Appendix N

Standard Specifications for Sanitary Sewer

City of Richland

Standard Special Provisions Update

(December 15, 2010)

The following changes are made to the City of Richland Standard Special Provisions. For information only, an outline of the changes is listed below:

WSDOT GSP
Description of Work
Added

APWA GSP
1-01.3 Definitions
Updated

Richland GSP
1-02.1 Qualifications of Bidder
Replaced with APWA GSP

APWA GSP
1-02.1 Qualifications of Bidder
Added

APWA GSP
1-02.1(1) Supplemental Qualifications Criteria
Added

APWA GSP
1-02.13 Irregular Proposals
Updated

Richland GSP
1-02.14 Disqualification of Bidders
Replaced with APWA GSP

APWA GSP
1-02.14 Disqualification of Bidders
Added

WSDOT GSP
1-07.16 Protection and Restoration of Property
Added

WSDOT GSP
1-07.17 Utilities and Similar Facilities
Updated

Richland GSP
1-07.17(3) Underground Utility Crossings – Marked and Unmarked
Updated

Richland GSP
1-07.18 Insurance
Added

APWA GSP
1-07.23(1) Construction Under Traffic
Deleted: This GSP has been included in the 2010 WSDOT Standard Specification book.

APWA GSP
1-07.23(2) Construction and Maintenance of Detours
Deleted: This GSP has been included in the 2010 WSDOT Standard Specification book.

APWA GSP
1-08.0(1) Preconstruction Conference
Updated

RICHLAND GSP
1-08.0(4) Submittals
Updated: changed submittals from (4) sets to (3) hard copy sets and (1) pdf

Richland GSP
1-08.3(1) Weekly Meeting
Added

Richland GSP
1-08.5 Time for Completion
Added: estimated liquidated damages
Deleted: third Monday of January as a Holiday
Added: Christmas Eve as a Holiday

APWA GSP
1-09.9 Payments
Added

Richland GSP
1-09.9 Payments
Changed from replacing to supplementing

WSDOT GSP
1-10.1(2) Description
Deleted: This GSP has been included in the 2010 WSDOT Standard Specification book.

WSDOT GSP
1-10.2(1) General
Updated

Richland GSP
2-03.4 Measurement
Replaced with WSDOT GSP

WSDOT GSP
2-03.4 Measurement
Added

Richland GSP
4-04.4 Measurement
Updated: Crushed surfacing top and base course will be measured by the cubic yard to the neat lines (in-place) for roadway; and under sidewalks, ramps, driveways and other structures identified in Section 8.

Richland GSP
4-04.5 Payment
Deleted: payment of crushed surfacing top and base course by the ton. Payment will only be made by the cubic yard to the neat lines (in-place).

APWA GSP
5-04.3(8)A Acceptance Sampling and Testing – HMA Mixture
Deleted: This GSP has been included in the 2010 WSDOT Standard Specification book.

Richland GSP
5-04.5 Payment
Updated: Changed the payment description and deleted the crushed surfacing top course as incidental to "Asphalt Conc. Sidewalk".

Richland GSP
7-08.2 Materials
Added

Richland GSP
7-08.3(1)A Trenches
Updated: changed "Alternative" Trench Detail to "Ground Water" Trench Detail.

Richland GSP
7-08.4 Measurement
Deleted: "(except with use of Alternative Trench Section)" from paragraph 2.
Deleted: "dewatering, furnishing and installing bedding" from paragraph 2.
Deleted: measurement for "Alternative Trench Section".
Added: "imported and" to measurement for "imported pipe zone bedding.

Richland GSP
7-08.5 Payment
Deleted: payment for "Alternative Trench Section".
Added: City's Ground Water Detail pay items.

Richland GSP
7-09.3(7) Trench Excavation
Deleted: second paragraph referencing "City's Alternative Trench Detail"

Richland GSP
7-08.4 Measurement
Deleted: "dewatering" from the first paragraph.
Deleted: measurement of "alternate trench section".

Richland GSP
7-08.5 Payment
Deleted: payment for "Alternative Trench Section".

Richland GSP
7-09.3(24)
Added: AWWA spec reference

Richland GSP
7-09.3(24)N
Added: Water main into service procedure

Richland GSP
7-12.3 Construction Requirements
Updated: changed “temporary” to “construction” in paragraph 2.

Richland GSP
7-12.5 Payment
Deleted: these pay items are included in the 2010 WSDOT Standard Specification book

Richland GSP
7-15.3 Construction Requirements
Updated: Deleted references to Missiling. The boring method includes the option to missile.

Richland GSP
7-17.2 Materials
Updated: changed the pipe material spec for (18 inch and larger) and (15 feet and deeper).

Richland GSP
8-04.3(1) Cement Concrete Curbs, Gutters, and Spillways
Added: all concrete to be Class 4000 concrete.

Richland GSP
9-03.8(7) HMA Tolerances and Adjustments
Changed the plus “0.5%” to “0.25%”

CITY OF RICHLAND
STANDARD SPECIAL PROVISIONS

Updated December 15, 2010

CITY OF RICHLAND, WASHINGTON

SPECIAL PROVISIONS

The following Special Provisions are made a part of this contract and supersede any conflicting provisions of the 2010 Standard Specifications for Road, Bridge and Municipal Construction, and the foregoing Amendments to the Standard Specifications.

INTRODUCTION TO THE SPECIAL PROVISIONS

(July 31, 2007 APWA GSP)

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 Special Provisions, all of which are made a part of the Contract Documents, shall govern all of the Work.

These 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 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 not apply.

The project-specific Special Provisions are not labeled as such. The GSPs are labeled under the headers of each GSP, with the date of the GSP and its source, as follows:

(May 18, 2007 APWA GSP)
(August 7, 2006 WSDOT GSP)
(December 15, 2010 Richland GSP)

Also incorporated into the Contract Documents by reference are:

- 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
- Richland Standard Plans
- Richland Material Lists for Water, Sewer and Storm

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

DIVISION 1
GENERAL REQUIREMENTS

DESCRIPTION OF WORK
(March 13, 1995 WSDOT GSP)

This contract provides for the construction of ***$$$***; and other incidental work all in accordance with the attached Contract Plans, these Contract Provisions, and the Standard Specifications.

1-01 DEFINITIONS AND TERMS

1-01.3 Definitions
Supplement this section 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.

Supplement this Section with the following:
(November 10, 2009 Richland GSP)

Definitions (Richland)

The following terms have the meanings indicated which are applicable to both the singular and plural thereof:

Agreement
The written Agreement between the City and Contractor covering the Work to be performed; other parts of the Contract Manual are attached to and part of the Agreement.

Application for Payment
The form furnished by the Engineer which is to be used in requesting progress payments and an affidavit of Contractor that progress payments theretofore received because of the Work have been applied by Contractor to discharge in full all of Contractor's obligations reflected in prior Applications for Payment.

Bonds
Bid, Performance, Payment Bonds, and other instruments of security, furnished by the Contractor and his surety in accordance with the Contract Manual.

Change Order

A written order to the Contractor signed by the City authorizing an addition, deletion, or revision in the Work, or an adjustment in the Contract Price or the Contract Time issued after execution of the Agreement.

The City
The City of Richland, a public body, acting through its legally constituted officials, officers, or employees.

Contract Manual
The Agreement, Addenda, Instructions to Bidders, Contractor's Bid, Proposal, the Bonds, the Notice of Award, General Conditions, the Special Conditions, the Specifications, Drawings, City of Richland Standards (latest revision), and Modifications.

Contract Price
The total moneys payable to the Contractor under the Contract Manual, not including any applicable taxes.

Day
A calendar day of twenty-four (24) hours measured from midnight to the next midnight.

Drawings
The Drawings which show the character and scope of the Work to be performed and which have been prepared or approved by the City and are referred to in the Contract Manual.

Engineer
The City Engineer.

Field Order
A Field Order is a written direction of minor changes or alterations in the work given by the Engineer to avoid undue delay in project work. Field Orders and associated documentation will be used in the preparation of change orders.

Modification
(a) a written amendment to the Contract Manual signed by both parties; (b) a Change Order; (c) a written clarification or interpretation issued by the Engineer in accordance with Section 1-02.4 or (d) a written order for minor change or alteration in the Work issued by the Engineer pursuant to Section 1-04.4. A Modification may only be issued after execution of the Agreement.

Project
The entire construction to be performed as provided in the Contract Manual.

Resident Project Representative or Inspector
An authorized representative of the City, acting through the Engineer, who is assigned to the Project site or any part thereof.

Shop Drawings
All drawings, diagrams, illustrations, brochures, schedules, and other data which are prepared by the Contractor, a Subcontractor, manufacturer, supplier, or distributor which illustrate the equipment, material or some portion of the Work.

Substantial Completion
A project is considered Substantially Complete when the following items, as applicable, are complete and operational with un-obstructed access to all valves and structures: curb, gutter, sidewalk, HMA, storm drainage systems, water, sanitary sewer, street lights, traffic

signals, landscaping, irrigation systems, communication conduits, electrical conduits, and other items as listed in the bid proposal.

Working Day
Calculated / defined by Section 1-08.5.

1-02 BID PROCEDURES AND CONDITIONS

1-02.1 Prequalification of Bidders

1-02.1 Qualifications of Bidder
Delete this Section and replace it with the following:
(March 25, 2009 APWA GSP)

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)."

1-02.1(1) Supplemental Qualifications Criteria
Add the following new section:
(March 25, 2009 APWA GSP)

In addition, the Contracting Agency has established Contracting Agency-specific and/or project-specific supplemental criteria, in accordance with RCW 39.04.350(2), for determining Bidder responsibility, including the basis for evaluation and the deadline for appealing a determination that a Bidder is not responsible. These criteria are contained in the Instruction for Bidders and/or the Special Provisions.

1-02.2 Plans and Specifications
Delete this Section and replace it with the following:
(October 1, 2005 APWA GSP)

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")	5	Furnished automatically
Large plans (22" x 34")	2	Furnished automatically (if applicable)
Contract Provisions	5	Furnished automatically

Additional plans and Contract Provisions may be purchased by the Contractor.

1-02.5 Proposal Forms
Delete this Section and replace it with the following:
(October 1, 2005 APWA GSP)

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 are 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 interlineations, 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/W/MBE requirements are to be satisfied through such an agreement.

1-02.7 Bid Deposit
Supplement this Section with the following:
(October 1, 2005 APWA GSP)

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
Revise the first paragraph to read:
(October 1, 2005 APWA GSP)

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.

Supplement this Section with the following:
(November 10, 2009 Richland GSP)

Bids must be submitted in sealed envelopes bearing on the outside, the name and address of the bidder, the name of the project, for which the bid is submitted, and the time and date of the bid opening. Bids are to be delivered to the City of Richland, Purchasing Division, City Shops Building 100, 2700 Duportail Street. If bid is forwarded by mail, the sealed envelope containing the bid and marked as directed above, must be enclosed in another envelope addressed to the City Shops Complex, Purchasing Department, 2700 Duportail Street, Building 100, Richland, Washington 99352.

1-02.13 Irregular Proposals
Revise item 1 to read:
(March 25, 2009 APWA GSP)

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; or
   i. The bid proposal does not constitute a definite and unqualified offer to meet the material terms of the bid invitation.
   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
Delete this Section and replace it with the following:
(March 25, 2009 APWA GSP, Option B)

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

Revise this Section to read:

(October 1, 2005 APWA GSP)

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

Revise the first paragraph to read:

(January 23, 2006 APWA GSP)

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

Revise this Section to read:

(October 1, 2005 APWA GSP)

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

Revise the first paragraph to read:

(October 1, 2005 APWA GSP)

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 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).

1-04 SCOPE OF WORK

1-04.1 Intent of the Contract

1-04.1(2) Bid Items Not Included in the Proposal

Replace this Section with the following:

(November 10, 2009 Richland GSP)

All labor, equipment and materials required for the manufacturing and installation of this project shall be incorporated into the bid items as provided in the bid proposal. Payment for general construction items that are not listed in the bid proposal are indicative of the fact that the items of work not listed are considered as incidental to the bid items listed in the proposal, even though the Standard Specifications may call for a separate measurement and payment. Unless the work to be performed is specifically called out in the proposal, measurement and payment for such work shall be included in other applicable items of the proposal.

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

Revise the second paragraph to read:

(October 1, 2005 APWA GSP)

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.

1-04.3 Pre-Bid Site Inspection
Section 1-04.3 is added as follows:
(November 10, 2009 Richland GSP)

The Contractor is encouraged to inspect the project site prior to submitting a bid.

