V WITH PLC, NEG 24V)
2. (CT1+ CT1-) 4-20MA INPUT FROM MTR #1 CT (SOURCE VOTAGE FROM PLC 24V DC)
3. (CT2+ CT2-) 4-20MA INPUT FROM MTR #2 CT (SOURCE VOTAGE FROM PLC 24V DC)
4. (+-) TOSHIBA FLOW METER

The Contractor shall install the control enclosure including installation, programming and testing.

#### **7-11.2(6) Telemetry**

A spare two (2) inch diameter conduit shall be installed for future telephone and telemetry wiring. The conduit shall be installed from the control panel to one (1) foot past the edge of pavement with a nylon cord installed and capped as shown on the plans and the District Standard Drawings. A permanent marker will be installed at the edge of the concrete slab marking the location of the spare conduit.

An MDS TransNET 900 transceiver as manufactured by General Electric (GE) shall be installed within the control panel and shall include diagnostics software. The transceiver shall be connected to an antenna mounted in the location shown on the plans. The antenna shall be an MDS model number 97-3194A13 as manufactured by GE.

#### **7-11.2(7) Electrical Conduit, Fittings, Junction Box and Splices**

Electrical conduit shall be rigid nonmetallic conduit and fittings conforming to National Electrical Code, NEMA Specification TC-2 and UL651. Electrical conduit fittings shall be Schedule 40 PVC.

### 7-11.2(8) Control Panels

The Control Panel is to be in conformance with District Standard Drawings.

The control cabinet shall be a minimum of thirty six (36) inches wide by thirty-six (36) inches tall by twelve (12) inches deep and be a free standing, lockable, NEMA 4 enclosure, Hoffman A36H36FLP, or approved equal, and shall be furnished with all necessary fittings and appurtenances as specified in the plans, standard plans and specifications.

The control panel shall be fitted with a one-quarter ( $\frac{1}{4}$ ) inch thick, clear polycarbonate inner door as a barrier between the operator and all electrical components. Components mounted on the inner door shall include the level controller, operator panel, the momentary push buttons, indicator lights, HOA switches and door mount operators as shown on the standard drawings. The level controller shall be a Hydroranger 200 as manufactured by Siemens. The operator interface panel shall be a six (6) inch, color, touch screen display, as manufactured by Automation Direct (part number EA7-T6CL) or approved equal. The magnetic flow meter converter shall be as manufactured by Toshiba (part number LF602FBC211E) or approved equal.

The cabinet shall be supplied with a 120V, 100 watt, thermostatically controlled panel heater and a 120V inner panel light shall be mounted to the top of the cabinet. A 120V red, beacon type alarm light shall be mounted to the top of the cabinet on the exterior.

The floor stand shall be a Hoffman AFK1812, or approved equal anchored to the concrete pad using one-half ( $\frac{1}{2}$ ) inch diameter bolts.

Wiring shall be neatly bundled and secured with plastic wire ties when located outside the conduit or raceway and protected from contact with sharp edges of the control panel sheet metal and from contacting the internal moisture prevention equipment.

Cables and wires will be clearly identified with heat shrink sleeves.

Wiring from the transducer in the wet well shall be intrinsically safe.

Protection devices shall be provided in the control panel for ground fault, phase reversal, phase loss, phase imbalance, over current and under voltage. Both pumps shall be shut down and alarms activated if any of these conditions occur. The Phase Monitors shall be SYMCOM #201-200-SP or approved equal. Two (2) current transformers to be Hawkeye 921 made by Veris Industries or approved equal.

Analog card for the PLC to be Automation Direct FO-04AD-1 or approved equal. Two (2) motor starters with manually adjustable overloads with stop and reset capabilities sized for calculated motor load. HOA switches, indicator lights and reset button all to be nonmetallic, monoblock, 22mm & UL listed.

Provide two (2) standard 120-volt receptacles, with 15-ampere breaker with one GFI inside the control panel and one mounted on the clear polycarbonate inner door.

The control panel shall include an uninterruptible power supply (UPS) for the control circuit and other components such as the transnet 900 radio, Hydorranger, operator interface and PLC. The UPS shall be a SmartUPS SUA750 as manufactured by American Power Conversion Corp.

Engraved Name tags shall be provided for all electrical components in the control panel on or above each component as shown on the District Standard Construction Drawings.

### **7-11.3 Construction Requirements**

#### **7-11.3(1) General**

Where shown on the Plans, STEP systems shall be installed: in accordance with the Standard Plans and by a Contractor approved by the District to install STEP systems.

The STEP system shall be located and configured as shown on the Plans. The Contractor shall request in writing, permission to vary from the Plans. The District will respond in writing. Alternate configurations may require different materials to address vehicle loading, drainage, or other considerations at the sole discretion of the District.

#### **Preconstruction Conference**

Prior to the Contractor beginning the work, a preconstruction conference will be held between the Contractor, the Engineer and such other interested parties as may be invited. The purpose of the preconstruction conference will be:

1. To review the construction schedule;
2. To establish a working understanding among the various parties associated or affected by the work;
3. To establish and review procedures for notifications, approvals, submittals, etc;
4. To establish normal working hours for the work;
5. To review safety standards; and
6. To discuss such other related items as may be pertinent to the work.

The Contractor shall submit material sources prior to the preconstruction conference.

The Contractor shall request the preconstruction conference a minimum of 10 calendar days prior to the start of construction.

The actual date of the preconstruction conference will depend on availability of District staff and the various parties associated with the work.

The preconstruction conference may be held at the construction site for single-family residences. It will be held in conjunction with the Clark County preconstruction conference or scheduled at the District offices for all other projects.

#### **7-11.3(2) Testing**

After the tank is placed, and prior to backfilling, the tank shall be filled to a point above the base of the riser. There shall be no more than a one (1) inch loss of water depth over a 24-hour period. Concrete tanks may be filled for a period of 24 hours to allow for absorption prior to testing. Where multiple tanks are installed each tank shall be isolated in such a way as to make it possible to test each tank individually.

Hydrostatic pressure testing for pressure sewer services shall be done following installation and prior to acceptance in the presence of the District Inspector. The lines shall be tested in accordance with Section 7-09.3(23) Hydrostatic Test at 150 psi for 15 minutes with no loss of pressure.

### **7-11.3(3) Pressure Service Lines**

Pressure service line construction shall be installed in conformance with Section 7-09.3 except as modified below.

The pressure service lines shall not be backfilled prior to inspection.

The District will install taps on existing mains. A "Request for Tap" form must be completed by the Contractor, fees paid, and a two (2) working day notice be given to the District to allow the tap to be scheduled.

The pressure service line from the main to the valve box shall be installed at a minimum depth of 36-inches below finished grade or the flow line of a ditch. The pressure service line from the valve box to the STEP tank shall be 24-inches below finished grade or the flow line of a ditch.

A continuous toning wire shall be attached to the top of the pressure service line. A minimum of a three (3) foot coil of wire shall be left in each access point (junction boxes, vaults, locate stations, air/vacuum valves, etc).

Detectable marking tape shall be installed one (1) foot above the top of the pressure service line.

### **7-11.3(4) Tanks**

STEP tanks shall be installed in accordance with the Plans, Standard Plans, and the manufacturer's instructions.

The tank shall be installed where it will not collect surface water. All lids and access risers shall be set such that surface waters will flow away from them.

The inlet and outlet access openings shall accommodate a twenty-four (24) inch diameter riser. The openings for the pump vaults shall accommodate a thirty (30) inch Perma-Loc PVC riser.

The entrance of the inlet or outlet tee shall pass through a Ty-seal type of neoprene grommet for fiberglass tanks or a manhole boot for concrete tanks that shall provide a watertight seal, but allow flexibility to the building sewer.



The inlet tee shall be Schedule 40 ABS or PVC (PVC can be ASTM 3034 for six (6) inch or larger pipe). The Contractor shall install the six (6) inch Schedule 40 ABS or PVC service line from the tank to the building. The building shall be connected (if it is for an existing building) or the new service line shall be stubbed and plugged in the location staked.

Thirty (30) inch risers shall be installed at each tank when they service a pump. The risers shall be of the same material as the tank and submitted for District review and approval. For concrete tanks, risers shall be ribbed PVC as manufactured by Orenco Systems, Inc., Model RR30 with riser-to-lid adapters, Model RLA30, or approved equal.

The risers shall have a minimum inside diameter of twenty-nine and one-half (29½) inches, and shall be a maximum of thirty-six (36) inches tall. Any change in length of the riser shall be approved.

A twenty-four (24) inch (if not servicing a pump) diameter Ultra-Rib PVC riser pipe shall be installed over the inlet tee and be fastened to the tank with a water-tight connection as specified for the twenty-four (24) inch riser.

The lid shall extend at least one-half (½) inch over the riser and be capable of supporting a 2,500-pound wheel load. The lids shall have a non-skid finish, a neoprene sponge gasket, and shall be fastened to the riser with four (4) allen head stainless steel bolts. Neoprene grommets shall be supplied for all penetrations.

Anti-flotation measures shall be installed according to manufacturer recommendation.

Fiberglass tank(s) shall be bedded in and backfilled with pea gravel consisting of clean washed gravel, rounded with no crushed material. The maximum size shall be one quarter (¼) inch in diameter, well graded with no more than 2% passing the No. 200 sieve.

Concrete tanks shall be bedded in and backfilled with Crushed Surfacing Base Course per Section 9-03.9(3). Compaction shall be at 90% of the maximum density for the material as established by Section 2-03.3(14)D.