1-05 CONTROL OF WORK

1-05.4 Conformity With and Deviations from Plans and Stakes
Add the following four new sub-sections:
(November 10, 2009 Richland GSP)

1-05.4(1) Roadway and Utility Surveys

Construction surveying will be provided by the City on City funded Capital Improvement Project. The City will furnish to the Contractor one time only all principal lines, grades and measurements the Engineer, deems necessary for completion of the work per the design drawings. At a minimum, these shall consist of:

1. Slope stakes on 100 foot intervals, or alignment changes, or at grade breaks.
2. Sub-grade hub for center line shall be placed at 50 foot intervals on tangents and at alignment changes and on 25 foot intervals in curves.
3. Curb grade stakes shall be placed at 50 foot intervals on tangents and at alignment changes and on 25 foot intervals in curves. Curb returns will be staked with a radius point, PC, Mid-point and PT, and at catch basins and grade breaks. **Said stakes shall be in reference to Top back of Curb.**
4. Top of base course and top course hub with chasers will be placed at 50 foot intervals on tangents and at alignment changes and at 25 foot intervals on curves as needed, at the centerline of roads up to 36 feet in width. Quarter crown points **may be required** on wider road sections.
5. Hubs at offset points to establish line and grade for underground utilities shall be placed on 50 foot intervals on tangents and at alignment changes and at 25 intervals on curves as needed.

The following requirements must be met for all survey work:

1. A minimum of 48 hours notice must be given to the project inspector for scheduling all survey work.
2. The entire section of roadway must be smooth, compacted and within 0.15 +/- of design grade being staked.
3. The Contractor shall provide all necessary traffic control including a flagger or spotter if requested. The area to be surveyed shall also be free from Contractor equipment traffic.

1-05.4(2) Bridge and Structure Surveys

For all structural work such as bridges and retaining walls, the Contractor shall retain as a part of Contractor's organization an experienced team of surveyors.

The Contractor shall provide all surveys required to complete the structure, except when a Capital Improvement Project is administered by the City, the City will provide the following primary survey control:
1. Centerline or offsets to centerline of the structure.
2. Stations of abutments and pier centerlines.
3. A sufficient number of bench marks for levels to enable the Contractor to set grades at reasonably short distances.

4. Monuments and control points as shown in the Plans.

The Contractor shall establish all secondary survey controls, both horizontal and vertical, as necessary to assure proper placement of all project elements based on the primary control points provided by the Engineer. Survey work shall be within the following tolerances:

Stationing	+/- 0.10 foot
Alignment	+/- 0.10 foot (between successive points)
Superstructure Elevations	+/- 0.05 foot (from plan elevations)
Substructure Elevations	+/- 0.05 foot (from plan elevations)

During the progress of the work, the Contractor shall make available to the Engineer all field books including survey information, footing elevations, cross sections and quantities.

The Contractor shall be fully responsible for the close coordination of field locations and measurements with appropriate dimensions of structural members being fabricated.

1-05.4(3) Surveying Grade Staking Tolerances

The Contractor shall ensure a surveying accuracy within the following tolerances:

	Vertical	Horizontal
Slope Stakes	+/- 0.10'	+/- 0.10'
Subgrade Stakes	+/- 0.05'	+/- 0.05'
Base Course Stakes	+/- 0.05'	+/- 0.05'
Top Course Stakes	+/- 0.05'	+/- 0.05'
Curb Stakes	+/- 0.05'	+/- 0.10'

1-05.4(4) Land Corner and Control Monuments

All existing land corner and survey control monuments shall be carefully preserved. Before disturbing any existing monuments, the Contractor shall request, through the Inspector, with no less than three (3) days notice that reference stakes be set beyond the limits of the work. The Contracting Agency shall set reference points only once and the Contractor shall take necessary care to preserve said reference stakes. The Contracting Agency will deduct from payments due the Contractor all costs to replace such stakes, marks and monuments carelessly or willfully damaged or destroyed by the Contractor's operation.

1-05.7 Removal of Defective and Unauthorized Work
Supplement this Section with the following:
(October 1, 2005 APWA GSP)

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.

Supplement this Section with the following:
(November 10, 2009 Richland GSP)

Hot mix asphalt that is rejected on new roadway construction and overlays shall require the replacement of that half of the roadway this is rejected, a minimum of 100 feet longitudinally, either side of the rejected area. Hot mix asphalt that is rejected for trench patching shall require the replacement of the entire patch width, a minimum of 100 feet longitudinally, either side of the rejected area. If two rejected areas are within 200 feet from outer edges of each other, the replacement will extend between the areas.

1-05.11 Final Inspection
Delete this Section and replace it with the following:
(October 1, 2005 APWA GSP)

1-05.11 Final Inspections and Operational Testing

1-05.11(1) 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.

1-05.11(2) 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.

1-05.11(3) 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.

1-05.12 Final Acceptance

1-05.12(A) One Year Correction Period
Section 1-05.12(A) is added as follows:
(November 10, 2009 Richland GSP)

Within one-year of the Physical Completion Date of the project, or such longer period of time as may be prescribed by law or by the terms of any applicable special guarantee required by the Contract Manual, any Work that is found to be defective the Contractor shall promptly correct. Contractor's correction of Work shall be at no cost to the City and in accordance with City's written instructions, or, if work has been rejected by City, Work shall be removed from the site and replaced with non-defective Work. If Contractor does not promptly comply with the terms of such instructions, the procedures for correcting defective Work outlined in Section 1-05.7, shall be followed. All direct and indirect costs of such removal and replacement, including compensation for additional professional services, shall be paid by Contractor.

1-05.12(B) Record Drawings
Section 1-05.12(B) is added as follows:
(November 10, 2009 Richland GSP)

The Contractor shall be responsible for maintaining accurate on-site "Record Drawings" during construction. Changes or deviations from the project drawings shall be noted and updated on a daily basis. Upon completion of construction, the Contractor shall submit his "Record Drawings" to the Engineer for incorporation into the final completed project drawings.

Costs for all labor, materials, tools and equipment necessary to provide record drawings shall be considered incidental to the project. Physical Completion will not be granted until the Record Drawings have been submitted to the Engineer.

1-05.13 Superintendents, Labor and Equipment of Contractor
Revise the seventh paragraph to read:
(May 25, 2006 APWA GSP)

Whenever the Contracting Agency evaluates the Contractor's qualifications pursuant to Section 1-02.1, it will take these performance reports into account.

1-05.14 Cooperation With Other Contractors
Supplement this Section with the following:
(November 10, 2009 Richland GSP)

No additional compensation will be given to the Contractor for any coordination or delays caused by other nearby construction projects.

1-05.16 Water and Power
Section 1-05.16 is added as follows:
(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.

Supplement this Section with the following:
(November 10, 2009 Richland GSP)

When a Capital Improvement Project is administered by the City, the City will provide a water source for dust control, compaction, placement of crushed surfacing, pipe line installation, flushing and testing, etc. at available fire hydrant locations, within the construction area only. The Contractor shall pay a $750.00 meter deposit to be refunded at the end of the project if the meter is returned undamaged.

1-05.17 Oral Agreements
Section 1-05.17 is added as follows:

(October 1, 2005 AWPA 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

Revise the first paragraph to read:

(November 10, 2009 Richland GSP)

Prior to use, the Contractor shall notify the Engineer of all proposed materials. The Contractor shall use the City of Richland Materials List or the Request for Approval of Material (RAM) form. Materials included in the Qualified Products List (QPL) but not on the City's Material List will be taken under consideration by use of the RAM form.

1-06.2 Acceptance of Materials

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

This Section is deleted in its' entirety.

(November 10, 2009 Richland GSP)

1-07 LEGAL RELATIONS AND RESPONSIBILITIES TO THE PUBLIC

1-07.1 Laws to be Observed

Supplement this Section with the following:

(October 1, 2005 APWA GSP)

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:

(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

1-07.4(2) Health Hazards
Supplement this Section with the following:
(November 10, 2009 Richland GSP)

The Contractor and all Subcontractors shall comply with WAC 296-809 for confined spaces and provide any required hazard protection for employees.

1-07.6 Permits And Licenses
Supplement this Section with the following:
(November 10, 2009 Richland GSP)

The Contractor shall obtain a City of Richland right-of-way permit for all work within this contract prior to the start of work. On Capital Improvement Projects administered by the City, the City will wave the permit fee.

The Richland City Council has passed ordinances requiring that a Contractor have a City Business License. In accordance with these ordinances, a City of Richland Business License is required prior to conducting business within the City limits.

1-07.16 Protection and Restoration of Property
Supplement this Section with the following:
(December 15, 2010 Richland GSP)

The Contractor shall notify the adjacent property owners of the construction actives prior to commencing work. Method of notification shall be submitted to the Engineer for approval. Additional notifications may be required as the work progresses.

1-07.17 Utilities and Similar Facilities
Supplement this Section with the following:
(April 2, 2007 WSDOT GSP)

Locations and dimensions shown in the Plans for existing facilities are in accordance with available information obtained without uncovering, measuring, or other verification.

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:

City of Richland – Water Department	Scott Siefken	(509) 531-7915
City of Richland – Sewer / Storm Dept	Vern McGraw	(509) 942-7483
City of Richland – Streets Department	Dave Pardini	(509) 942-7524
City of Richland – Energy Services	Jim Leip	(509) 942-7422
Charter Communications	Dean Kelley	(509) 222-2665
Frontier Communications NW	Shawn McVay	(509) 736-3722
Cascade Natural Gas	Ron Coffell	(509) 240-5887
Call Before You Dig		**1-800-424-5555**

1-07.17(3) Underground Utility Crossings – Marked and Unmarked
Section 1-07.17(3) is added as follows:
(December 15, 2010 Richland GSP)

Utility crossings are common during pipe laying and boring construction and unexpected utility crossings are probable. The utilities identified on the plans were identified in accordance with available information.

Service lines are difficult to locate precisely. The Contractor shall use surface features and other evidence as well as locate marks in determining the approximate locations prior to excavation.

When excavating or boring in the vicinity of fiber optic cable, telephone lines, electrical power lines or gas lines, the Contractor shall exercise extreme caution to prevent damage to the utilities or danger to worker and/or nearby citizens. If such utilities are uncovered, the Contractor shall contact representatives of the owning utility to examine the facilities before they are backfilled.

During mainline installation the Contractor shall hand dig to expose existing utilities. For water line construction, the Contractor shall uncover all marked utilities a minimum of 100' ahead of water line placement. A new water main may require additional depth of bury, beyond the typical 48" minimum cover depth. For all other utility lines, the Contractor shall uncover all utilities between each mainline structure prior to placing pipe. Any utility conflicts identified shall be brought to the attention of the Engineer. During boring operations the Contractor shall uncover utilities for depth verification as needed or identified by the Engineer.

Any underground utility line of any size with less than a 6" horizontal separation from another underground line shall be considered a single utility crossing up to 24".

Any underground utility line damaged by the Contractor shall be restored to its' original condition. Crossing above an existing underground utility shall not be considered a utility crossing. Irrigation lines under 2" in diameter shall not be considered a utility crossing.

If a utility is determined to be abandoned and the Engineer approves, the utility may be cut and removed for the crossing. All costs to cut, remove, and plug the abandoned line are the sole responsibility of the Contractor.

"Underground Utility Crossings – Marked and Unmarked" per each.
The unit contract price per each shall be full payment for furnishing all labor, materials, equipment and supervision necessary to identify, uncover, protect and restore, cut and plug, and cross an underground utility.

1-07.18 Public Liability and Property Damage Insurance
Delete this section in its entirety, and replace it with the following:
(May 10, 2006 APWA GSP)

1-07.18 Insurance

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

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 Insurance

Supplement this section with the following:

(December 15, 2010 Richland GSP)

Indemnification / Hold Harmless

The Contractor shall defend, indemnify and hold the City, its officers, officials, employees and volunteers harmless from any and all claims, injuries, damages, losses or suits including attorney fees, arising out of or in connection with the performance of this Agreement, except for injuries and damages caused by the sole negligence of the City.

Should a court of competent jurisdiction determine that this Agreement is subject to RCW 4.24.115, then, in the event of liability for damages arising out of bodily injury to persons or damages to property caused by or resulting from the concurrent negligence of the Contractor and the City, its officers, officials, employees and, volunteers, the Contractor's liability hereunder shall be only to the extent of the Contractor's negligence. It is further specifically and expressly understood that the indemnification provided herein constitutes the Contractor's waiver of immunity under Industrial Insurance, Title 51 RCW, solely for the purposes of this indemnification. This waiver has been mutually negotiated by the parties. The provisions of this Section shall survive the expiration or termination of this Agreement.

1-07.23 Public Convenience And Safety

1-07.23(1) Construction Under Traffic

Supplement this Section with the following:

(November 10, 2009 Richland GSP)

6. Maintain existing sidewalk and path routes, keeping them open, through the project limits by placing gravel or temporary ramps in sidewalk removal areas. No drop off greater than 1 inch will be allowed along the route with temporary ramps not to exceed a 12:1 slope.
7. Sidewalks, pathways, driveways, and ramps which have been removed shall be replaced within 14 calendar days to their final configuration.

Supplement this Section with the following:

(April 2, 2007 WSDOT GSP)

Work Zone Clear Zone

The Work Zone Clear Zone (WZCZ) applies during working and nonworking hours. The WZCZ applies only to temporary roadside objects introduced by the Contractor's operations and does not apply to preexisting conditions or permanent Work. Those work operations that are actively in progress shall be in accordance with adopted and approved Traffic Control Plans, and other contract requirements.

During nonworking hours equipment or materials shall not be within the WZCZ unless they are protected by permanent guardrail or temporary concrete barrier. The use of

temporary concrete barrier shall be permitted only if the Engineer approves the installation and location.

During actual hours of work, unless protected as described above, only materials absolutely necessary to construction shall be within the WZCZ and only construction vehicles absolutely necessary to construction shall be allowed within the WZCZ or allowed to stop or park on the shoulder of the roadway.

The Contractor's nonessential vehicles and employees private vehicles shall not be permitted to park within the WZCZ at any time unless protected as described above.

Deviation from the above requirements shall not occur unless the Contractor has requested the deviation in writing and the Engineer has provided written approval.

Minimum WZCZ distances are measured from the edge of traveled way and will be determined as follows:

Posted Speed	Distance From Traveled Way (Feet)
35 mph or less	10 *
40 mph	15
45 to 55 mph	20
60 mph or greater	30

* or 2-feet beyond the outside edge of sidewalk

Minimum Work Zone Clear Zone Distance

1-07.24 Rights Of Way
Delete this Section in its entirety, and replace it with the following:
(October 1, 2005 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:
(May 25, 2006 APWA GSP)

1-08.0 Preliminary Matters

1-08.0(1) Preconstruction Conference

Section 1-08.0(1) is added as follows:
(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.

1-08.0(2) Hours of Work

Section 1-08.0(2) is added as follows:
(May 25, 2006 APWA GSP)

Except in the case of emergency or unless otherwise approved by the Contracting Agency or as determined at the pre-construction conference, the normal straight time working hours for the contract shall be any consecutive 8-hour period between 7:00 a.m. and 6:00 p.m. of a working day with a maximum 1-hour lunch break and a 5-day work week. The normal 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 7:00 a.m. or after 6:00 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 7:00 a.m. and 6:00 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.

Permission to work between the hours of 10:00 p.m. and 7:00 a.m. during weekdays and between the hours of 10:00 p.m. and 9:00 a.m. on weekends or holidays may also be subject to noise control requirements. Approval to continue work during these hours may be revoked at any time the Contractor exceeds the Contracting Agency's noise control regulations or complaints are received from the public or adjoining property owners regarding the noise 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; and considering multiple work shifts as multiple working days with respect to contract time even though the multiple shifts occur in a single 24-hour period. Assistants may include, but are not limited to, survey crews; personnel from the Contracting Agency's material testing lab; inspectors; and other Contracting Agency employees when in the opinion of the Engineer, such work necessitates their presence.

1-08.0(4) Submittals
Section 1-08.0(4) is added as follows:
(December 15, 2010 Richland GSP)

Contractor shall have three (3) hard copy sets and one (1) pdf of submittals for review and comment by the City. Included in the submittals shall be all material / parts cut-sheets and other information as required as stated on the City's approved material list otherwise a Request for Approval of Material (RAM) per Section 1-06.1(2) will be required. Contractor will not be allowed to start project work until submittals have been processed.

1-08.3 Progress Schedule

1-08.3(1) Weekly Meeting
Section 1-08.3(1) is added as follows:
(December 15, 2010 Richland GSP)

A weekly meeting between representatives of the City (inspector and/or engineer) and contractor (foreman, supervisor, and/or project manager) shall be held at the project site or in the Developmental Services Building at a pre-determined time. This meeting is to go over current project status, project schedule, and address problems that have arisen.

1-08.5 Time For Completion
Supplement this Section with the following:
(November 10, 2009 Richland GSP)

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.

The third sentence of the first paragraph is revised as follows:
(December 15, 2010 Richland GSP)

A nonworking day is defined as a Saturday, a Sunday, a whole or half day on which the Contract specifically prohibits Work on the critical path of the Contractor's approved progress schedule, or one of these holidays: January 1, the third Monday of February, Memorial Day, July 4, Labor Day, November 11, Thanksgiving Day, the day after Thanksgiving, Christmas Eve, and Christmas Day.

Supplement this Section with the following:
(March 13, 1995 WSDOT GSP)

This project shall be physically completed within **$$$ working days.**

Supplement the fifth paragraph with the following:
(December 15, 2010 Richland GSP)

The original contract amount and working days will be used in calculating the liquidated damages; this amount is estimated to be approximately $$$ per day.

Supplement the fifth paragraph with the following:
(November 10, 2009 Richland GSP)

Physical Completion will not be granted until the Record Drawings have been submitted to the Engineer.

Supplement the sixth paragraph to read:
(November 10, 2009 Richland GSP)

e. Property owner releases per Section 1-07.24

1-08.7 Maintenance During Suspension
(October 1, 2005 APWA GSP)
Revise the second paragraph to read:

At no expense to the Contracting Agency, the Contractor shall provide through the construction area a safe, smooth, and unobstructed roadway, sidewalk, and path for public use during suspension (as required in Section 1-07.23 or the Special Provisions). This may include a temporary road or detour.

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.

Payments will be made by warrants, issued by the Contracting Agency's fiscal officer, against the appropriate fund source for the project. Payments received on account of work performed by a subcontractor are subject to the provisions of RCW 39.04.250.

1-09.9 Payments

Supplement paragraph 3 with the following:

(December 15, 2010 Richland GSP)

Progress payments will be made on a monthly basis. The City is able to make payments during any week of the month; payment may be made at any time during the month convenient to the Contractor and acceptable to the City. The cut-off date for progress payments will be decided at the pre-construction conference. Progress payments will be made based on Contractor submitted and Engineer verified pay requests. Pay requests shall include the quantities completed for each bid item on a form approved by the Engineer.

1-10 TEMPORARY TRAFFIC CONTROL

1-10.2 Traffic Control Management

1-10.2(1) General

Section 1-10.2(1) is supplemented with the following:
(December 1, 2008 WSDOT GSP)

Only training with WSDOT TCS card and WSDOT training curriculum is recognized in the State of Washington. The Traffic Control Supervisor shall be certified by one of the following:

The Northwest Laborers-Employers Training Trust
27055 Ohio Ave.
Kingston, WA 98346
(360) 297-3035

Evergreen Safety Council
401 Pontius Ave. N.
Seattle, WA 98109
1-800-521-0778 or
(206) 382-4090

The American Traffic Safety Services Association
15 Riverside Parkway, Suite 100
Fredericksburg, Virginia 22406-1022
Training Dept. Toll Free (877) 642-4637
23 Phone: (540) 368-1701

DIVISION 2
EARTHWORK

2-01 CLEARING, GRUBBING, AND ROADSIDE CLEANUP

2-01.2 Disposal of Usable Materials and Debris
Section 2-01.2 is supplemented with the following:
(November 10, 2009 Richland GSP)

Disposal of burnable and non-burnable materials on private property will not be allowed without the written permission of the property owner.

2-01.2(1) Disposal Method No. 1 – Open Burning
Section 2-01.2(1) is supplemented with the following:
(November 10, 2009 Richland GSP)

All vegetation not retained for replanting or other uses, and all burnable litter within the clearing area, may be burned in an area approved by the Engineer and the ashes buried or disposed of at an approved waste site. Contractor shall obtain and comply with the requirements of burning permits including conditions which may be required by the Benton Franklin Air Pollution Control Board.

2-01.2(2) Disposal Method No. 2 – Waste Site
Section 2-01.2(2) is supplemented with the following:
(November 10, 2009 Richland GSP)

It shall be the Contractor's responsibility to locate approved waste sites for the disposal of all materials designated to be waste. The Contractor shall provide written approval from the property owner for private waste sites. All expenses incurred in securing both public and private waste sites will be the responsibility of the Contractor and considered incidental to the contract prices. The Contractor will be held liable for any and all damages resulting from the disposal of waste materials on privately owned waste sites. The Contractor may dispose of waste materials at the City of Richland Landfill located at the intersection of Grosscup Road and State Highway 240.

2-02 REMOVAL OF STRUCTURES AND OBSTRUCTIONS

2-02.3 Construction Requirements
Section 2-02.3 is supplemented with the following:
(February 17, 1998 WSDOT GSP)

Removal of Obstructions
The following items shall be removed, disposed of or reset as directed by the Engineer in accordance with the requirements of Section 2-02 of the Standard Specifications:

Sign Posts and Foundations
Curbing
Bollards

All other items encountered, which are not covered by Section 2-01 of the Standard Specification (Clearing and Grubbing) shall be considered incidental to the bid item “Removal of Structures and Obstructions”.

Section 2-02.3 is supplemented with the following:

(November 10, 2009 Richland GSP)

Written permission shall be provided to The City of Richland from property owners of any waste site prior to its use.

2-03 ROADWAY EXCAVATION AND EMBANKMENT

2-03.3 Construction Requirements

Section 2-03.3 is supplemented with the following:

(November 10, 2009 Richland GSP)

Sawcutting

Contractor shall sawcut existing asphalt and concrete as detailed in the plans. Sawcutting shall produce a straight and vertical cut line to the full depth of the existing surface.

2-03.3(14) Embankment Construction

2-03.3(14)C Compacting Earth Embankments

Section 2-03.3(14)C is supplemented with the following:

(November 10, 2009 Richland GSP)

Compacting embankments and excavations shall be by Method "C" as specified under Section 2-03.3(14)C of the Standard Specifications.

2-03.4 Measurement

Section 2-03.4 is supplemented with the following:

(March 13, 1995 WSDOT GSP)

Only one determination of the original ground elevation will be made on this project. Measurement for roadway excavation and embankment will be based on the original ground elevations recorded previous to the award of this contract. Control stakes will be set during construction to provide the Contractor with all essential information for the construction of excavation and embankments.

If discrepancies are discovered in the ground elevations which will materially affect the quantities of earthwork, the original computations of earthwork quantities will be adjusted accordingly.

Earthwork quantities will be computed, either manually or by means of electronic data processing equipment, by use of the average end area method or by the finite element analysis method utilizing digital terrain modeling techniques.

Copies of the ground cross-section notes will be available for the bidder's inspection, before the opening of bids, at the Project Engineer's office and at the Region office.

Upon award of the contract, copies of the original ground cross-sections will be furnished to the successful bidder on request to the Project Engineer.

2-03.5 Payment

Section 2-03.5 of the Standard Specifications is supplemented with the following:

(November 10, 2009 Richland GSP)

The Contract Unit Price for "Roadway Excavation Incl. Haul," per Cubic Yard, shall be full compensation for all labor, equipment, tools, and materials necessary to excavate, load, haul, place, compact, shape, or otherwise dispose of the materials including existing hot mix asphalt

pavements, and any other work required to complete this item as specified and no further payment shall be made.

No separate payment shall be made for embankment compaction and all costs to perform this work as required shall be included in the Unit Bid Price per Cubic Yard for "Roadway Excavation Incl. Haul."

No measurement or payment will be made for “Sawcutting”. It is considered incidental to other bid items.

2-07 WATERING

2-07.2 Construction Water Meter

Section 2-07.2 is added as follows:

(November 10, 2009 Richland GSP)

Water for dust control, compaction, placement of crushed surfacing, pipe line installation, flushing and testing, etc. will be available at fire hydrant locations, within the construction area only. The Contractor shall secure a fire hydrant meter from the City. The Contractor shall pay a $750.00 meter deposit to be refunded at the end of the project if the meter is returned undamaged.