The tank supplier shall provide a written five (5) year warranty to the Owner.

The tanks shall be installed in non-traffic areas whenever possible. For installation in traffic areas, a traffic-bearing lid will be required. The traffic-bearing lid shall be cast iron marked "Sanitary Sewer", have two (2) pick holes, be rated at H-20 loading and shall have a water tight seal with the riser. No part of the ring shall cover or bear on the riser or cover.

### **7-11.3(5) Electrical**

#### **7-11.3(5) A General**

- A. All electrical work shall be completed by an electrician licensed by the State of Washington.

- B. All work shall be inspected and approved by the State of Washington Labor and Industries.
- C. The Contractor shall install a complete electrical installation, including connection to the electrical building panel.
- D. All connections and installation shall be in accordance with the National Electrical Code, State of Washington Department of Labor and Industries requirements and these specifications.
- E. All underground power installations shall be placed in a one (1) inch minimum Schedule 40 PVC conduit at a minimum depth of twenty-four (24) inches or the 8" x 8" raceway for the pump power lines, float wire level control lines from the tank risers to the pump disconnect panel located adjacent to the tank.
- F. Components shall be listed or recognized by an accepted testing laboratory (UL, CSA or FM).
- G. All electrical equipment shall be rated for local temperature ranges.
- H. All exposed electrical terminals shall be fully insulated.
- I. The float assembly shall consist of one (1) mercury float switch with non-metallic cord grips, waterproof and explosion-proof splices, stainless steel mounting frame and other miscellaneous parts as required.

**7-11.3(5) B Safety Disconnect Panel**

- A. The safety disconnect panel shall be lockable, rated at the calculated need of the system (as determined by the design engineer [service amperes]), 240-volts, non-fused, waterproof with an external disconnect handle. The safety disconnect panel shall be rated as needed (such as a Cutler Hammer model DG221URB), or approved equal.
- B. If the total length of conductor from the commercial building electrical panel is more than one hundred (100) feet from the building power panel to the pump motor, the conductor gage shall be increased in accordance with the National Electrical Code as adopted by the State of Washington.
- C. The safety disconnect panel shall be locked. The District will provide a lock for District owned or District maintained systems.

**7-11.3(5)C Pump Disconnect Panel**

The Pump Disconnect Panel shall be installed in the location shown on the Plans and be used as a disconnect for electrical lines from the tank/wet pit to the control panel. It will service the power cords, float wires, transducer wires and any other wiring that is necessary for the operation and control of the tank, pumps and appurtenances. The Pump disconnect Panel shall be constructed in accordance with the Plans, Specifications, and the Standard drawings that apply to it. The panel must have Meltric decontactor receptacles to mate with the motor cord and plug. The panel must have at least forty-five (45) inches of open air space enclosed with expanded metal that has at least one face hinged and latched from the surface level to the bottom of the panel enclosure. The panel must have an intrinsically safe barrier in it.

#### **7-11.3(5)D Electric Service Mounting**

- A. The safety disconnect panel and the control panel shall be located and configured as shown on the Plans and described in these specifications. The Contractor shall request in writing, permission to vary from the Plans and specifications. The District will respond in writing. Alternate configurations may require different materials to address vehicle loading, drainage, or other considerations at the sole discretion of the District. The Contractor shall bear any added costs that result from the change; and
- B. The safety disconnect panel shall be mounted to the right of the control panel with a minimum six (6) inch and a maximum twelve (12) inch clearance between the panels; and
- C. The safety disconnect panel and the control panel shall be mounted at the same height. There shall be a distance between four (4) and five (5) feet between the top of the panels and the mounting base; and
- D. The Contractor may locate the control panel on a separate pressure treated 4x4 post, buried 24-inches in the ground, adjacent to the building at the height discussed in (b) above; and
- E. No structure, fence or landscaping or other material shall be installed, placed or stored that block access to the STEP tank, valve box, disconnect panel, control panel or block the view of the control panel or disconnect panel from the street.

#### **7-11.4 Measurement**

STEP Systems will be measured per each.

No measurement will be made for clearing and grubbing, removal of existing street improvements, protection of existing utilities and services, excavation, pipe zone backfill, pipe zone bedding, trench backfill, and compaction of backfill.

Removal and replacement of unsuitable material will be measured per cubic yard.

## 7-11.5 Payment

Payment will be made in accordance with Section 1-04.1 for each of the following Bid items that are included in the Proposal:

“STEP System”, per each.

The unit Contract price per each for STEP systems shall be full pay for furnishing, hauling, and assembling in place the completed installation including all fittings, special fittings, joint materials, bedding and backfill material, motor, pump, tank, valves (check, gate and bleeder valves), valve vault, flow meter, electrical, paving, fencing and gates, testing, start-up, and all other Work necessary for the completion of the installation in accordance with Plans and Contract Provisions.

“Removal and Replacement of Unsuitable Material”, per cubic yard.

The unit Contract price per cubic yard for “Removal and Replacement of Unsuitable Material” shall be full pay for all Work to remove unsuitable material and replace and compact suitable material as specified in Section 7-08.3(1)A.

## 7-17 SANITARY SEWERS

### 7-17.2 Material

Section 7-17.2 is supplemented as follows:

(CRWWD January 2010)	
Polyvinyl Chloride (PVC) Pressure Pipe (4-inches and over)	9-30.1(5)A
Toning Wire and Splices	9-05.30(1)
Marker Balls	9-05.30(2)
Locator Station	9-05.30(3)

Delete all references to Vitrified Clay.

### 7-17.3 Construction Requirements

#### 7-17.3(1) Protection of Existing Sewerage Facilities

Section 7-17.3(1) is supplemented with the following:

(CRWWD January 2010)

For all new construction, the District, upon the Contractor connecting to the existing system, will install a plug at the first available manhole where pumping can be done to clean the new line.

Following completion of the corrections required by the Inspector’s pre-television punch list, the Contractor shall flush, clean and pump flushing water out of the system in the presence of the Inspector.

At any time during the construction activity, the Inspector may require, at the contractors expense that the existing sewerage facility be flushed clean and the water be removed from the system in the presence of the inspector. Water shall not enter the existing sanitary sewer system.

(CRWWD January 2010)

Section 7-17.3 is supplemented with the following new subsections:

**7-17.3(3) Toning Wire and Splices**

Where shown on the Plans, a continuous toning wire shall be attached to the top of the sanitary sewer. The toning shall be continuous between manholes, and enter each manhole and connect to a locator station as shown on the Standard Plans. The toning wire shall be tested for and have continuity prior to acceptance.

**7-17.3(4) Mark Balls**

Where indicated on the Plans, marker balls shall be installed according to manufacturer's recommendations and according to the following requirements:

- Install marker balls directly above the pipe alignment at a depth no less than 3 feet and no more than 4.5 feet below final surface grade.
- Install marker balls during trench backfill operations by placing the marker ball in compacted backfill. Cover marker ball with a minimum of 6 inches of backfill and compact backfill before continuing trench backfill operations.
- Install marker balls directly above connection points, termination points and all fitting locations, and at a minimum spacing of 50 linear feet on sewers with a straight horizontal alignment.
- Install marker balls on new or reconstructed sewer service laterals, directly above the centerline of the end of the lateral at the curb, property line or other end of lateral location, as directed.
- Install marker balls directly above every alignment change along sewer mains and service laterals.
- Install marker balls directly above manholes for manholes with buried covers.

**7-17.3(2) Cleaning and Testing**

**7-17.3(2)A General**

Section 7-17.3(2)A is supplemented with the following:

Delete the first paragraph and replace with:

(CRWWD January 2010)

Sanitary sewers and appurtenances shall be cleaned and tested by the low pressure air method after backfilling. The Contractor shall provide a minimum of five (5) working days notice to the District Inspector to schedule testing.

Delete the first two sentences of the second paragraph.

Replace the first two sentences of the fourth paragraph with the following:

(CRWWD January 2010)

Testing of side sewers shall be by the low pressure air method with the main line.

**7-17.3(2)B Exfiltration Test**

Section 7-17.3(2)B is deleted.

**7-17.3(2)C Infiltration Test**

Section 7-17.3(2)C is deleted.

**7-17.3(2)D Other Test Allowances**

Section 7-17.3(2)D is deleted.

**7-17.3(2)E Low Pressure Air Test for Sanitary Sewers Constructed of Air Permeable Materials**

Section 7-17.3(2)E is supplemented with the following:

The seventh and eighth paragraphs are revised to read:

(CRWWD January 2010)

Low pressure air testing shall be as outlined on the District form titled "AIR TEST / MANDREL TEST". Copies are available at the District offices.

**7-17.3(2)F Low Pressure Air Test for Sanitary Sewers Constructed of Non Air Permeable Materials**

Section 7-17.3(2)F is supplemented with the following:

The second sentence of the first paragraph is revised to read:

(CRWWD January 2010)

When non air permeable pipe is subjected to a low-pressure air test, all of the provisions of Section 7-17.3(2)E shall apply.

**7-17.3(2)G Deflection Test for Thermoplastic Pipe**

Section 7-17.3(2)A is supplemented with the following:

Insert a new paragraph at the beginning of this section:

(CRWWD January 2010)

Sanitary sewers will be required to pass a deflection (5% mandrel) test for all thermoplastic pipe six (6) inches or more in diameter.