2-07.3 Construction Requirements

Section 2-07.3 is supplemented with the following:

(November 10, 2009 Richland GSP)

The Contractor shall be solely responsible for dust control on this project and shall protect the motoring public, adjacent homes, orchards and crops from damage due to dust, by whatever means necessary. The Contractor shall be responsible for any claims for damages and shall protect the City from any and all such claims.

When directed by the Engineer, the Contractor shall provide water for dust control within two hours of such order and have equipment and manpower available at all times including weekends and holidays to respond to orders for dust control measures.

If City forces are required to respond to a dust control problem, the Contractor shall be charged liquidated damages to offset City expenditures. For each time that the City is required to provide dust control measures, the Contractor shall be assessed damages in the amount of $500.00.

DIVISION 4
BASES

4-04 BALLAST AND CRUSHED SURFACING

4-04.3(5) Shaping And Compaction
Section 4-04.3(5) is supplemented with the following:
(November 10, 2009 Richland GSP)

The Contractor shall be responsible for all damages or claims resulting from the use of vibratory compactors.

No successive course of crushed rock shall be spread until the preceding course is approved by the Engineer.

4-04.4 Measurement
Section 4-04.4 is supplemented with the following:
(December 15, 2010 Richland GSP)

Crushed surfacing top course and base course will be measured by the cubic yard to the neat lines (in-place) as determined by use of the average end area method. Measurement will be based on the plan quantities as listed in the proposal. For Material verification, the Contractor shall deliver truck tickets to the Engineer within four (4) hours of delivery of material to the job site or at the time of delivery when the Engineer is present.

Crushed surfacing top course placed under cement concrete sidewalks, ramps, driveways, and other structures identified in Section 8 will be measured by the cubic yard to the neat lines (in-place) as determined by use of the average end area method. Measurement will be based on the plan quantities as listed in the proposal.

4-04.5 Payment
Section 4-04.5 is supplemented with the following:
(December 15, 2010 Richland GSP)

Payment shall be made at the unit price as stated in the Contractor's bid proposal. Payment shall constitute full compensation for all labor, materials, and equipment to furnish and install crushed rock, complete.

5-04 HOT MIX ASPHALT

5-04.2 Materials

Section 5-04.2 is supplemented with the following:
(November 10, 2009 Richland GSP)

HMA used for pathway paving shall utilize the 3/8-inch aggregate gradation and mix criteria.

5-04.3 Construction Requirements

5-04.3(10) Compaction

5-04.3(10)B Control

The first paragraph of Section 5-04.3(10)B is deleted and replaced with the following:
(November 10, 2009 Richland GSP)

HMA used in traffic lanes, including lanes for ramps, truck climbing, weaving, and speed change, and having specified compacted course thickness greater than 0.10 foot, shall be compacted to a specified level relative density. The specified level of relative density shall be a minimum of 91.0 percent of the reference maximum density as determined by WSDOT for AASHTO T 209. The reference maximum density shall be determined as the moving average of the most recent five determinations for the lot of asphalt concrete being placed. The specified level of density attained will be determined by five nuclear gauge tests taken in accordance with WAQTC FOP TM8 and WSDOT SOP T 729 on the day the mix is placed (after completion of the finish rolling) at locations determined by the stratified random sampling procedure conforming to WSDOT Test Method 716 within each density lot. The quantity represented by each density lot will be no greater than a single day's production or approximately 400 tons, whichever is less. The Engineer will furnish the Contractor with a copy of the results of all acceptance testing performed in the field by 7:00 a.m. the morning of the next workday after testing, or for nighttime work within four hours after the beginning of the next paving shift.

The last paragraph of Section 5-04.3(10)B of the Standard Specifications is deleted and replaced with the following:
(November 10, 2009 Richland GSP)

In addition to the randomly selected locations for tests of density, the Engineer may also isolate from a normal lot any area that is suspected of being defective in relative density. Such isolated material will not include an original sample location. A minimum of 5 randomly located density tests will be taken. The isolated area then will be evaluated for price adjustment in accordance with the price reduction formula in the Special Provisions, considering it as a separate lot.

Control lots not meeting the minimum density standard shall be removed and replaced with satisfactory material. At the option of the Engineer, noncomplying material may be accepted at reduced price as computed below.

FACTORS INVOLVED:

Quantity of HMA involved (from Compaction Control Report)

Percent compaction (from Compaction Control Report)

Pay adjustment factor (see table below)

Liquid asphalt used = Percent liquid asphalt from "Amount Ordered" or "Calculated from Production" (whichever is less) from Daily Report of Asphalt Plant Operations (when producing from a commercial plant, always use the "Amount Ordered")

Price liquid asphalt = Invoice price f.o.b. job site (if invoice unavailable then use average monthly refinery price.)

Unit Contract Price (from Contract Proposal)

CALCULATION PROCEDURE:

Equations: PA = Q x AUCP x PAF
AUCP = UCP - VLA
VLA = PLA x RLAU
RLAU = LAU/100

PA = Price adjustment
UCPA = Unit contract price adjustment
Q = Quantity HMA involved
AUCP = Adjusted unit contract price
PAF = Pay adjustment factor
UCP = Unit contract price
VLA = Value liquid asphalt
PLA = Price liquid asphalt
RLAU = Rate liquid asphalt used
LAU = Liquid asphalt used

EXAMPLE:

Q = 200 tons
Percent compaction = 91.5
LAU = 5.0%
UCP = $25.00/ton
PLA = $200.00/ton f.o.b. job site
PAF = 0.05
RLAU = LAU/100
= 5.0/100
RLAU = 0.05 ton/ton
VLA = PLA x RLAU
= $200.00/ton x 0.05 ton/ton
VLA = $10.00/ton

AUCP = UCP - VLA
= $25.00/ton - $10.00/ton
AUCP = $15.00/ton
PA = Q x AUCP x PAF
= 200 ton x $15.00/ton x 0.05
PA = $150.00

UCPA = PA/Q
= $150.00/200 ton
UCPA = $0.75/ton

PAY ADJUSTMENT FACTOR

% RICE	**FACTOR**
91.0 AND ABOVE	0.00

90.0 - 90.9	0.05
89.0 - 89.9	0.10
88.0 - 88.9	0.20
BELOW 88.0	0.50 (IF ACCEPTED)

5-03.3(11) Reject Work
Supplement this Section with the following:
(November 10, 2009 Richland GSP)

Hot mix asphalt that is rejected on new roadway construction and overlays shall require the replacement of that half of the roadway that is rejected, a minimum of 100 feet longitudinally, either side of the rejected area. Hot mix asphalt that is rejected for trench patching shall require the replacement of the entire patch width, a minimum of 100 feet longitudinally, either side of the rejected area. If two rejected areas are within 200 feet from outer edges of each other, the replacement will extend between the areas.

5-04.4 Measurement
Section 5-04.4 is supplemented with the following:
(November 10, 2009 Richland GSP)

Asphalt concrete sidewalks will be measured by the square yard of finished surface.

Asphalt Patching (_ In. HMA and _ In. CSTC) will be measured by the square yard. Limits of measurement will be as depicted on the Trench Detail or as approved by the Engineer. Additional areas may be identified by the Engineer during construction.

5-04.5 Payment
Section 5-04.5 is supplemented with the following:
(December 15, 2010 Richland GSP)

"Asphalt Conc. Sidewalk", per square yard.
The unit price per square yard for "Asphalt Conc. Sidewalk" shall be full payment for all costs incurred to perform the Work as specified.

"Asphalt Patching (_ In. HMA and _ In. CSTC)", per square yard
The unit price for "Asphalt Patching (_ In. HMA and _ In. CSTC)", per square yard shall be full compensation for furnishing all labor, materials, tools and equipment necessary to furnish, haul, place and compact surfacing materials to the grade as shown on the plans (or matching existing grade in field). It includes applying asphalt tack coat to adjacent existing asphalt and concrete surfaces, removal and disposal of the existing asphalt and surfacing within the pay limits, sawcutting the existing asphalt along the final match point and all other incidentals necessary to complete the asphalt surfacing complete in every detail.

5-04.5(1) Quality Assurance Price Adjustments
Section 5-04.5(1) shall be deleted.
(November 10, 2009 Richland GSP)

5-04.5(1) A Price Adjustment for Quality of HMA
Section 5-04.5(1)A shall be deleted.
(November 10, 2009 Richland GSP)

5-04.5(1) B Price Adjustment for Quality of HMA Compaction
Section 5-04.5(1)B shall be deleted.
(November 10, 2009 Richland GSP)

DIVISION 7
DRAINAGE STRUCTURES, STORM SEWERS, SANITARY SEWERS, WATER MAINS, AND CONDUITS

7-04 STORM SEWERS

7-04.2 Materials
Section 7-04.2 is supplemented with the following:
(November 10, 2009 Richland GSP)

Unless otherwise specified in the Special Provisions or on the plans, all storm sewers shall be solid wall PVC.

Materials shall meet the requirements of the City of Richland Materials List and Standard Details.

7-04.3 Construction Requirements
Section 7-04.3 is supplemented with the following:
(November 10, 2009 Richland GSP)

Installation of storm drain pipe with less than 18 inch cover to finished grade, the Contractor has the option of using PVC C905 pipe as specified in Section 9-30.1(5)A or covering pipe and trench with controlled density fill (CDF) per 2-09.3(1)E.

7-04.3(1) Cleaning and Testing

7-04.3(1)A General
Section 7-04.3(1)A is supplemented with the following:
(November 10, 2009 Richland GSP)

The requirements of Section 7-17.3(2)H shall apply to storm sewers.

7-05 MANHOLES, INLETS, CATCH BASINS AND DRYWELLS

7-05.2 Materials
Section 7-05.2 is supplemented with the following:
(November 10, 2009 Richland GSP)

Ladder rungs 9-12.4(B)

7-05.3 Construction Requirements
Section 7-05.3, paragraph four is replaced with the following:
(November 10, 2009 Richland GSP)

Channels shall be made to conform accurately to the sewer grade and shall be brought together smoothly with well-rounded junctions, satisfactory to the Engineer. Channel sides shall be carried up vertically to the crown elevation of the various pipes, and the concrete shelf between channels shall be smoothly finished and warped evenly with slopes to drain.

Section 7-05.3, paragraph five is supplemented with the following:
(November 10, 2009 Richland GSP)

Ladder rungs to be installed only on sanitary sewer manholes per City Standard Details unless stated otherwise on the plans or in the Special Provisions.

Section 7-05.3, paragraph seven is replaced with the following:
(November 10, 2009 Richland GSP)

The ends of pipes shall be trimmed flush with the inside walls on sewer manholes and storm catch basins as shown on standard details. The ends of pipes on storm drain manholes shall extend into the manhole as shown on the standard details unless otherwise noted on the plans or in the special provisions.

7-05.3(3) Connections to Existing Manholes
Section 7-05.3(3) is supplemented with the following:
(November 10, 2009 Richland GSP)

New pipe connections to existing catch basins or manholes shall be core drilled and grouted. Mortar shall conform to the requirements of Section 9-04.3.

7-05.3(4) Drop Manhole Connection
Section 7-05.3(4) is replaced with the following:
(November 10, 2009 Richland GSP)

Drop manhole connections shall be constructed per City Standard Details or as shown on the plans.

7-08 GENERAL PIPE INSTALLATION REQUIREMENTS

7-08.2 Materials
Section 7-08.2 is supplemented with the following:
(December 15, 2010 Richland GSP)

Alternate Trench Foundation Class B	9-03.17
Imported Pipe Zone Bedding	9-03.8(4), 9-03.9(3)-Top Course

7-08.3 Construction Requirements

7-08.3(1) Excavation and Preparation of Trench

7-08.3(1)A Trenches
Section 7-08.3(1)A is supplemented with the following:
(December 15, 2010 Richland GSP)

Section 7-09.3(7)A Dewatering of Trench and Section 7-09.3(7)B Rock Excavation shall apply to section 7-08, General Pipe Installation Requirements.

The Contractor shall neatly saw cut all areas of existing ACP/BST within the trench excavation area, then remove and haul all waste materials from the project and dispose of at an approved site provided by the Contractor. Should any undermining occur on adjacent ACP/BST, the Contractor shall neatly cut the ACP/BST 6 inches beyond the undermined area.

In wet ground / groundwater installation or at the direction of the Engineer, the Contractor shall install new sewer or storm pipe per the City's Ground Water Trench Detail.

The requirements of section 7-09.3(7)A and 7-09.3(7)B shall apply to storm sewers and sewer mains.

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

(November 10, 2009 Richland GSP)

All trench excavations shall have adequate safety systems for the trench excavation that meet the requirements of the Washington Industrial Safety and Health Act, Chapter 49.17 RCW. The Contractor shall be fully responsible for providing the necessary back sloping, cribbing, trench boxes, etc., as required to meet the specified safety requirements for the trench. When City crews will be making the main line taps or other work in the trench, the Contractor shall provide all trench safety measures, prior to City personnel entering the trench.

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:

(November 10, 2009 Richland GSP)

The Contractor shall be responsible for locating and protecting existing utilities as per Section 1-07.17. The Contractor shall make any advance explorations as necessary (even though not specifically identified on the drawings) in order to verify connection requirements, properly plan the installation of the pipe to the design line and grade, and achieve a uniform grade and horizontal alignment.

Sewer and storm drain mains are typically shown in profile as well as on the plan view. Other utilities are typically shown in plan view only except at crossings. Some omissions and inaccuracies should be expected. Critical locations shall be field located ahead of time and Call-Before-You-Dig procedures should be implemented in all cases. Any discrepancies shall be reported to the Engineer prior to commencing with the work.

The Plans may identify locations requiring “Dig and Verify.” Where specially called for on the Plans, or as directed by the Engineer the Contractor shall “Dig and Verify” existing utilities, connection points and existing inverts. All required “Dig and Verify” shall be completed prior to any Contractor activities at each improvement location. Any discrepancies found as the result of the “Dig and Verify” shall be immediately reported to the Engineer. Unless otherwise directed to the Engineer, the Contractor shall backfill and compact location where the ‘Dig and Verify“ was completed.

7-08.3(2)J Transition Couplings

Section 7-08.3(2)J is added with the following:

(November 10, 2009 Richland GSP)

When non-rigid transition couplings (i.e. Fernco couplings) are used for connections to existing sewer or storm pipe, the inclusion of controlled density fill will be required to prevent excessive settlement. Use of rigid transition couplings (i.e. Romac) in similar connection locations will not require use of controlled density fill unless installation (of CDF) is directed by the Engineer or noted on the plans.

7-08.4 Measurement

Section 7-08.4 is supplemented with the following:

(December 15, 2010 Richland GSP)

Trench safety shall be measured per linear foot of installed pipe.

All trench excavation shall be unclassified and a separate measurement will not be made for any excavation, cement concrete and asphalt pavement sawing, removal and disposal, dewatering, and backfill for pipelines. All cost for excavation, cement concrete and asphalt pavement sawing, removal and disposal, and backfill for pipelines and fittings including

detectable marking tape and tracer wire shall be incidental to the pipe installation except as follows:

Dig and verify will be measured on a per each basis for those identified in the Plans or as directed by the Engineer.

Imported pipe zone bedding will be measured by the linear foot of imported and placed bedding.

7-08.5 Payment
Section 7-08.5 is supplemented with the following:
(December 15, 2010 Richland GSP)

"Trench safety", per linear foot.

"Dig and Verify", per each.
The unit contract price per each for "Dig and Verify" shall be pay to furnish all labor, materials and equipment for performing the work and when required to backfill and compact the dig and verify location.

"Imported Pipe Zone Bedding", per linear foot.
The unit contract price per linear foot for "Imported Pipe Zone Bedding" shall be full pay to provide all labor, materials and equipment for completing the work as specified. Payment shall include removing the unsuitable materials the imported bedding replaced.

All costs associated with constructing the City's Ground Water Detail shall be included in the following bid items:
"Imported Pipe Zone Bedding"
"Gravel Backfill for Foundations Class B"
"Construction Geotextile"

All costs associated with de-watering shall be included in the unit contract price for "Gravel Backfill for Foundations Class B".

7-09 WATER MAINS

7-09.2 Materials
Section 7-09.2 is supplemented with the following:
(November 10, 2009 Richland GSP)

Unless otherwise specified in the Special Provisions or on the plans, all water mains to be ductile iron except for residential water mains 10 inches and smaller can either be PVC or ductile iron pipe.

Materials shall meet the requirements of the City of Richland Materials List and Standard Details.

7-09.3 Construction Requirements

7-09.3(5) Grade and Alignment
The first sentence of the third paragraph of Section 7-09.3(5) is deleted and replaced with the following:
(November 10, 2009 Richland GSP)

The depth of trenching for water mains shall be such as to give a minimum cover of 48-inches over the top of the pipe unless otherwise specified in the Special Provisions or on the plans.

7-09.3(7) Trench Excavation

Section 7-09.3(7) is supplemented with the following:

(December 15, 2010 Richland GSP)

The Contractor shall neatly saw cut all areas of existing ACP/BST within the trench excavation area, then remove and haul all waste materials from the project and dispose of at an approved site provided by the Contractor. Should any undermining occur on adjacent ACP/BST, the Contractor shall neatly cut the ACP/BST 6 inches beyond the undermined area.

All trench excavations shall have adequate safety systems for the trench excavation that meet the requirements of the Washington Industrial Safety and Health Act, Chapter 49.17 RCW. The Contractor shall be fully responsible for providing the necessary back sloping, cribbing, trench boxes, etc., as required to meet the specified safety requirements for the trench. When City crews will be making the main line taps or other work in the trench, the Contractor shall provide all trench safety measures, prior to City personnel entering the trench.

7-09.3(12) General Pipe Installation

Section 7-09.3(12) is supplemented as follows:

(November 10, 2009 Richland GSP)

The Contractor shall be responsible for locating and protecting existing utilities as per Section 1-07.17. The Contractor shall make any advance explorations as necessary (even though not specifically identified on the drawings) in order to verify connection requirements, properly plan the installation of the pipe to the design line and grade, and achieve a uniform grade and horizontal alignment.

Sewer and storm drain mains are typically shown in profile as well as on the plan view. Other utilities are typically shown in plan view only except at crossings. Some omissions and inaccuracies should be expected. Critical locations shall be field located ahead of time and Call-Before-You-Dig procedures should be implemented in all cases. Any discrepancies shall be reported to the Engineer prior to commencing with the work.

The Plans may identify locations requiring “Dig and Verify.” Where specially called for on the Plans, or as directed by the Engineer the Contractor shall “Dig and Verify” existing utilities, connection points and existing inverts. All required “Dig and Verify” shall be completed prior to any Contractor activities at each water line improvement location. Any discrepancies found as the result of the “Dig and Verify” shall be immediately reported to the Engineer. Unless otherwise directed to the Engineer, the Contractor shall backfill and compact location where the ‘Dig and Verify“ was completed.

Pipe tracer wire shall be installed with all PVC pipe used for water mains as per City Standard Detail.

7-09.3(12)A Mechanical Couplings

Section 7-09.3(12)A is added as follows:

(November 10, 2009 Richland GSP)

Before coupling, clean each pipe end a distance of at least eight (8) inches back from the end to provide a seat for the coupling gaskets. The pipe coating need not be removed if it presents a smooth surface and is securely bonded to the pipe.

Install couplings in accordance with the manufacturer's instructions. Wipe gaskets clean before installation. If necessary, lubrication may be used to install the gaskets onto the end of the pipe.

Tighten coupling bolts progressively and evenly on both sides to assure uniform seating of the gaskets.

7-09.3(15) Laying of Pipe on Curves

Section 7-09.3(15) is supplemented with the following:
(November 10, 2009 Richland GSP)

The amount of deflection in each pipe joint when pipe is laid on a horizontal or vertical curve shall not exceed 50% of the manufacturer's printed recommended deflections.

7-09.3(19) Connections

7-09.3(19)A Connections to Existing Mains
Section 7-09.3(19)A is supplemented with the following:
(November 10, 2009 Richland GSP)

Connections and disconnections to existing water mains
All connections (except hot taps on 12" diameter and smaller mains) to existing water mains shall be done by the Contractor under the supervision of the City water division maintenance personnel. Engineer shall direct the Contractor in the procedure taken for such water main connections and disconnections. The Contractor shall supply all fittings, couplings and adapters that may be required for all connections to the existing mains in addition to adequate de-watering pump(s) and trench shoring. The Contractor shall be responsible for all installation work, including locating, excavating, backfilling and installing thrust blocks at each point of connection.

At connection points to existing mains the Contractor shall have installed, sterilized, flushed and tested, per the Standard Specifications, the new main up to a maximum 10 feet within the connection point to the existing main. The pipe used to complete the connections shall be swabbed and bagged per the Standard Specifications. The Contractor shall dig and verify the pipe material type, size, location and elevation of the tie-in prior to installing the new water line. The new pipe should be installed at a location and elevation per the Standard Specifications to facilitate a smooth transition to the existing line.

The anticipated schedule for the tie-ins shall be discussed and scheduled at the pre-construction conference, and indicated on the weekly schedule for actual execution. The City reserves the right to adjust the schedule of the tie-ins, as required, subject to a minimum of 24 hour notice of schedule change to the Contractor. ***NO TIE-INS WILL BE SCHEDULED FOR THE FIRST WORKING DAY AFTER A WEEKEND OR HOLIDAY.***

7-09.3(21) Concrete Thrust Blocking
Section 7-09.3(21) is supplemented with the following:
(November 10, 2009 Richland GSP)

No bag concrete mix will be allowed for concrete thrust blocks.

7-09.3(21)A Joint Harness
Section 7-09.3(21)A is added as follows:
(November 10, 2009 Richland GSP)

Install joint harness or thrust ties where indicated and as directed by the Engineer. Thrust tie bolts, nuts, and lugs shall be coated with hot coal-tar enamel or Koppers

Bitumastic No. 505, as specified for mechanical couplings. Joint harnesses of adequate strength may be used instead of concrete thrust blocks if approved by the Engineer.

7-09.3(22) Blowoff Assemblies
Section 7-9.3(22) is supplemented to read as follows:
(November 10, 2009 Richland GSP)

Temporary blowoff assemblies shall be constructed as required for flushing and testing of water mains and in accordance with the standard plan.

7-09.3(23) Hydrostatic Pressure Test
The first sentence of the first paragraph of Section 7-09.3(23) is deleted and replaced with the following:
(November 10, 2009 Richland GSP)

Water main appurtenances and service connection to the meter setter shall be tested in section of convenient length under a hydrostatic pressure of 150 PSI (gage).

The first sentence of the fifth paragraph of Section 7-09.3(23) is deleted and replaced with the following:
(November 10, 2009 Richland GSP)

The test shall be accomplished by pumping the main up to 150 PSI, stopping the pump for 1 hour (60 minutes), and then pumping the main up to 150 PSI again.

Section 7-09.3(23) is supplemented with the following:
(November 10, 2009 Richland GSP)

When the Contractor is required to connect to an existing water main stub, or extend an existing water main, the City does not warrant that existing valve or pipe will meet pressure test requirements. The Contractor shall have the option of installing a valve at the point of connection or the Contractor may attempt the pressure test, utilizing the existing installations at his sole risk and expense. Where water services are presently connected to the existing water main, the Contractor shall install a mainline valve at the point of connection.

7-09.3(23)D Building Fire Line Test Procedures
Section 7-09.3(23)D is added as follows:
(November 10, 2009 Richland GSP)

1. Pressure Test – Test for 2 hours at 200 psi If a loss, refer to allowable leakage description on Contractor's Material and Test Certificate for underground piping form as required by the latest edition of the NFPA Standard.

2. Flush – After the underground fire line passes the pressure test the flushing of the pipe from the main to the flange can be scheduled.
   All debris that is in the underground pipe must be flushed clear, a burlap bag will be required to collect debris from the pipe.

3. Flow test – When all debris has been flushed and the pipe is flowing clear, flow test must be taken to assure the pipe is flowing the minimum gallons per minute.
   4" Pipe – 390 GPM
   6" Pipe – 880 GPM
   8" Pipe – 1560 GPM
   Flow from the flange must be directed in a safe manner as not to flood the surrounding area. The Contractor will conduct the flow test with a City representative present. The Contractor shall supply a pedo gauge and measure the flow.

If the flushing can be completed without reducing the pipe size and the P.I. valve opened completely, then gauging the flow fore GPM will not be required.

4. Health Sample – The Contractor shall obtain a health sample per the requirements of City Standard Specifications.

5. Soft Seat Check Valve – If a soft sear check valve is required, contract the City's Cross Connection Specialist to inspect the valve prior to installation.

7-09.3(24) Disinfection of Water Mains

Section 7-09.3(24) is supplemented with the following:
(December 15, 2010 Richland GSP)

The City of Richland uses AWWA Standard C651 as a guideline for disinfecting water mains.