**7-17.3(2)H Television Inspecting**

Section 7-17.3(2)H is supplemented with the following:

The first paragraph is revised to read:

(CRWWD January 2010)

All sanitary sewer lines shall be inspected by the use of a closed circuit television camera before final acceptance at no cost to the Contracting Agency.

TV inspection shall not be performed until a District Inspector has completed a pre-television punch list and all punch list items have been repaired to the Inspector's satisfaction.

Television inspections shall be performed after placement of base rock and prior to final paving. The Contractor shall run water through the line to be tested immediately prior to the television testing.

Sags in sewer pipe shall meet the requirements of Section 7-08.3(2)B. The Contractor shall correct any variations that exceed the tolerances in Section 7-08.3(2)B. The Contractor shall remove and replace any pipe with manufacturing defects or damage identified during the television testing at no expense to the Contracting Agency.

#### **7-17.4 Measurement**

Section 7-17.4 is supplemented as follows:

(CRWWD January 2010)

Trench Safety System will be measured as a separate item per Section 7-08.4.

There will be no separate measurement for toning wire or marker balls.

#### **7-17.6 Payment**

Section 7-17.5 is supplemented as follows:

(CRWWD January 2010)

"PVC C-900 Sanitary Sewer Pipe \_\_\_\_ In. Diam.", per linear foot.

The unit Contract price per linear foot for sewer pipe of the kind and size specified shall be full compensation for furnishing, hauling, and assembling in place the completed installation including all bypass pumping, connection to existing sewer lines, wyes, tees, special fittings, joint materials, bedding and backfill material, toning wire, marker balls, and adjustment of inverts to manholes for completion of the installation to the required lines and grades.

The unit Contract price per linear foot for "Testing Sewer Pipe" shall be full compensation for all labor, material and equipment required to conduct the tests required in Section 7-17.3(2).

### **7-18 SIDE SEWERS**

#### **7-18.2 Material**

Section 7-18.2 is supplemented as follows:

(CRWWD January 2010)

All fittings shall be rigid.

### **7-18.3 Construction Requirements**

#### **7-18.3(1) General**

Section 7-18.3(1) is supplemented as follows:

(CRWWD January 2010)

Side sewers shall have a minimum vertical clearance of one (1) foot from storm sewers at all crossings.

Side sewers shall have a minimum horizontal separation from any water service of at least two (2) feet. The side sewer and water service must be constructed in a separate trench.

Side sewers must be eighteen (18) inches below any water service or water line for crossings, or be constructed of ductile iron pipe and a full length pipe centered on the crossing.

Surface water, mud, construction materials or other debris shall not enter the side sewers.

All connections to existing District sewer main lines will be made by the District unless otherwise approved by the District.

The Contractor must apply to the District on the District form "Clark Regional Wastewater District Request for a Tap" and pay the District fee prior to the District installing the tap. The Contractor shall provide a trench with access to the line opening of a minimum of four (4) feet wide and four (4) feet long for the District. The trench will meet all WISHA requirements. The Contractor shall notify the District at least two (2) working days prior to the District doing the tap on the sewer main line.

The Contractor shall protect existing curb to the extent practical. Any damaged curb shall be replaced in accordance to local jurisdiction requirements at no cost to the Contracting Agency.

#### **7-18.3(2) Fittings**

Section 7-18.3(2) is supplemented as follows:

(CRWWD January 2010)

Transition from DIP laterals within the public right of way to ABS laterals on private property shall be through the use of rigid stainless steel Fernco fitting or approved equal.

(CRWWD January 2010)

Section 7-18.3 is supplemented with the following new subsection:

#### **7-18.3(6) Toning Wire and Splices**

A continuous toning wire shall be attached to the top of the side sewer. A minimum of a two (2) foot coil of wire shall be wrapped around each cleanout or end pipe marker and around the sewer main at the connection point.



### **7-18.3(3) Testing**

Section 7-18.3(3) is supplemented as follows:

Delete second paragraph and replace with:

(CRWWD January 2010)

All side sewers constructed in conjunction with the sewer main, for purposes of testing as specified in Section 7-17, shall be capped at the end of the side sewer and be tested with the sewer main. Caps shall be the same material as the pipe and be adequate to meet the test requirements of Section 7-17. PVC or ABS caps shall be glued.

Delete the third paragraph.

### **7-18.3(4) Extending Side Sewers Into Private Property**

Section 7-18.3(4) is supplemented as follows:

(CRWWD January 2010)

Side sewers shall not be extended beyond the end of the public side sewer until a permit is received from the District and all District fees have been paid.

Side sewers extending into private property shall meet the requirements of the side sewer permit.

The Contractor shall abandon all septic tanks in accordance with state and local codes. The Contractor shall notify the Engineer before abandonment; and provide the Engineer with a copy of the septic disposal company's confirmation of pumping the tank.

Side sewers serving commercial buildings may be completed and connected to the monitoring manhole or the public side sewer with approval of the District if the monitoring manhole is located within ten (10) feet of the end of the public side sewer. The District Inspector will install a plug in the outlet pipe of the monitoring manhole and the plug shall not be removed until the District accepts the public and private portions of the sanitary sewer system.

Side sewers serving multifamily developments will be required to have a District installed locking plug at the nearest downstream manhole or have a minimum of a two (2) foot gap between the public and private side sewers until the public and private portions of the sanitary sewer system are accepted by the District. The location of the gap must be approved by the District Inspector and each pipe on either side of the gap closed with a glued cap. The location of the gap will be marked as per the Section 7-18.3(5) End Pipe Marker. The final connection removing the gap shall not be made until the District accepts the public and private portions of the sanitary sewer system. The District Inspector must inspect the connection of the public and private lateral gap before the side sewer is backfilled.

### **7-18.3(5) End Pipe Marker**

Section 7-18.3(5) is revised to read:

(CRWWD January 2010)

Side sewers must be marked with a 2x4 by 10-foot long board. In addition, the toning wire shall be brought to the surface and wrapped securely around the 2x4 board. Each end of the board will be painted green for two (2) feet. All markers must remain in place until after roads and curbs are constructed and final as built drawings are completed, submitted and accepted by the District. If the pipe end markers are destroyed or removed before as built measurements are completed, Contractor shall expose the end of the side sewer for record drawing measurements and replace the marker.

### **7-18.5 Payment**

Section 7-18.5 is supplemented as follows:

(CRWWD January 2010)

The unit Contract price per linear foot for sewer pipe of the various kind and size specified shall be full pay for all Work required for the completion of the installation including fittings, end pipe marker, and toning wire.

## **7-19 SEWER CLEANOUTS**

### **7-19.2 Material**

Section 7-19.2 is supplemented as follows:

(CRWWD January 2010)

Add the following to the end of the sentence:

“and the Standard Plans”

### **7-19.3 Construction Requirements**

Section 7-19.3 is revised to read:

(CRWWD January 2010)

Side sewer cleanouts shall be installed at intervals not to exceed one-hundred (100) feet in straight runs and for each aggregate horizontal change in direction exceeding one-hundred and thirty-five (135) degrees.

All cleanouts shall have the invert elevation verified and reported to the Engineer prior to backfilling.

All cleanouts shall be extended to grade.

### **7.19.5 Payment**

Section 7-19.5 is supplemented as follows:

(CRWWD January 2010)

“Cleanout \_\_\_\_ In. Diam.”, per each

The unit Contract price per each for cleanouts shall be full compensation for furnishing and placing the wye, pipe, pipe bends, pipe plug, castings, collar, concrete pad, toning wire, installation of the District furnished locator marker, and testing as specified herein and as shown on the Standard Plan.

## **DIVISION NO. 8 MISCELLANEOUS CONSTRUCTION**

### **8-02 ROADSIDE RESTORATION**

#### **8-02.1 Description**

Section 8-02.1 is supplemented as follows:

(CRWWD January 2010)

This Work consists of in-kind restoration of all disturbed areas between the edge of pavement or curb, and the limits of construction.

#### **8-02.4 Measurement**

Section 8-02.4 is revised to read:

(CRWWD January 2010)

When the Bid Proposal contains the item "Roadside Restoration" there will be no measurement of unit items for Work defined in Section 8-02.

No specific unit of measurement will apply to the lump sum item of "Roadside Restoration."

#### **8-02.5 Payment**

Section 8-02.5 is revised to read:

(CRWWD January 2010)

"Roadside Restoration", lump sum.

The lump sum Contract payment shall be full compensation for all costs incurred by the Contractor in performing the Contract Work defined in Section 8-02.

### **8-06 CEMENT CONCRETE DRIVEWAY ENTRANCES**

#### **8-06.1 Description**

Section 8-06.1 is supplemented with the following:

(CRWWD January 2010)

Cement concrete approach shall include replacing residential driveways as required to complete the Work shown on the Plans, to the nearest existing expansion joint. The Contractor shall use care to minimize restoration of driveways. No work shall take place on private property without the property owner's written permission.

The terms "cement concrete approach" and "cement concrete driveway entrance" are used interchangeably in Section 8-06.

### **8-06.3 Construction Requirements**

(CRWWD January 2010)

The third sentence of the second paragraph of Section 8-06.3 is revised to indicate that the surface shall receive a medium broomed finish (instead of stiff), or as required to match existing adjacent surfaces.

The first sentence of the third paragraph of Section 8-06.3 is revised to read:

The Contractor shall coordinate the construction of approaches with property owners to minimize disruption of access. All approaches with a 20-foot width or greater shall be constructed and fully cured one half at a time as required to maintain continuous access to adjacent residences and businesses.