7-09.3(24)A Flushing
Section 7-09.3(24)A is supplemented with the following:
(November 10, 2009 Richland GSP)

Temporary blow offs used for flushing shall be a minimum of 4 inch for a 12 inch main and 6 inch for a 24 inch main or as required to meet the 2.5 feet per second velocity required.

7-09.3(24)D Dry Calcium Hypochlorite
Section 7-09.3(24)D is supplemented as follows:
(November 10, 2009 Richland GSP)

Dry calcium hypochlorite shall only be used on water mains 10 inch diameter and smaller.

7-09.3(24)N Final Flushing and Testing
Section 7-09.3(24)N is supplemented with the following:
(November 10, 2009 Richland GSP)

After flushing has been accomplished to the satisfaction of the Engineer, a bacteriological test will be performed by City forces. Should the initial treatment result in an unsatisfactory bacteriological test, the chlorination procedure shall be repeated by the Contractor until satisfactory results are obtained.

After a satisfactory bacteriological test is confirmed, the hydrostatic test can be performed.

Section 7-09.3(24)N is supplemented with the following:
(December 15, 2010 Richland GSP)

City of Richland's Domestic water main into service procedure:

1. Main Pre-flush (if determined to be needed) via existing water source (i.e. fire hydrant)
2. Load Main with "hot" water (chlorinated water, either liquid (all pipes) or granules (allowed on 10" and smaller diameter only))
3. Flush lines via existing water source (i.e. fire hydrant)
4. 1st Health Sample
5. 24 hour period after sample
6. Pressure Test
7. Flush lines
8. 24 hour period after flushing
9. 2nd Health Sample
10. Tie-ins can begin after second sample is returned with positive result

All tie-ins (connection to existing water system) on mains 12" and smaller will only be allowed after water service procedure is completed to the engineer's satisfaction. Tie-in sequence for larger (distribution) mains will be determined on a project basis.

All costs associated with loading, flushing, testing, and health samples (including temporary service taps if needed) as considered incidental to the installation of the water main.

7-09.4 Measurement

Section 7-09.4 is supplemented with the following:

(November 10, 2009 Richland GSP)

All trench excavation (except with use of Alternative Trench Section) shall be unclassified and a separate measurement will not be made for any excavation, cement concrete and asphalt pavement sawing, removal and disposal, and backfill for pipelines.

Alternative Trench Foundation Class B will be measured by the linear foot.

Dig and verify will be measured on a per each basis for those identified in the Plans or as directed by the Engineer.

Trench safety systems will be measured per linear foot of pipe installed.

Imported pipe zone bedding will be measured by the linear foot of placed bedding.

Fittings of the type and size listed on the bid proposal schedule will be measured per each furnished and installed.

Connect to existing water main per each.

7-09.5 Payment

Section 7-09.5 is supplemented with the following:

(December 15, 2010 Richland GSP)

All costs for excavation, cement concrete and asphalt pavement sawing, removal and disposal, and backfill for pipelines and fittings including detectable marking tape and tracer wire shall be incidental to the pipe installation except as follows:

"_____ Pipe for Water Main _____ In. Diam. With Restrained Joint", per lineal foot.
The unit contract price for "_____ Pipe for Water Main _____ In. Diam. With Restrained Joint" shall be full pay for all work to complete the installation of the water main including but not limited to trench excavation, bedding, laying and jointing pipe, backfilling, testing, flushing, disinfecting the pipeline, and cleanup.

Fittings (bends, tees, crosses, caps, plugs, couplings, etc.) shall be per each.
The unit contract price shall be full pay for all work to complete the installation of the specified fittings including but not limited to excavation, bedding, laying and jointing pipe and fittings, backfilling, testing, flushing, disinfecting the pipeline, specified thrust restraint and cleanup.

"Dig and Verify", per each.
The unit contract price per each for "Dig and Verify" shall be pay to furnish all labor, materials and equipment for performing the work and when required to backfill and compact the dig and verify location.

"Imported Pipe Zone Bedding", per linear foot.

The unit contract price per linear foot for “Imported Pipe Zone Bedding” shall be full pay to provide all labor, materials and equipment for completing the work as specified. Payment shall include removing the unsuitable materials the imported bedding replaced.

“Trench safety”, per linear foot.

“Connect to Existing Water Main _ In.”, per each.
The unit contract price per each for “Connect to Existing Water Main” shall be full pay for furnishing all labor, materials and equipment necessary to make the connections, including miscellaneous fittings.

7-12 VALVES FOR WATER MAINS

7-12.2 Materials

Section 7-12.2 is amended as follows:
(November 10, 2009 Richland GSP)

Unless otherwise specified in the Special Provisions or on the plans, all valves 8 inch and smaller shall be gate valves and all valves 10 inches and larger shall be butterfly valves.

Materials shall meet the requirements of the City of Richland Materials List and Standard Details.

7-12.3 Construction Requirements

Section 7-12.3 is supplemented with the following:
(December 15, 2010 Richland GSP)

All valves shown on the plans adjacent to tees, crosses or similar fittings shall be flanged to such fittings.

Misaligned valve boxes shall be excavated, plumbed, and backfilled at the Contractor's expense.

Blow off valves shall be installed per City Standard Detail for Construction _ In Blow-off Installation or Permanent 2 In Blow-off Installation.

7-14 HYDRANTS

7-14.3 Construction Requirements

7-14.3(1) Setting Hydrants

Section 7-14.3(1) is supplemented with the following:
(November 10, 2009 Richland GSP)

Set all hydrants plumb and nozzles parallel with, or at right angles to, the curb, with the pumper nozzle facing the curb. Set hydrants so that middle of traffic flange is 2 inches to 6 inches above finished ground or sidewalk level to clear bolts and nuts, and as directed. Hydrants shall be ordered with the bury depth required to meet the above specification. No extensions will be allowed.

When placed behind the curb, set hydrant behind the back of curb as shown on the standard detail. When set in lawn space between curb and sidewalk, or between sidewalk and property line, let no portion of the hydrant or nozzle cap be within 8 inches of the sidewalk.

City to install Contractor supplied Storz adapter.

7-15 SERVICE CONNECTIONS

7-15.3 Construction Requirements

Section 7-15.3 is supplemented as follows:

(November 10, 2009 Richland GSP)

All new meter boxes shall be set square with the roadway and level with the adjacent sidewalk and/or lawn. The finished box grade shall be set by two each 2" x 4" x 24" grade adjustment boards set on compacted soil at the 36" depth. As indicated in the Special Provisions and as directed by the Engineer new meter boxes located in a position to receive vehicular traffic shall have traffic rated metal lids.

Existing Water Connections

The service connection shall conform to the City's Water Service Connection Standard Detail.

The Contractor shall thread existing galvanized service line to facilitate connections. Plumber's paste shall be used on all threaded connections. If condition of existing pipe is not conducive to threading, the Engineer on a case-by-case basis will consider a pack joint for iron pipe coupling.

The new house service line shall be connected so that all existing meter setter fittings are eliminated. The new house service line shall be swept into the tie-in locations with adequate pipe length to allow for expansion/contraction of the HDPE. Equivalent elbow fittings will be considered by the Engineer on a case-by-case basis to reduce impacts to existing improvements.

The Contractor shall make a mark on the HDPE house service line one foot from the end of the pipe prior to installing the house service assembly couplings. No couplings will be allowed beneath concrete or asphalt areas.

Section 7-15.3, end of second paragraph, is supplemented as follows:

(December 15, 2010 Richland GSP)

Boring is the preferred method of service line installation under existing roadways, curbs and sidewalks. The Engineer will consider the use of a small backhoe for installation of service lines on a case by case basis. Where boring is used the house service line shall not be used to connect the air source to the missile and the 4" wide locate tape will not be required.

7-15.3(2) Connection to Water Main

Section 7-15.3(2) is added as follows:

(November 10, 2009 Richland GSP)

Do not place saddle within one (1) foot of pipe joint, couplings, or other clamps without approval from the Engineer.

7-15.3(3) New Water Service Connection

Section 7-15.3(3) is added as follows:

(November 10, 2009 Richland GSP)

The Contractor shall, prior to backfilling the piping and in the presence of the Engineer, pressure-test the new line at system pressure to assure no leakage and shall flush the new water service line a minimum of 30 seconds prior to the connection being made. Once the connection is made, the Contractor shall have the property owner open outside hose bibs

and unscreened inside faucets to assure any sediment removal, and to assure proper flow and pressure at each location.

The shutdown time for each new water service connection shall be minimized by the Contractor, having the meter setter and all of the service line installed to the point of connection prior to the shutting down of water service. At the completion of each service connection, the Contractor shall verify with the property owner that all plumbing fixtures and irrigation systems are working properly. The Contractor shall repair any deficiency promptly.

7-15.5 Payment

Section 7-15.5 is replaced by the following:

(November 10, 2009 Richland GSP)

Payment will be made in accordance with Section 1-04.1, for the following bid items that are included in the proposal:

"__ In. Street Service Assembly", per each

The unit contract price per each for "__ In. Street Service Assembly" shall be full pay for all work to install the street service assembly including the service saddle, corporation stop, curb stop, service valve box and any pipe couplings, insert stiffeners and adaptors necessary for the installation of the new street service lines from the service saddle to the curb stop as shown in the City Standard Detail.

"1 In. Street Service Line (Type K Copper)", per linear foot
"2 In. Street Service Line (HDPE)" per linear foot.

The unit contract price per linear foot for "1 In. Street Service Line (Type K Copper)" and "2 In. Street Service Line (HDPE)" shall be full pay for all work to install the Type K copper piping or HDPE pipe, trench excavation and backfill, pipe bedding, and 4" wide locate tape necessary for the street service line installation as shown on the plans.

"__ In. Meter Assembly", per each

The unit contract price per each for "__ In. Meter Assembly" shall be full pay for all work to install the include the meter setter (supplied by City with jumper or meter (see detail), meter boxes, grade adjustment boards and all copper tubing and fittings as shown in the details "1" Meter Setter and 1 ½" & 2" Meter Setter" including excavation and backfill, and the removal and disposal of the existing water meter installation (boxes and setter). The existing water meter shall be removed from the existing meter box, wrapped in a plastic bag and placed in the new meter assembly boxes.

"__ In. House Service Assembly", per each

The unit contract price per each for "__ In. House Service Assembly" shall be full pay for all work including all labor, equipment and materials needed for the installation of the water service lines, compression couplings, insert stiffeners and materials necessary for the capping and abandonment of the existing water service lines.

"__ In. House Service Line", per linear foot

The unit contract price per linear foot for "__ In. House Service Line" shall be full pay for the installation of the service line including the HDPE piping, trench excavation and backfill, piping bedding and locate tape necessary for the service line installations shown on the plans.

7-17 SANITARY SEWERS

7-17.2 Materials

Section 7-17.2 is supplemented with the following:
(December 15, 2010 Richland GSP)

Unless otherwise specified in the Special Provisions or noted on the plans all sewer pipe 15 inch diameter or smaller and with less than 15 feet of cover shall be polyvinyl chloride (PVC), ASTM D3034, SDR 35. All sewer mains 18 inch diameter to 48 inch diameter or with more than 15 feet of cover shall be ASTM F 679, 115 psi min. pipe unless an alternate material is specified or approved by the City.

ASTM D3034, SDR 35	9-05.12(1)
ASTM F 679, 115 psi min	9-05.12(1)

7-17.3 Construction Requirements

7-17.3(2) Cleaning and Testing

7-17.3(2)A General
The last paragraph of Section 7-17.3(2)A is supplemented with the following:
(November 10, 2009 Richland GSP)

Sanitary sewer pipe repairs shall be limited to one per segment of sewer pipe with a segment being defined as a sewer run from manhole to manhole or manhole to cleanout. If additional repairs are required, the Contractor shall, at the direction of the Engineer, replace the entire segment unless other acceptable repairs can be agreed upon.

7-17.3(2)H Television Inspection
Section 7-17.3(2)H is supplemented with the following:
(November 10, 2009 Richland GSP)

1. Sewer/Storm collection system main and service line installation shall be completed prior to TV video inspection.

2. Insure all sewer/storm lines are clean prior to the City TV crew starting inspections. TV inspection work stoppage due to an obstruction in a line may result in rescheduling for TV inspection completion at a future unspecified date/time and may incur a cost to the Contractor. Cleaning shall consist of hydro pressure jetting of lines (jet truck). Material / debris shall be caught and removed at each structure.