Section 8-06.3 is supplemented with the following:

(CRWWD January 2010)

Concrete shall obtain a minimum compressive strength of 2500-psi in 3-days.

### **8-06.5 Payment**

Section 8-06.5 is supplemented with the following:

(CRWWD January 2010)

“Cement Conc. Approach”, per square yard.

## **DIVISION NO. 9**

### **MATERIALS**

#### **9-04 JOINT AND CRACK SEALING MATERIALS**

*(CRWWD January 2010)*

Section 9-04 supplemented with the following new sections:

##### **9-04.12 Manhole External Seals**

*(CRWWD January 2010)*

Manhole external seals shall be NPC External Joint Seal, seven and one-half (7.5) inch width, or approved equal.

External joint seal shall meet the requirements of ASTM C923-02, consisting of a high quality flexible rubber seal, and stainless steel compression bands with take-up assemblies.

Flexible Rubber Seals shall be extruded to the require length, and the ends are joined using a high strength vulcanized splice.

Stainless Steel Compression Bands shall be hose clamp bands manufactured from 300 series, non-magnetic stainless steel, which conforms to the material requirements of ASTM C923-02.

##### **9-04.13 Manhole Boots**

*(CRWWD January 2010)*

Manhole boots shall be NPC Kor-N-Seal 106 Series pipe-to-manhole connector, Press-Seal Gasket Corporation PSX Direct Drive Flexible Pipe-to-Structure Connectors, or approved equal.

Manhole boots shall be meet the requirements of ASTM C923 consisting of a flexible rubber seal and stainless steel compression and expander bands with take-up assemblies.

##### **9-04.14 Penetration Seals**

*(CRWWD January 2010)*

Penetrations seals shall be modular, mechanical seals, consisting of rubber links. The links shall be shaped to continuously fill the annular space between the pipe and the wall opening. Penetration seals shall be PSI-Thunderline/ Link-Seal® Modular Seal as manufactured by Pipeline Seal & Insulator, Inc, Houston, TX, or approved equal.

## **9-05 DRAINAGE STRUCTURES, CULVERTS, AND CONDUITS**

### **9-05.12(1) Solid Wall PVC Culvert Pipe, Solid Wall PVC Storm Sewer Pipe, and Solid Wall PVC Sanitary Sewer Pipe**

Section 9-05.12(1) is supplemented with the following:

*(CRWWD January 2010)*

For pipe sizes from 6 inches to 15 inches: ASTM D 3034 SR 35

For pipe sizes under 6 inches: Schedule 40 conforming to ASTM D1785 specifications. Solvent weld socket type fittings shall be PVC Schedule 40 conforming to ASTM D2466 specifications. Threaded fittings shall be PVC Schedule 80 conforming to ASTM D2464 specifications. Solvent cement joints shall be made in a two step process using primer manufactured for thermoplastic piping systems and solvent cement conforming to ASTM D 2564.

### **9-05.12(2) Profile Wall PVC Culvert Pipe, Profile Wall PVC Storm Sewer Pipe, and Profile Wall PVC Sanitary Sewer Pipe**

Section 9-05.12(2) is supplemented with the following:

*(CRWWD January 2010)*

Profile wall PVC sanitary sewer pipe will be considered as an alternative material. The Contractor shall submit manufacturer's data, including successful installations for sanitary sewer, for approval.

### **9-05.14 ABS Composite Sewer Pipe**

Section 9-05.14 is supplemented with the following:

*(CRWWD January 2010)*

ABS composite sewer pipe shall be used for 4 inch side sewers only.

### **9-05.15 Metal Castings**

#### **9-05.15(1) Manhole Ring and Cover**

Section 9-05.15(1) is supplemented with the following:

*(CRWWD January 2010)*

All manhole rings and covers shall be as specified on the Plans.

All hardware for locking manhole covers and watertight covers shall be made from stainless steel meeting the Specifications of ASTM A 304.

Locking and watertight covers shall accommodate standard manhole vacuum testing equipment.

*(CRWWD January 2010)*

Section 9-05 is supplemented with the following subsections:

#### **9-05.15(4) Manhole Inflow Dishes**

Manhole inflow dishes shall be manufactured from a durable High Density Polyethylene Copolymer material that meets ASTM D-1248 Class A, Category 5, Type III Specification. The material shall have a minimum impact brittleness temperature of 180 degrees Fahrenheit in accordance with ASTM D 746-70. Cretex Inflow Dish or approved equal.

Manhole inflow dishes shall be a uniform 1/8" in thickness.

The manhole inflow dishes shall be manufactured to fit the manhole frames they are to be installed in.

Two 3/16" holes shall be installed 180 degrees apart and approximately 1" from the top of the insert.

#### **9-05.15(4)A Vented Manhole Inflow Dishes**

Vented manhole inflow dishes shall be meet the requirements of Section 9-05.15((4) for manhole inflow dishes. Vents shall consist of a valve or valves manufactured of a Polypropylene Ethylene compound that are corrosion and wear resistant. The valve or valves should be designed to release gas pressure at approximately 1 psi, and vacuum pressure at approximately 2 psi. The inflow dish valve(s) material shall be unaffected by temperatures within a range of -70 to 350 degrees Fahrenheit.

#### **9-05.30 Vacant**

Section 9-05.30 including the title is revised to read:

(CRWWD January 2010)

#### **9-05.30 Locate Devices**

##### **9-05.30(1) Toning Wire and Splices**

(CRWWD January 2010)

Toning wire shall be coated #12 HMWPE coated solid copper toning wire manufactured by Kris-Tech Wire or approved equal.

All splices will be made using a Direct Bury Splice Kit 600 Volts (DBR-6) by 3M or approved equal.

##### **9-05.30(2) Marker Balls**

(CRWWD January 2010)

Marker balls shall be Omni Marker Model 162, or approved equal. Marker balls shall:



- Be green in color,
- Maximum 4.5 inches in diameter,
- Made with exterior material of HDPE,
- Be locatable with standard electronic marker locating devices at a depth up to 5 feet,
- Produce a spherical RF field regardless of orientation, and
- Contain no floating or movable parts, and no batteries or active components.

### **9-05.30(3) Locator Station**

(CRWWD January 2010)

Locator stations shall be Single (5 lead) FlangeFink® locator stations manufactured by Cott Manufacturing or approved equal. Locator station shall be Lexan® polycarbonate, green in color, with terminals suitable for #12 AWG leads. Use single (2 lead) locator stations with two terminals, one for ground wire and one for tracer wire, when only one tracer wire is terminated in manhole. Use multi-lead locator stations with the appropriate number of terminals when 2 or more tracer wire leads are terminated in manhole.

### **9-05.50 Precast Concrete Drainage Structures**

#### **9-05.50(1) Fabrication Tolerances and Requirements**

Section 9-05.50(1) is supplemented with the following:

(CRWWD January 2010)

The manufacturing plant for precast concrete units shall be certified by the Precast/Prestressed Concrete Institute's Plant Certification Program for the type of precast member to be produced, or the National Precast Concrete Association's Plant Certification Program or be an International Congress Building Officials or International Code Council Evaluation Services recognized fabricator of structural precast concrete products, and shall be approved by WSDOT as a Certified Precast Concrete Fabricator prior to the start of production.

Precast units shall be certified by the manufacturer prior to shipment that all materials conform to WSDOT and District specifications. The Contractor shall provide the District with the manufacturer's certification.

#### **9-05.50(6) Vacant**

Section 9-05.50(6) including the title is revised to read:

(CRWWD January 2010)

#### **9-05.50(6) Precast Concrete Wetwells**

(CRWWD January 2010)

Precast concrete wetwells shall meet the requirements of ASTM 478 for precast reinforced concrete manhole sections. Concrete shall be Class 4000.

The wall thickness shall be a minimum of 9 inches and shall include steel reinforcement conforming to ASTM A-706. The minimum inside diameter shall be 8 feet. The precast top slab shall be H20 rated. The pump discharge elbows, a

prefabricated, non-porous, self-cleaning basin, and associated anchors shall be installed in the base at the manufacturer's.

The pump discharge bases shall be poured into the wetwell base section at the time of fabrication to provide a complete and integrated installation. The barrel sections of the wetwell shall be linked with a single offset joint with R-3 rubber gasket meeting ASTM C361,425, and 433. All hardware inside the wetwell shall be stainless steel.

**9-05.50(7) Vacant**

Section 9-05.50(7) including the title is revised to read:

(CRWWD January 2010)

**9-05.50(7) Precast Valve Vaults**

(CRWWD January 2010)

The Contractor shall provide shop drawings for all components, including the concrete box, lid, and access hatch conforming to the dimensions shown on the plans. The shop drawings shall show placement of reinforcing steel, knock outs, and any other appurtenances.

Precast valve vaults shall conform to the following:

Concrete	Section 6-02
Reinforcing Steel	Section 9-07
Loading	AASHTO HS-20, ASTM C-857, ASTM C-858, or as shown on the Plans
Lid	Section 9-05(15)5.
Bolts, Nuts, Washers	ASTM F 593 or A 193, type 304 or 316
Ladder	Permanently mounted, telescoping, galvanized, installed as shown on the Standard Drawing and meeting WISHA specifications.
Penetrations	Core drilled.

**9-05.50(8) Vacant**

Section 9-05.50(8) including the title is revised to read:

(CRWWD January 2010)

**9-05.50(8) Access Hatches**

(CRWWD January 2010)

Access hatches shall be fabricated aluminum to support an H-20 wheel load with a maximum deflection of 1/150th of the span. Door size shall be as shown on the plans.

Doors shall be of 1/4" aluminum diamond plate and capable of transferring the load bearing to the 1/4" extruded aluminum channel frame that has a 1-1/4" anchor flange around the perimeter, and is equipped with a neoprene gasket for a weather tight seal. Panel springs shall be enclosed in telescopic stainless steel tubes which makes the opening of the hatch cover easy, smooth and controlled through both

opening and closing. When the door leaf is opened in a vertical position, it shall automatically lock into place with a hold open arm that has a release handle. The door shall be equipped with heavy stainless steel hinges and pivots. The door latches shall shut with a stainless steel snap lock equipped with lock hasp. Hardware used on all hatch covers is stainless steel, 300 series. Factory finish is a mill finish.

Hatches for the wetwell and valve vault shall include an OSHA compliant Safe-Hatch for fall protection as manufactured by Syracuse Castings, or approved equal.

Access hatches for use on wet wells shall be able to accommodate Flygt pump guide brackets and lifting chain, and the cable trench.

## **9-15 IRRIGATION SYSTEM**

### **9-15.18 Detectable Marking Tape**

Section 9-15.18 is supplemented with the following:

*(CRWWD January 2010)*

Detectable marking tape for pressure sanitary sewer shall be a continuous, reflective, three (3) inch wide, green, six (6) mil thick, and marked every three (3) feet with "CAUTION BURIED PRESSURE SEWER BELOW".

## **9-16 FENCE AND GUARDRAIL**

### **9-16.1 Chain Link Fence and Gates**

#### **9-16.1(1) General**

Section 9-16.1(1) is supplemented as follows:

*(CRWWD January 2010)*

All galvanized coatings per AASHTO M 181 shall be a minimum of 0.8 ounce per square foot of surface area.

All fencing materials shall be coated with an ultraviolet-insensitive plastic or other inert material at least 2 mils in thickness. Any pretreatment or coating shall be applied in accordance with the manufacturer's written instructions. The Contractor shall provide the Engineer with the manufacturer's written specifications detailing the product and method of fabrication. The color shall be black, or as approved by the Engineer.

The Engineer shall approve samples of the coated fencing prior to the Contractor installing it on the project.

The Contractor shall supply the Engineer with a minimum of one can, and one additional can for every 500 feet of fence installed, of aerosol spray containing a minimum of 14 ounces each of paint of the color specified above. The touch-up paint shall be compatible with the coating system used.

**9-16.1(1)A Post Material for Chain Link Fence**

Section 9-16.1(1)A is supplemented as follows:

(CRWWD January 2010)

Chain link fence end, corner, pull, and gate posts shall be round.

**9-16.1(1)B Chain Link Fence Fabric**

The first sentence of Section 9-16.1(1)B is revised to read:

(CRWWD January 2010)

Chain link fabric shall consist of 9 gage wire (0.148-inch diameter).

**9-26 EPOXY RESINS**

(CRWWD January 2010)

Section 9-26 supplemented with the following new section:

**9-26.4 Manhole Coating**

**9-26.4(1) General**

(CRWWD January 2010)

This section covers the protective coatings for concrete structures. Coat concrete walls and base/invert for the concrete manholes or other structures with Raven 405 epoxy lining, or approved equal.

**9-26.4(2) Submittals**

(CRWWD January 2010)

1. Submit paint material catalog cuts for each system for favorable review.
2. Obtain colors from Owner and submit color samples for favorable review.
3. Submit certification of applicator by materials manufacturer.

**9-26.4(3) Health and Safety**

(CRWWD January 2010)

Be advised that harmful or fatal materials are specified if contact or ingestion occurs. Take appropriate action to comply with local, state, and federal regulatory and other applicable agencies with regard to environment, health, and safety.

**9-26.4(4) Paint System**

(CRWWD January 2010)

Interior Concrete Surface Coatings should consist of the following:

1. Epoxy Lining:
 

RAVEN LINING SYSTEMS= 405 epoxy coating system.	
Product type	Amine cured epoxy
Color	(to be selected)
Solids Content (vol %)	100

Mix Ratio	3:1
Compressive Strength, psi	12,000 ASTM D695
Tensile Strength, psi	6,500 ASTM D638
Tensile Elongation, Va	1.53% ASTM D638
Flexural Modulus, psi	12,000 ASTM D695
Hardness, Type D	80 ASTM D2240
Bond Strength - Concrete	Greater than Tensile Strength of Concrete, (achieved by a pull test)

2. Protective Coating Application Equipment: Manufacturer approved heated plural component spray equipment shall be used in the application of the specified protective coating.

## **9-30 WATER DISTRIBUTION MATERIALS**

### **9-30.2 Fittings**

#### **9-30.2(6) Restrained Joints**

Section 9-30.2(6) is supplemented with the following:

(CRWWD January 2010)

Restraint for mechanical joints in AWWA C900 PVC pipe systems shall consist of the following: The restraint shall be manufactured of ductile iron conforming to ASTM A536. A split serrated ring shall be used to grip the pipe in conjunction with a sufficient number of bolts connecting the serrated restraint to the joint. The combination shall have a minimum working pressure rating equivalent to the pipe. The restraint devices shall be coated with MEGA-BOND. (For complete specifications on MEGA-BOND visit [www.ebaa.com](http://www.ebaa.com).) The restraint shall be the Series 15MJ00, as manufactured by EBAA Iron, Inc., or approved equal.

Restraint for PVC pipe bell (AWWA C900) shall consist of the following: The restraint shall be manufactured of ductile iron conforming to ASTM A536. The restraint devices shall be coated using MEGA-BOND. (For complete specifications on MEGA-BOND visit [www.ebaa.com](http://www.ebaa.com).) A split ring shall be used behind the pipe bell. A serrated ring shall be used to grip the pipe, and a sufficient number of bolts shall be used to connect the bell ring and the gripping ring. The combination shall have a minimum working pressure rating equivalent to the pipe. The restraint shall be the Series 1500TD, as manufactured by EBAA Iron, Inc., or approved equal.

### **9-30.3 Valves**

#### **9-30.3(1) Gate Valves**

Section 9-30.3(1) is supplemented with the following:

(CRWWD January 2010)

Gate valves shall be cast iron body with resilient seats with non rising stems and operators.

#### **9-30.3(7) Combination Air Release/Air Vacuum Valves**

Section 9-30.3(7) is supplemented with the following new section:

### **9-30.3(7)A Air/Vacuum Valves**

(CRWWD January 2010)

Air/vacuum valves shall be designed to operate with sanitary sewer under pressure to permit discharging a surge of air from an empty line when filling and relieve the vacuum when draining the system.

Air/vacuum valves shall be APCO series 140C, size as shown on the plans, or approved equal.

(CRWWD January 2010)

Section 9-30.3 is supplemented with the following new sections:

### **9-30.3(9) Check Valves**

(CRWWD January 2010)

Check valves shall be cast iron bodied, swing disc type with bronze resilient seat and with external SS spring and weight and lever with an access port for seat replacement. Check valves shall conform to AWWA C508.

### **9-30.3(10) Duckbill Valves**

(CRWWD January 2010)

Duckbill valves shall be made of Neoprene and shall be slip-on type. The Duckbill valve shall be supplied with stainless steel clamps to secure it to the pipe. Duckbill valves shall be a Series CPO as manufactured by Elasto-Valve Rubber Products Inc. or approved equal.

(CRWWD January 2010)

Division 9 is supplemented with the following new section:

## **9-36 SEWAGE PUMP STATIONS**

### **9-36.1 Sewage Pumps**

Sewage pumps shall be Flygt pumps with N Series impellers, or approved equal with one pump per pump station equipped with a Flygt Mix Flush Valve.

Sewage pumps shall be 600-volt rated, three-phase, 240-volt, equipped with dual 304 SS slides to raise and lower each pump. The pump configuration shall be type NP with twin guide bars on a discharge connection. The motors shall be rated for 1735 RPM, 230 volt, 3-phase, 60 Hertz.

Each pump shall be equipped with a moisture sensor in the motor housing and a thermal overload sensor in each motor winding.

### **9-36.2 Pressure Gauges**

Pressure gauges shall be constructed of type 316 stainless steel, rated to 60 psi; Ashcroft #1009 SW or approved equal. All pressure gauges shall include a

diaphragm seal constructed of type 316 stainless steel; Ashcroft type 315 or approved equal.

### **9-36.3 Flow Meters**

Flow meters shall be Toshiba Flow Tube Magmeter with a Teflon lining; or approved equal.

### **9-36.4 Control Panel**

#### **9-36.4(1) Panel Enclosure**

The panel enclosure shall be a minimum of thirty six (36) inches wide by sixty (60) inches tall by sixteen (16) inches deep and be a free standing, lockable, NEMA 4 enclosure, Hoffman A60H36FLP, or approved equal. The panel enclosure shall be furnished with all necessary fittings and appurtenances as specified in the Plans, Standard Drawings and these specifications.

The floor stand shall be a Hoffman AFK1216, or approved equal. Anchor bolts shall be zinc coated, one-half (½ ) inch diameter conforming to ASTM A 307. Nuts shall meet the requirements of AASHTO M 291. Washers shall meet the requirements of ASTM F 844. All anchor hardware shall be zinc coated in conformance to ASTM F2329.