3. After cleaning of lines by jetting, water will be dumped into all endpoints for sewer/storm to ensure flow arrives at the lowest point of the new system. This will be done no more that 24 hours in advance of scheduled inspection.

4. Job site access for the City TV inspection van/truck shall be a road following the sewer/storm main lines, made of compact sub-grade media or gravel. A delay in performing TV inspections due to poor or no vehicle access may result in rescheduling for TV inspection completion at a future unspecified date/time and may incur cost to the Contractor.

5. During construction a plug shall be placed at the lowest possible point in the new storm or sewer system to prevent infiltration into the existing system. Plug(s) will be attached

to the top ladder rung in sewer manholes by a rope. Plug(s) will be removed only after acceptance of project by City.

6. Contractor will supply, as needed, a person to assist TV crew in the field.

7-18 SIDE SEWERS

7-18.3 Construction Requirements

7-18.3(5) End Pipe Marker
Section 7-18.3(5) is replaced with the following:
(November 10, 2009 Richland GSP)

End pipe marker shall be per Sewer Service Marker Post Standard Detail or as shown on the plans.

7-19 SEWER CLEANOUTS

7-19.5 Payment
Section 7-19.5 is supplemented with the following:
(November 10, 2009 Richland GSP)

"__ In Sewer Cleanout", per each.

DIVISION 8
MISCELLANEOUS CONSTRUCTION

8-01 EROSION CONTROL AND WATER POLLUTION CONTROL

8-01.3 Construction Requirements

8-01.3(2) Seeding, Fertilizing, and Mulching

8-01.3(2)B Seeding and Fertilizing

Section 8-01.3(2)B is supplemented with the following:

(December 4, 2006 WSDOT GSP)

Grass seed, of the following composition, proportion, and quality shall be applied at the rates shown below on all areas requiring roadside seeding within the project:

Kind and Variety of Seed in Mixture by Common Name and (Botanical name)	Pounds Pure Live Seed (PLS) Per Acre
Thick spike Wheatgrass	11.4
Blue bunch Wheatgrass	10.8
Great Basin Wildrye	5.7
Sandberg Bluegrass	5.7
Sherman Big Bluegrass	11.4
Idaho Fescue	10.8
Weed Seed	0.6(max)
Inert and Other Crop	3.6(max)
Total Pounds PLS Per Acre	60.0

Seeds shall be certified “Weed Free,” indicating there are no noxious or nuisance weeds in the seed.

(January 3, 2006 WSDOT GSP)

Sufficient quantities of fertilizer shall be applied to supply the following amounts of nutrients:

Total Nitrogen as N - *** 67 *** pounds per acre.

Available Phosphoric Acid as P_2O_5 - *** 67 *** pounds per acre.

Soluble Potash as K_2O - *** 67 *** pounds per acre.

*** forty *** pounds of nitrogen applied per acre shall be derived from isobutylidene diurea (IBDU), cyclo-di-urea (CDU), or a time release, polyurethane coated source with a minimum release time of 6 months. The remainder may be derived from any source.

The fertilizer formulation and application rate shall be approved by the Engineer before use.

8-01.3(2)D Mulching
Section 8-01.3(2)D is supplemented with the following:
(November 10, 2009 Richland GSP)

Initial Application
*** Wood Cellulose fiber with guar-based tackifier *** mulch shall be applied at a rate of *** 1200 (WCF) and 50 (tackifier) *** pounds per acre. Mulch shall be applied to completed slopes within 7 days.

Final Application
*** Wood Cellulose fiber with guar-based tackifier *** mulch shall be applied at a rate of *** 1500 (WCF) and 50 (tackifier) *** pounds per acre.

8-01.3(17) Temporary Water and Pollution/Erosion Control
Section 8-01.3(17) is added as follows:
(November 10, 2009 Richland GSP)

The Contractor shall be responsible for preventing objectionable materials and sediments from entering and clogging all new or existing catch basin curb inlets, grates and underground piping. Prior to construction, the Contractor shall supply, install and maintain effective protective sediment filtering devices. Sediment filtering devices such as straw bale barriers, sediment barriers and/or filter fabric on inlet structures shall be in place at all times during construction.

The Contractor shall be responsible to regularly inspect sediment-filtering devices to insure that they do not become ineffective or cause localized flooding. Upon completion of construction activities, the Contractor shall remove sediment-filtering devices from all catch basins and clean catch basin sumps and underground piping which have become contaminated with sediment and debris.

Payment for catch basin protection including all labor, equipment and materials as required shall be considered incidental to the associated contract bid items.

8-02 ROADSIDE RESTORATION

8-02.3 Construction Requirements

8-02.3(17) Tree Trimming
Section 8-02.3(17) is added as follows:
(November 10, 2009 Richland GSP)

The Contractor shall trim all existing tree limbs within 2 feet of the edge of the sidewalk or pathway to provide 8 feet of vertical clearance from the surface of the sidewalk or pathway to the bottom of the tree limb.

8-02.3(18) Site Restoration
Section 8-02.3(18) is added as follows:
(November 10, 2009 Richland GSP)

Site restoration shall consist of the restoration of all disturbed site improvements, including fences, sprinkler valves, sprinkler lines, heads, and lawn and landscaping materials. The property owner shall be notified prior to the removal of any plants or shrubs. The existing plants and shrubs shall be set aside and re-planted or replaced after trenching is completed.

All disturbed lawn areas shall be cut with a sod cutter or other method approved by the Engineer, and replaced. During trenching the top 4" of topsoil shall be segregated and replaced prior to sod installation. All damaged sod shall be replaced with grass sod, from an off-site source, and placed on four inches of topsoil. All sod shall be watered daily by the Contractor for a three-week period, at which time any dead or browned sod shall be removed and replaced. The replaced areas will again require a three-week watering period. The Contractor shall provide a water source and all equipment required to maintain the sod. Use of the property owner's water and/or hoses shall be approved in writing by the property owner prior to its use. At any yard where the underground sprinkling system is disturbed (either piping or heads), the Contractor shall verify with the resident that the system has been restored to satisfactory operating condition.

All site restoration (except for concrete and/or asphalt patching) shall be completed within 14 calendar days after the adjacent construction has taken place. All construction debris shall be removed and properly disposed of.

If existing topsoil is not segregated for reuse, then topsoil from an off-site source shall be provided. Topsoil shall be a sandy loam silt material free of sticks, rocks, wood, vegetable material and other deleterious material, and shall contain 30% silt or clay. Minimum thickness placed shall be four inches. The seed specifications for grass sod and/or hydro-seed will be submitted to the Engineer for approval prior to placement.

In areas where landscaping rock and/or gravel exist, the Contractor shall remove and replace rock and landscaping materials to match existing types or better. In gravel areas without fabric the Contractor shall apply a weed sterilant to the finished gravel surface as approved by the Engineer.

8-02.5 Payment

Section 8-02.5 is supplemented with the following:

(November 10, 2009 Richland GSP)

"Tree Trimming", lump sum.
All costs for trimming, removing, and hauling off tree trimmings shall be included in the lump sum price for "Tree Trimming".

"Site Restoration", lump sum.
The lump sum contract payment shall include all labor, equipment and materials necessary for the restoration of all disturbed site improvements, other than those specifically listed in the bid proposal.

8-04 CURBS, GUTTER, AND SPILLWAYS

8-04.3 Construction Requirements

8-04.3(1) Cement Concrete Curbs, Gutters, and Spillways

Section 8-04.3(1) is supplemented with the following:

(November 10, 2009 Richland GSP)

At each location where a water service or water main crosses under a concrete curb the curb shall be stamped with a "W" to indicate the location.

At each location where a sewer service or sewer main crosses under a concrete curb the curb shall be stamped with an "S" to indicate the location.

Section 8-04.3(1) the first sentence of the first paragraph is revised to read:

(December 15, 2011 Richland GSP)

All cement concrete curb, curb and gutter, gutter, and spillway shall be constructed with air entrained concrete Class 4000 conforming to the requirements of Section 6-02.

8-14 CEMENT CONCRETE SIDEWALKS

8-14.3 Construction Requirements

Section 8-14.3 is supplemented with the following:

(November 10, 2009 Richland GSP)

Detectable Warning Strip

Where shown in the Plans, the Contractor shall install a detectable warning pattern having truncated dome shape shown in the Standard Plans. The Contractor shall use 1 of the detectable warning pattern products listed in the Qualified Products List or submit another manufacturer's product for approval by the Engineer. The warning pattern shall be capable of being bonded to an existing cement or asphalt concrete surface.

BOLLARDS

(April 4, 2005 WSDOT GSP)

Description

This work shall consist of furnishing and installing steel bollards in accordance with the Plans, Standard Plans, and these Specifications, at the locations shown in the Plans or as staked by the Engineer.

Materials

Post

Bollard posts shall be Schedule 80 steel pipe and post sleeves shall be Schedule 40 steel pipe.

Hardware

All hardware shall be steel, conforming to the size and thickness shown in the Standard Plans. The welding shall not interfere with the fit of the lid in the cover plate.
All steel parts shall be hot-dip galvanized after fabrication in accordance with ASTM A 123.

Reflective Tape

Reflective tape shall be one of the following or an approved equal: Scotchlite High Intensity Grade Series 2870 Reflexite AP-1000
Scotchlite Diamond Grade LDP Series 3970
T-6500 High Intensity (Type IV)

Concrete

Footings shall be constructed using concrete Class 3000.

Construction Requirements

Bollards shall be constructed in accordance with the Standard Plans.
Bollards shall not vary more than 1/2 inch in 30 inches from a vertical plane.
Bollard posts, and the exposed parts of the base assembly shall be painted with one coat of paint conforming to the requirements of Section 9-34.2(1).

Measurement

Measurement for bollards will be by the unit for each type of bollard furnished and installed.

Payment

Payment will be made in accordance with Section 1-04.1, for the following bid items:

"Bollard Type ___", per each.

DIVISION 9
MATERIALS

9-03.8 AGGREGATES

9-03.8 Aggregates for Hot Mix Asphalt

9-03.8 (7) HMA Tolerances and Adjustments

(December 15, 2010 Richland GSP)

1. Job Mix Formula Tolerances

In the table under the column of Non-statistical Evaluation for Asphalt Binder, the plus or minus 0.5%, is changed to be only a plus 0.25%. There will be no tolerance below the design job mix formula percent for asphalt binder.

9-30 WATER DISTRIBUTION MATERIALS

9-30.1 Pipe

9-30.1(7) Joint Lubricant

Section 9-30.1(7) Joint Lubricant is added

(November 10, 2009 Richland GSP)

Joint lubricant shall be furnished with the pipe, in the amount and type recommended by the pipe manufacturer. The lubricant shall be a water-soluble, nontoxic, vegetable soap compound conforming to United States Pharmacopoeia No. P39.

9-30.2 Fittings

9-30.2(6) Restrained Joints

Section 9-30.2(6) is supplemented as follows:

(November 10, 2009 Richland GSP)

1. Thrust Ties

   Joint harness shall be used where thrust ties are indicated, and consist of galvanized steel tie-bolts extending across the pipe joints to lugs shop welded to the pipe barrel. Thrust tie assembly shall conform to AWWA M 11 Steel Pipe Manual.

2. Retainer Gland

   Ductile iron retainer glands for mechanical joint pipe and fittings shall be constructed with matching bolt holes for standard joint and provided with a series of set screws to bear on the pipe barrel and provide holding power against joint separation due to internal pressure.

9-30.2(12) Pipe Couplings
Section 9-30.2(12) Pipe Couplings is added:
(November 10, 2009 Richland GSP)

Pipe couplings shall be wrought steel or cast iron capable of withstanding the designated internal pressure without leakage or overstressing. Diameter of the coupling shall be compatible with the outside diameter of the pipe on which the coupling is installed. Steel style pipe couplings shall be used in the pipeline or to connect the pipeline to existing steel pipelines. Cast style pipe couplings shall be used in the pipeline or to connect the pipeline to existing cast or ductile iron pipelines.

Couplings middle ring dimensions shall be as recommended by the manufacturer or as approved. Gaskets shall be standard or equivalent as approved. Corrosion protection for middle ring and follower rings shall be hot-dip or electro-galvanizing or bonded vinyl plastic coating.

Furnish all joint accessories with pipe couplings. Remove center stops if required for installation. It shall be the Contractor's responsibility to verify dimensions of all existing pipelines in the field before ordering couplings.