#### **9-36.4(2) Level Control System**

##### **9-36.4(2)A Level Controller**

The level controller shall be a Hydroranger 200 as manufactured by Siemens.

##### **9-36.4(2)B Float Switches**

The float switches shall be polyurethane foam resin bodies encapsulating mercury tube switches. The float switches shall be Anchor Scientific Inc., roto-float, Type S - Suspended, UL listed for pilot duty and industrial control equipment, or approved equal. The cable shall be 18-2 SJOW/A rated at 600 volts.

##### **9-36.4(2)C Level Controller**

The level controller shall be a Hydroranger 200 as manufactured by Siemens Industry, Inc. using an XPS-15 transducer as manufactured by Militronics, Inc. to deliver a four (4) to twenty (20) milliampere signal to the PLC, or approved equal.

##### **9-36.4(3) Operator Panel**

The operator panel shall be a six (6) inch, color, touch screen display, as manufactured by Automation Direct (part number EA7-T6CL), or approved equal.

##### **9-36.4(4) Flow Meter Converter**

The flow meter converter shall be as manufactured by Toshiba (part number LF602FBC211E).

#### **9-36.4(5) Thermal/leakage Sensor Relays**

The thermal/leakage sensor relays shall be Mini CAS II as manufactured by Flygt.

#### **9-36.4(6) Phase Monitors**

The Phase Monitors shall be SYMCOM #201A, or approved equal.

#### **9-36.4(7) Uninterruptible Power Supply (UPS)**

The UPS shall be a SmartUPS 700 as manufactured by American Power Conversion Corp.

#### **9-36.4(8) Programmable Logic Controller (PLC)**

The PLC shall be Automation Direct D0-06AA, or approved equal.

#### **9-36.4(9) SCADA Radio**

The SCADA Radio shall be an MDS TransNET 900 transceiver as manufactured by General Electric (GE) shall be installed within the control panel and shall include diagnostics software, and an MDS model number 97-3194A13 antenna as manufactured by GE.

#### **9-36.5 Transfer Switches**

Transfer Switches shall be ASCO Series 300 or approved equivalent with a programmable exercise timer, strip heater and position indicator contacts. The transfer switch shall include a portable generator receptacle, installed on the bottom of the enclosure. The receptacle shall be as manufactured by Appleton Electric and shall be Powertite series receptacle sized for the proper amperage. The receptacle shall have a lockable spring cover.

#### **9-36.6 Generator Set**

The generator set and controls shall conform to NEMA (National Electrical Manufacturers' Association), National Electric Code (NEC), and American National Standards Institute (ANSI) and other local standards and codes that may apply.

The engine generator shall:

- a. Be diesel powered.



- b. Have adequate fuel storage to operate for at least twenty-four (24) hours continuous operation.
- c. Be sized to operate all pumps simultaneously, controls, and all ancillary equipment required to operate the sewage pump station.
- d. Be hard wired with auto function on demand.
- e. Be located in a NEMA rated, water-tight enclosure.
- f. Include a battery charger and block heater.
- g. Have all necessary controls and diagnostics to operate the system.
- h. At a minimum, provide for the digital readout of AC volts, AC amperes, frequency and a continuous display of engine vitals, and running time.
- i. Have safety shutdowns for over-cranking, over-speed, low oil pressure and high water temperature.
- j. Be within an enclosure and muffled such that it shall not produce over sixty-eight (68) decibels at twenty (20) feet from the engine generator.
- k. Be anchored to the pad to conform to a plan designed by a licensed structural engineer.
- l. The Contractor shall provide the District with sizing calculations and specifications for written approval.

(CRWWD January 2010)  
Division 10 is added as follows:

## **DIVISION NO. 10**

### **TRENCHLESS TECHNOLOGIES**

#### **10-01 JACKING AND BORING**

##### **10-01.1 Description**

This Work consists of installing pipeline crossings by jacking and boring, and the installation of the sewer main pipe and casing where shown on the Plans.

##### **10-01.2 Materials**

Casing Pipe material shall be ASTM A252 Grade 2 steel, fabricated in sections for welded steel joints. Diameter and wall thickness shall be as shown on the Plans and the District Standard Drawings, but not less than three-eighths (3/8) of an inch. Casing pipe diameters noted on the Plans are inside diameters unless noted otherwise. Steel pipe design to conform to ASTM 120 or AWWA 200.

Spacers shall be PSI Ranger II as manufactured by Pipeline Seal and Insulator, Inc, or approved equal. If the casing is not within alignment tolerances specified on the Plans, Contractor may use Calpico spacers, or approved equal, that are individually designed and manufactured place the sanitary sewer pipe in the proper alignment.

Sand for casing backfill shall be clean sand with 100 percent passing the one-quarter (1/4) inch sieve and no more than four (4) percent passing the U.S. No. 200 sieve.

Review end cap material. End caps for casing pipe are to be plastic caps as manufactured by Cascade Waterworks Manufacturing, or approved equal.

##### **10-01.3 Construction**

All installation shall be in accordance with the requirements of the Plans, District Standard Drawings, County utility permit when in County right of way, City of Battle Ground utility permit when in City of Battle Ground right of way, Railroad or WSDOT franchise requirements when in WSDOT right of way, whichever is more restrictive.

##### **10-01.3(1) Casing Installation**

Casing pipe shall be installed by the jacking method and bored to remove all soil and material from the pipe interior. Except as otherwise shown or specified, any method of jacking and boring, within the limits shown on the Plans.

Alternate methods may be considered by the District, and the Contractor must submit the request in writing with a specific description of the method and reasons

for the alternate method. Alternate methods must be approved by the District in writing, and the District's decision is final.

The Contractor shall hold disturbances of surrounding material to a minimum.

Sluicing and jetting will not be allowed.

The Contractor should install the casing pipe continuously with field welded joints to the line and grade necessary to install the carrier pipe to the line and grade shown on the Plans.

### **10-01.3(2) Carrier Pipe Installation**

The Contractor shall install the sewer pipe in the casing in accordance with the Plans and the District Standard Drawings. Following the completion of the pipe installation and successful testing of the pipe, the Contractor shall fill the casing with sand and plug the ends of the casing with end caps as specified above.

### **10-01.3(3) Jacking and Receiving Pits**

#### **10-01.3(3)A General**

Excavation, shoring and backfill for the jacking and receiving pits shall be in accordance with the requirements of the Plans, District Standard Drawings, County utility permit when in County right of way, City of Battle Ground utility permit when in City of Battle Ground right of way, Railroad or WSDOT franchise requirements when in WSDOT right of way, whichever is more restrictive.

#### **10-01.3(3)B Backfill**

The Contractor shall backfill the jacking and receiving pits in accordance with the requirements of the County, WSDOT, the Plans and Construction Specifications Section 7-08.3(3) Backfilling. All pipe zone and backfill will conform to the standards for other sewer pipe installed in the Work and in accordance with the requirements of the Plans, District Standard Drawings, County utility permit when in County right of way, City of Battle Ground utility permit when in City of Battle Ground right of way, Railroad, or WSDOT franchise requirements when in WSDOT right of way, whichever is more restrictive.

#### **10-01.3(3)C Restoration**

Restoration of the area shall be in accordance with Plans, District Standard Drawings, County utility permit when in County right of way, City of Battle Ground utility permit when in City of Battle Ground right of way, Railroad or WSDOT franchise requirements when in WSDOT right of way, whichever is more restrictive.

### **10-01.4 Measurement**

Measurement will be made for the item Jacking and Boring on a per linear foot basis for each foot of casing, carrier pipe and appurtenances installed to the limits specified on the Plans.

Measurement for sanitary sewer pipe outside the limits of the casing and carrier pipe will be paid for under the individual type and size of sewer pipe.

### **10-01.5 Payment**

Payment will be made in accordance with Section 1-04.1 for "JACKING AND BORING", per linear foot, and shall include excavation and disposal of waste material, trench shoring, dewatering, furnishing and installing carrier and casing pipe with supports, end caps, backfill and compaction, filling the pipe with sand, restoration and erosion control, and all other items of the Work required by the Plans, District Standard Drawings, County utility permit when in County right of way, City of Battle Ground utility permit when in City of Battle Ground right of way, Railroad or WSDOT franchise requirements when in WSDOT right of way, whichever is more restrictive.

(CRWWD January 2010)  
Division 11 is added as follows:

## **DIVISION NO. 11**

### **SEWAGE PUMP STATIONS**

#### **SECTION 11-01 SEWAGE PUMP STATIONS**

##### **11-01.1 Description**

This Work consists of constructing sewage pump stations and appurtenant items including a wetwell, valve vault, controls, electrical service and other items in accordance with the plans, these Specifications, and the Standard Plans.

##### **11-01.2 Materials**

Materials shall meet the requirements of the following sections:

Sewage Pump Stations	9-36
Concrete	6-02
Permeable ballast	9-03.9(2)
Crushed Surfacing Base Course	9-03.9(3)
Manhole External Seal	9-04.12
Manhole Boots	9-04.13
Penetration Seals	9-04.14
Precast Wetwell	9-05.50(6)
Precast Vaults	9-05.50(7)
Access Hatches	9-05.50(8)
Paints	9-08
Timber and Lumber	9-09
Mortar	9-20.4
Manhole Coating	9-26.4
Valves	9-30.3
Ductile Iron Pipe	9-30.1(1)
Ductile Iron Fittings	9-30.2(1)

##### **11-01.3 Construction Requirements**

The pump station shall be located and configured as shown on the Plans. The Contractor shall request in writing, permission to vary from the Plans. The District will respond in writing. Alternate configurations may require different materials to address vehicle loading, drainage, or other considerations at the sole discretion of the District.

The excavation for wetwells and vaults shall be in conformance to Section 2-09.3. Excavation for trenches shall be in conformance to Section 7-08.3.

Wetwells and vaults shall be constructed in conformance to the applicable requirements of Section 7-05.3.

### **11-01.3(1) Dewatering**

The Contractor shall be prepared to suspend further trenching and excavation operations and immediately implement indirect dewatering methods if groundwater seepage causes sloughing or erodes the stability of the trench walls of the excavation. Indirect dewatering may include, but is not limited to, well-point construction, as required to lower groundwater elevations below the trench foundation. The Contractor shall submit a dewatering plan to the Engineer prior to the Preconstruction Conference that when implemented will prevent groundwater seepage into the trench. The dewatering plan shall contain, at a minimum, the number, placement and type of wells proposed, point of discharge, intake and discharge piping, power source and backup and any relative soils information that may be pertinent to the successful operation of the dewatering system.

The Contractor shall file a "Notice of Intent to Construct a Dewatering Well" with the Washington State Department of Ecology and furnish the District a copy before dewatering of the Work begins.

The Contractor shall meet all State and County requirements for disposal of trench water and groundwater from dewatering operations.

The groundwater control system shall be adequate to keep excavations free from water and in a hydrostatically controlled condition during construction. The Contractor shall dewater and dispose of the water so as not to cause injury to public or private property, or to cause a nuisance or a menace to the public. The Contractor shall provide backup systems for all ordinary emergencies including power outage, and shall have available at all times competent workers for the continuous and successful operation of the groundwater control system. The Contractor shall not disable or shut down the system between shifts, on holidays, or weekends, or during work stoppages without written permission from the District.

The Contractor shall maintain water levels at all times and under all conditions a minimum depth below the bottom of all open excavations.

### **11-01.3(2) Wetwell**

The wetwell shall be supported by a minimum of twelve (12) inches of permeable ballast, or as shown on the plans.

A cable trench that connects the wetwell to the pump disconnect panel shall be installed as shown on the plans. The cable trench shall be divided to maintain intrinsically safe wiring from the wet well to the disconnect panel. The top slab shall have a six (6) inch diameter transducer hole as shown on the plans and Standard Drawings.

The wetwell shall be supplied without an interior coating. Manhole interior coating shall be applied after the wetwell is installed and in accordance with Section 7-05.3(6).

Manhole external seal shall be installed over all section joints.

Openings for the inflow pipes and discharge pipes shall be core drilled or factory cast at the elevations shown on the plans. Manhole boots shall be installed at all penetrations 4-inches and greater. Penetration seals shall be installed at all penetrations less than 4-inches.

### **11-01.3(3) Valve Vault**

The vault shall be installed on six (6) inches of crushed surfacing base course.

The joints of the valve vault shall be sealed on the outside with Manhole external seal or approved equal.

A ductile iron drain shall be installed within the valve vault. The floor of the vault shall be sloped toward the drain. The drain shall be piped, with a pea trap, to the wetwell and a duckbill valve installed on the outlet of the drain pipe in the wetwell.

All valves and fittings shall be installed as shown on the plans and in accordance with the Construction Specifications Section 9-30.3 Valves.

The Contractor shall determine prior to installation if the valve vault will accommodate the valves, fittings, flow meter and appurtenances. In addition, the valve vault shall include a working space of eighteen (18) inches around the inside perimeter of the valve vault from any fittings. The Contractor shall submit a working drawing of the Contractor's proposed valve vault layout to the District for written approval prior to installation. District Standard Construction Drawings have a typical plan view for a valve vault, illustrating the detail required on the Contractor's plans.

### **11-01.3(4) Duplex Pump Assembly**

The discharge piping shall be, at a minimum, 4" diameter, Class 52 Ductile Iron Pipe. The Contractor shall provide submittals to the District for review and written approval.

Pumps, motors, electrical wiring, junction boxes and all other items shall be constructed as shown on the plans and in accordance with the Standard Specifications Section 8-20 Illumination, Traffic Signal Systems, and Electrical and the Standard Drawings.

The Contractor shall provide each pump, motor, cable, hangers, two (2) guide rails per pump, piping, and any other appurtenances as shown on the plans that are necessary for a complete installation.

The Contractor shall provide a spare pump, motor, seals, and volute to the District for submersible pumps.

Each motor shall be provided with a circuit breaker, motor starter, and overload with reset, hand-off-auto switch, run time meter and green run light as per the plans.

A pressure gauge shall be installed on the discharge lines from each pump in accordance with the District Standard Drawings.

### **11-01.3(5) Controls and Electrical**

#### **11-01.3(5)A General**

The control panel shall be a NEMA 4, corrosion resistant, painted (gray) steel enclosure. All controls and indicators shall be contained within the control panel.

Pump panel and controls must be reviewed by the Contractor for compatibility with pumps supplied. This would include, but not be limited to, the seal failure and high temperature method of control by the pumps supplied.

The contractor shall make all arrangements with Clark Public Utilities (CPU) to obtain electrical service from the nearest CPU facilities to the pump station and make the connection between CPU power and the sewage pump station wiring. The location of the meter, transformer(s) and junction box will be in the area designated on the Standard Construction Drawing and be approved by and in conformance with Clark Public Utility (CPU) requirements.

When an emergency power generator is required, the Contractor shall supply, install, connect and test the emergency power generator (engine generator) with a transfer switch. The test shall be based on a simulated power failure at the sewage pump station. The generator must be tested with a fully operational pump station. Electrical load banks may be used for preliminary testing but testing for final approval is only acceptable with the 'working' pump station.

Electrical equipment and appurtenances for installation within the wetwell shall be rated for use in a Class 1, Division 1, Group D hazardous location

Terminal blocks shall be screw connection only and used for all electrical connections. Each connection shall be clearly identified.

Electrical panels shall be designed to operate on a 240-volt, three-phase, 60 hertz, four (4) wire service

Vendor's components shall include data sheets that shall include specifications, pictures, dimensions, wiring diagrams, ratings, part numbers, model numbers, and general descriptions of each component's function. Data sheets shall include manufacturer's name, local vendor's name, address, telephone and FAX numbers.

#### **11-01.3(5)B Control Panel**

The Control Panel is to be in conformance to District Standard Drawings.

The control panel shall be fitted with a one-quarter (¼) inch thick, clear polycarbonate inner door as a barrier between the operator and all electrical components. Components mounted on the inner door shall include the level controller, operator panel, flow meter converter, and the two (2) thermal/leakage



sensor relays, as well as the momentary push buttons, indicator lights, HOA switches and door mount operators as shown on the standard drawings. The cabinet shall be supplied with a 120V, 100 watt, thermostatically controlled panel heater and a 120V inner panel light shall be mounted to the top of the cabinet. A 120V red, beacon type alarm light shall be mounted to the top of the cabinet on the exterior.

Wiring shall be neatly bundled and secured with plastic wire ties when located outside the conduit and protected from contact with sharp edges of the control panel sheet metal and from contacting the internal moisture prevention equipment.

Cables and wires will be clearly identified with heat shrink sleeves.

Wiring from the transducer in the wetwell shall include intrinsically safe barriers and relays within the control panel.

Phase Monitors shall be provided in the control panel for ground fault, phase reversal, phase loss, phase imbalance, over current and under voltage. Both pumps shall be shut down and alarms activated if any of these conditions occur.

Provide two (2) standard 120-volt receptacles, with 15-ampere breaker with a GFI inside the control panel.

The control panel shall include an uninterruptible power supply (UPS) for select components.

Engraved Name tags shall be provided for all electrical components in the control panel on or above each component as shown on the District Standard Construction Drawings.

### **11-01.3(5)C Level Control System**

Alarm and control panel wiring shall not be spliced.

One mercury float switch shall be provided to control the backup high level alarm for the sewage pump system. Provide intrinsically safe relays. The mercury float switches shall be dedicated to the following functions:

- c. High level alarm
- d. Emergency On - PLC Bypass

The Contractor shall provide a programmable logic controller (PLC) for operation of the sewage pump station and a program for the PLC. The PLC shall be programmed for operation, tested, and a complete set of documentation, and programming and programmer provided to the District. The PLC shall control the following pump operations:

- f. Pumps off
- g. Lead pump on
- h. Lag pump on

- i. Long run time
- j. High level alarm
- k. Seal fail motor shutdown
- l. High temp motor shutdown

The inputs and outputs for the PLC shall be as follows:

Fixed outputs on PLC:

AC(L)	H1 (JUMPER TO C0)
G	(JUMPER TO LG)
AC(N)	NEUTRAL
LG	GROUND
24v	+ 24
0V	-24
C0	(JUMPER TO C1)
Y0	PUMP #1
Y1	PUMP #2
Y2	HIGH ALARM LT. DOOR
Y3	SEAL FAIL PUMP#1
C1	(JUMPER TO C2)
Y4	SEAL FAIL PUMP#2
Y5	HIGH TEMP #1
Y6	HIGH TEMP #2
C2	(JUMPER TO C3)
Y7	LOW ALARM LT
Y10	PHASE FAIL INPUT
Y11	SPARE INPUT
Y12	ALARM BEACON
Y13	MTR #1 EXCESSIVE RUN TIME OUTPUT
C3	
Y14	MTR #2 EXCESSIVE RUN TIME OUTPUT
Y15	SPARE OUTPUT
Y16	SPARE OUTPUT
Y17	OUTPUT READ BY MASTER PLC FOR HEARTBEAT (ON BY SPECIAL RELAY ALWAYS ON)
N.C.	

Fixed Outputs on PLC:

CO	(JUMPER TO C1)
X0	PUMP 1 HAND TO PLC (SWITCH ALSO WIRED DIRECT TO MOTOR)
X1	PUMP 1 AUTO
X2	PUMP 2 HAND TO PLC (SWITCH ALSO WIRED DIRECT TO MOTOR)
X3	PUMP 2 AUTO
C1	(JUMPER TO C2)
X4	HIGH LEVEL ALARM FLOAT
X5	BACKUP ON FLOAT INPUT
X6	BACKUP OFF FLOAT INPUT
X7	SPARE INPUT
C2	(JUMPER TO C3)
X10	3□ MONITOR
X11	RESET

X12 SEAL FAIL FOR PUMP 1  
 X13 SEAL FAIL FOR PUMP 2  
 C3 (JUMPER TO C4)  
 X14 HIGH TEMP FOR PUMP 1  
 X15 HIGH TEMP FOR PUMP 2  
 X16 SPARE INPUT  
 X17 SPARE INPUT  
 C4 NEUTRAL  
 X20 SPARE INPUT  
 X21 SPARE INPUT  
 X22 SPARE INPUT  
 X23 SPARE INPUT  
 N.C.  
 N.C.

Slot 1 F0-04AD-1 4 channel analog input:

5. (+-) 4-20MA INPUT FROM HYDRO-RANGER 200 (TIE COMMON NEG 24V WITH PLC, NEG 24V)
6. (CT1+ CT1-) 4-20MA INPUT FROM MTR #1 CT (SOURCE VOTAGE FROM PLC 24V DC)
7. (CT2+ CT2-) 4-20MA INPUT FROM MTR #2 CT (SOURCE VOTAGE FROM PLC 24V DC)
8. (+-) TOSHIBA FLOW METER

The Contractor shall install the control enclosure including installation, programming and testing.

#### **11-01.3(5)D Telemetry**

A spare two (2) inch diameter conduit shall be installed for future telephone and telemetry wiring. The conduit shall be installed from the control panel to one (1) foot past the edge of pavement with a nylon cord installed and capped as shown on the plans and the District Standard Drawings. A permanent marker will be installed at the edge of the concrete slab marking the location of the spare conduit.

The transceiver shall be connected to an antenna mounted in the location shown on the plans.

#### **11-01.3(5)E Pump Disconnect Panel**

The Pump Disconnect Panel shall be installed in the location shown on the Plans. The Pump disconnect Panel shall be constructed in accordance with the Plans, Specifications, and the Standard Plans.

#### **11-01.3(5)F Transfer Switch**

The Transfer Switch shall be installed in the location shown on the Plans. The Transfer Switch shall be constructed in accordance with the Plans, Specifications, and the Standard Plans.

### **11-01.3(6) Generator Set**

When indicated on the plans, a permanent engine generator shall be provided, installed, and tested in accordance with the Plans, Specifications and Standard Drawings.

The Contractor shall obtain all necessary building permits.

### **11-01.3(6)A Generator Pad**

The concrete pad for the generator shall be constructed of Commercial Concrete, and shall be in accordance with the Plans, Specifications, and Standard Plans.

### **11-01.3(7) Control Panel Shelter**

A shelter shall be constructed over the control panel. The shelter shall be in conformance with the District's Standard Drawings and shall include a commercial concrete pad as shown on the Plans. The Contractor shall obtain all necessary building permits.

### **11-01.3(8) Startup and Testing**

It is the Contractor's responsibility to furnish all equipment, labor, and materials for startup and testing.

Operation of each of the components of the sewage pump station shall be demonstrated during the startup. This includes filling the wetwell with water to activate each of the floats observing the high water alarm, starting of the pumps, raising and lowering the pumps, etc.

The Contractor shall use the District document titled "START-UP REPORT FORM" and complete all the required testing and documentation outlined on the form to the satisfaction of the District.

The Contractor shall provide the Operations and Maintenance manual and final record drawing electrical plans to the District at least ten (10) working days prior to startup to enable PLC program verification prior to the sewage pump station startup. The Contractor shall provide two full working days advance written notice to the District Inspector prior to startup.

The Contractor shall provide the services of a factory-trained representative for a minimum period of one (1) day to perform the initial startup of the sewage pump station. During this time, the factory trained representative shall instruct all District personnel, who will be operating the sewage pump station, in the required maintenance and service procedures. The factory-trained representative shall operate the station for additional days if necessary to perform the startup

successfully to the District requirements and to fully train the District personnel to be capable of operating the sewage pump station.

#### **11-03.3(9) Conditional Acceptance**

Conditional acceptance of any mechanical, electrical or instrumentation installation shall be predicated upon the completion of tests and checks required by the District Specifications, Amendments to the Standard Specifications and Standard Drawings.

#### **11-03.3(10) Operation and Maintenance Manual**

The Contractor shall provide to the District a minimum of three (3) bound copies of an operation and maintenance manual for the sewage pump station on letter size paper. All drawings that are part of the operation and maintenance manual shall be reduced to eleven (11) inch by seventeen (17) inch and be included in the manual.

The operation and maintenance manual, as a minimum, shall include the following:

- a. The contract documents.
- b. The record drawings.
- c. Product information, including brochures.
- d. Start-up procedures.
- e. Written narrative.
- f. Photo documentation.
- g. Maintenance requirements.
- h. Test results and verification.
- i. Warranty-time periods and stipulations.
- j. Wiring schematics, including telemetric and alarm floats.
- k. The PLC program with documentation including one (1) paper copy with documentation, one (1) paper copy without documentation and one (1) electronic copy of PLC program.
- l. The HydroRanger operating program and instructions with one (1) paper copy.
- m. Engine generator operation and maintenance instructions including one (1) paper copy.
- n. A bill of materials for each item including quantity; voltage rating; manufacturer; model and part numbers; local supplier's company name, name of representative, address, telephone number and e-mail address. The bill of materials shall be referenced to the panel or site layout plans for easy identification.
- o. All manuals for the PLC, CPU and associated modules.

#### **11-03.3(11) Guarantees**

The pumps and the wet well interior coating shall be guaranteed for a period of five (5) years from the date of the District letter of acceptance for the Work.

#### **11-01.4 Measurement**

No unit of measure will apply to the lump sum item of "Dewatering".

“Wetwell” will be measured per each.

“Duplex Pump Assembly” will be measured per each.

No unit of measure will apply to the lump sum item of “Control Panel and Electrical”.

“Valve Vault” will be measured per each.

“Generator Set” will be measured per each.

“Transfer Switch” will be measured per each.

“Control Panel Shelter” will be measured per each.

No unit of measure will apply to the lump sum item of “Start-up and Testing”.

No unit of measure will apply of the lump sum item of “Operations and Maintenance Manual”.

### **11-01.5 Payment**

Payment will be made in accordance with Section 1-04.1, for each of the following Bid items that are included in the Proposal:

“Dewatering”, per lump sum.

The unit Contract price per lump sum for “Dewatering” shall include all labor, materials, and equipment necessary to perform Dewatering in accordance with the Plans and specifications.

“Wetwell”, per each.

The unit contract price per each for “Wetwell” shall include all labor, materials, and equipment necessary to furnish and install the wetwell and all appurtenant items in accordance with the Plans, Specifications and Standard Plans.

“Duplex Pump Assembly”, per each.

The unit Contract price per each for “Duplex Pump Assembly” shall be full pay for furnishing and installing two pumps, two motors, extenders, pressure pipe, fittings, reducers, bends, and spare parts.

“Controls and Electrical”, lump sum.

The unit Contract price per lump sum for “Controls and Electrical” shall be full pay for furnishing and installing the Control Panel, Level Control System, Manual Transfer Switch, Pump Disconnect Panel, conduit, wire, all necessary electrical components and provision of power supply from Clark Public Utilities to provide a complete and functioning control system per the Plans, Specifications and Standard Plans.

“Valve Vault”, per each.

The unit Contract price per each for “Valve Vault” shall be full pay for furnishing and installing the valve vault, including all piping, valves, flow meter, gauges and other

appurtenant items to provide a complete installation in accordance with the Plans, Specifications and Standard Plans.

“Generator Set”, per each.

The unit Contract price per each for “Generator Set” shall be full pay for furnishing and installing the engine generator with enclosure, controls, block heater, battery charger, concrete pad, electrical equipment, automatic transfer switch, wiring, conduit, appurtenances, start up and testing.

“Control Panel Shelter”, per each.

The unit Contract price per each for “Control Panel Shelter” shall be full pay for furnishing and installing a complete control panel shelter and concrete pad in accordance with the Plans, Specifications and Standard Plans.

No unit of measure will apply to the lump sum item of “Start-up and Testing”.

No unit of measure will apply of the lump sum item of “Operations and Maintenance Manual”.

The contract price for the appropriate bid items shall include all labor, materials, and equipment necessary for installation, testing, and start-up of the pump station in accordance with the Plans and specifications, including items not specifically itemized in the bid documents to provide a complete “turn key” operational sewage pump station.

# APPENDIX "B"

## STANDARD DRAWINGS