9-30.3 Valves

9-30.3(1) Gate Valves (3-inches to 16 inches)
Section 9-30.3(1) is supplemented as follows:
(November 10, 2009 Richland GSP)

The ductile Iron Gate valve wedge or gate member shall be fully encapsulated in synthetic rubber. All seating surfaces within the valve body shall be inclined to the vertical, the valve stem shall be sealed by a minimum of two (2) O-rings and all stem seals shall be replaceable with the valve wide open and subjected to full rated pressure.

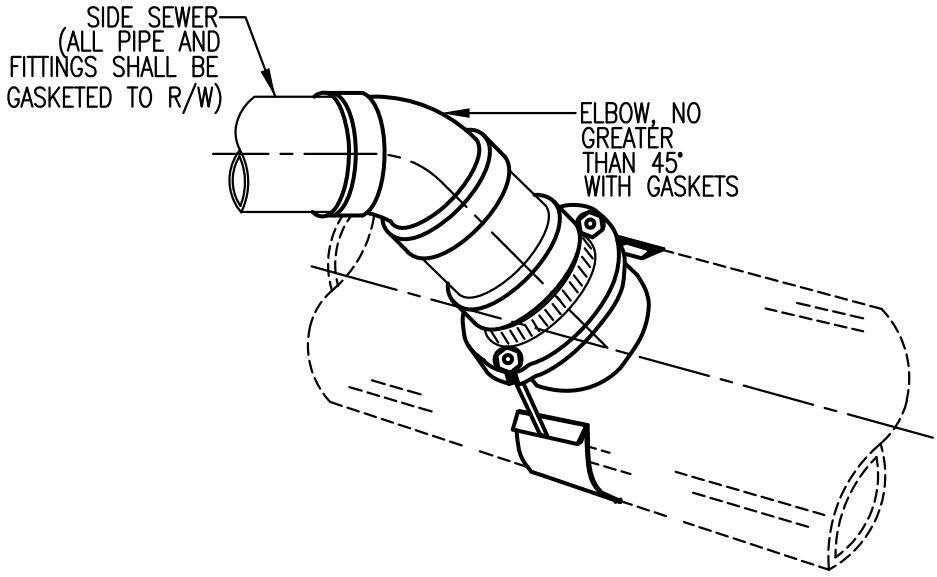
Joint materials for mechanical joint or push-on joint for cast iron pipe shall conform to AWWA C111. Joint materials for flanged joints shall consist of one-eighth (1/8) inch thick, full-face, one-piece, cloth inserted rubber gaskets conforming to Section 7 of AWWA C207. Bolts and nuts shall conform to Section 8 of AWWA C207.

9-30.3(8) Tapping Sleeve and Valve Assembly
Section 9-30.3(8) is supplemented as follows:
(November 10, 2009 Richland GSP)

Tapping valves are required with all tapping sleeves 12” diameter and larger along with all size on size taps.

9-30.6(4) Service Fittings
Section 9-30.6(4), third paragraph is replaced with the following:
(November 10, 2009 Richland GSP)

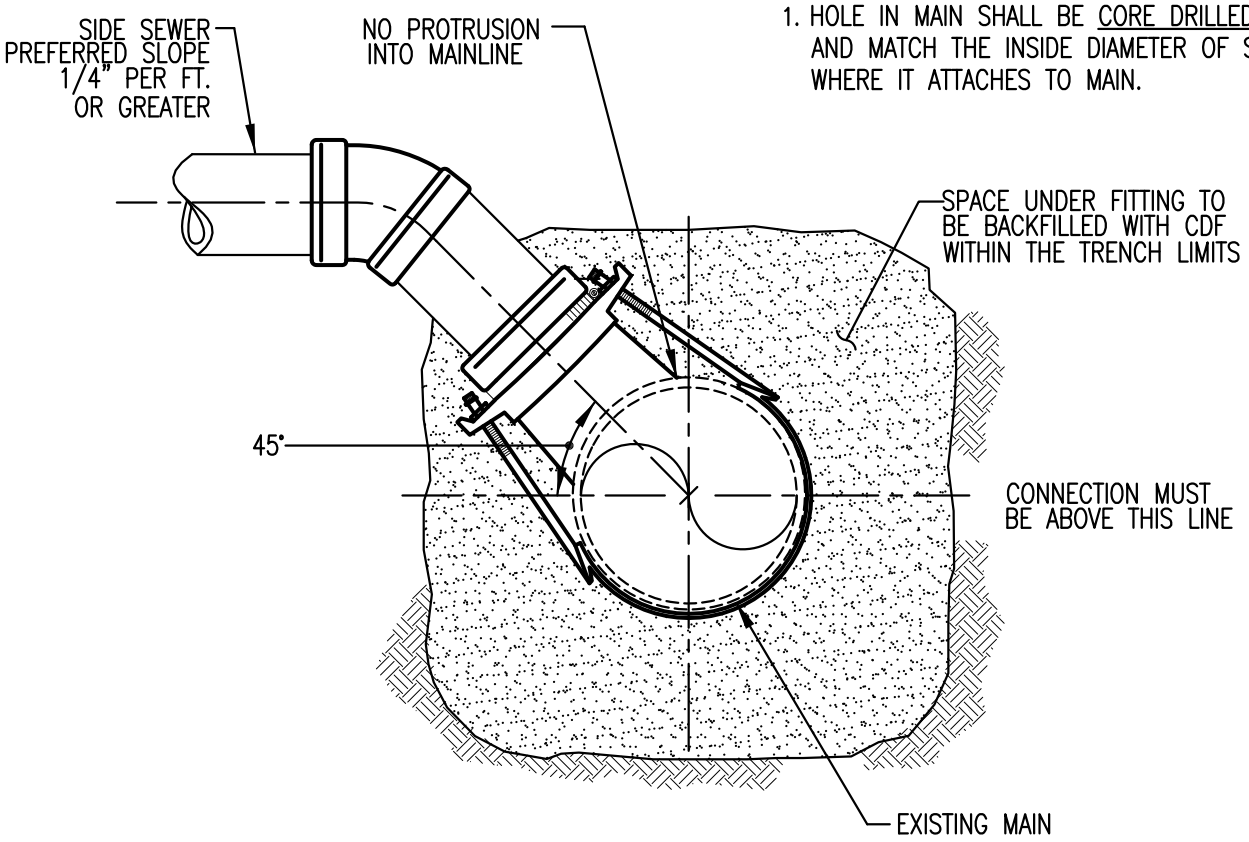
All connection to polyethylene tubing shall be Ford Pack Joint type fittings.



ISOMETRIC

NOTE:

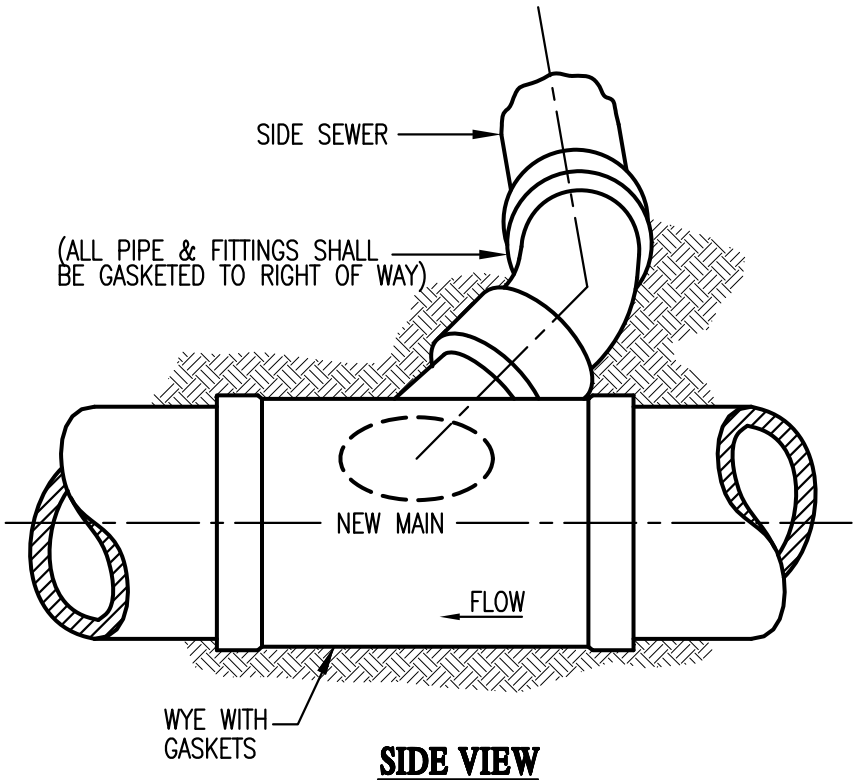
1. HOLE IN MAIN SHALL BE CORE DRILLED AND MATCH THE INSIDE DIAMETER OF SADDLE WHERE IT ATTACHES TO MAIN.



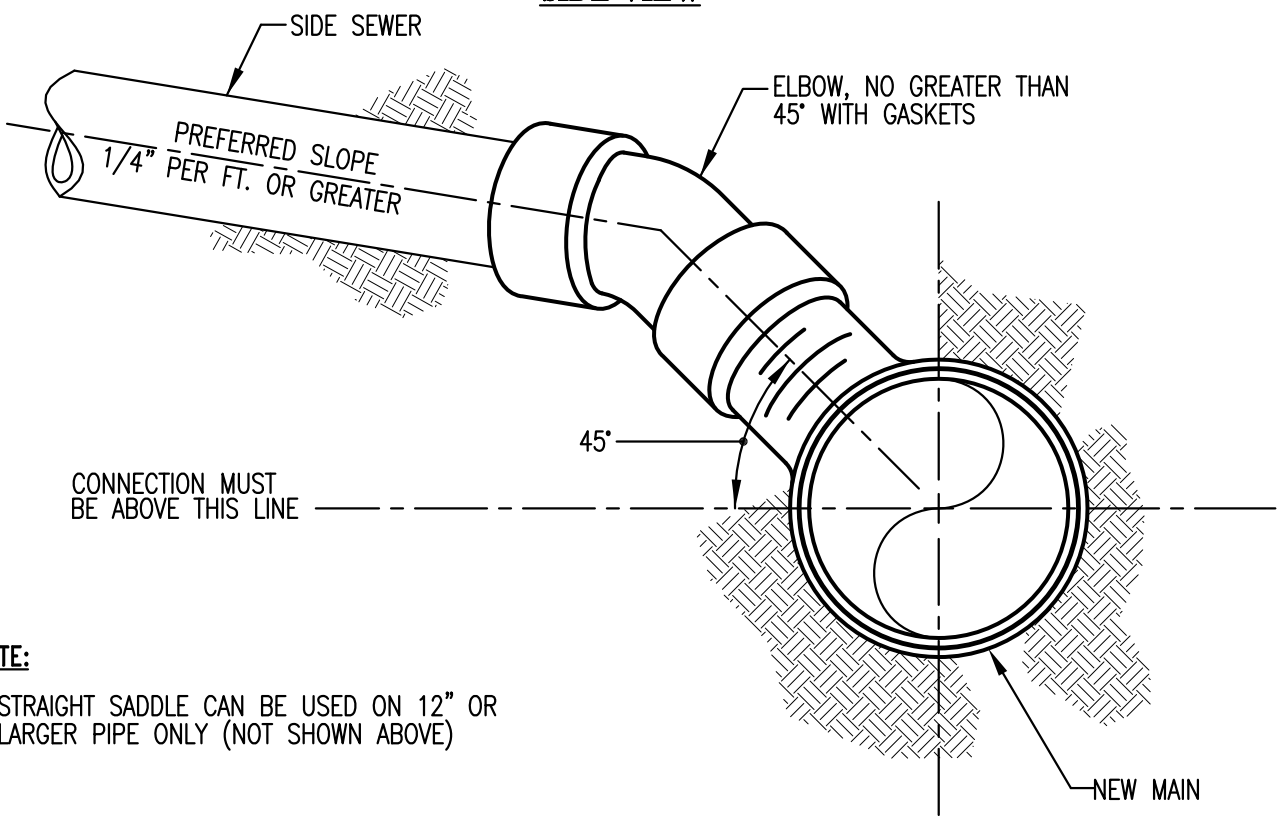
SECTION

SEWER SERVICE SADDLE CONNECTION TO EXISTING MAIN

CIVIL & UTILITY ENGINEERING	
APPR. BY: PKR	DATE: 02.12
DRAWN BY: JKS	DWG: S1
CAD FILE: 2012_S1_02_2012	



SIDE VIEW



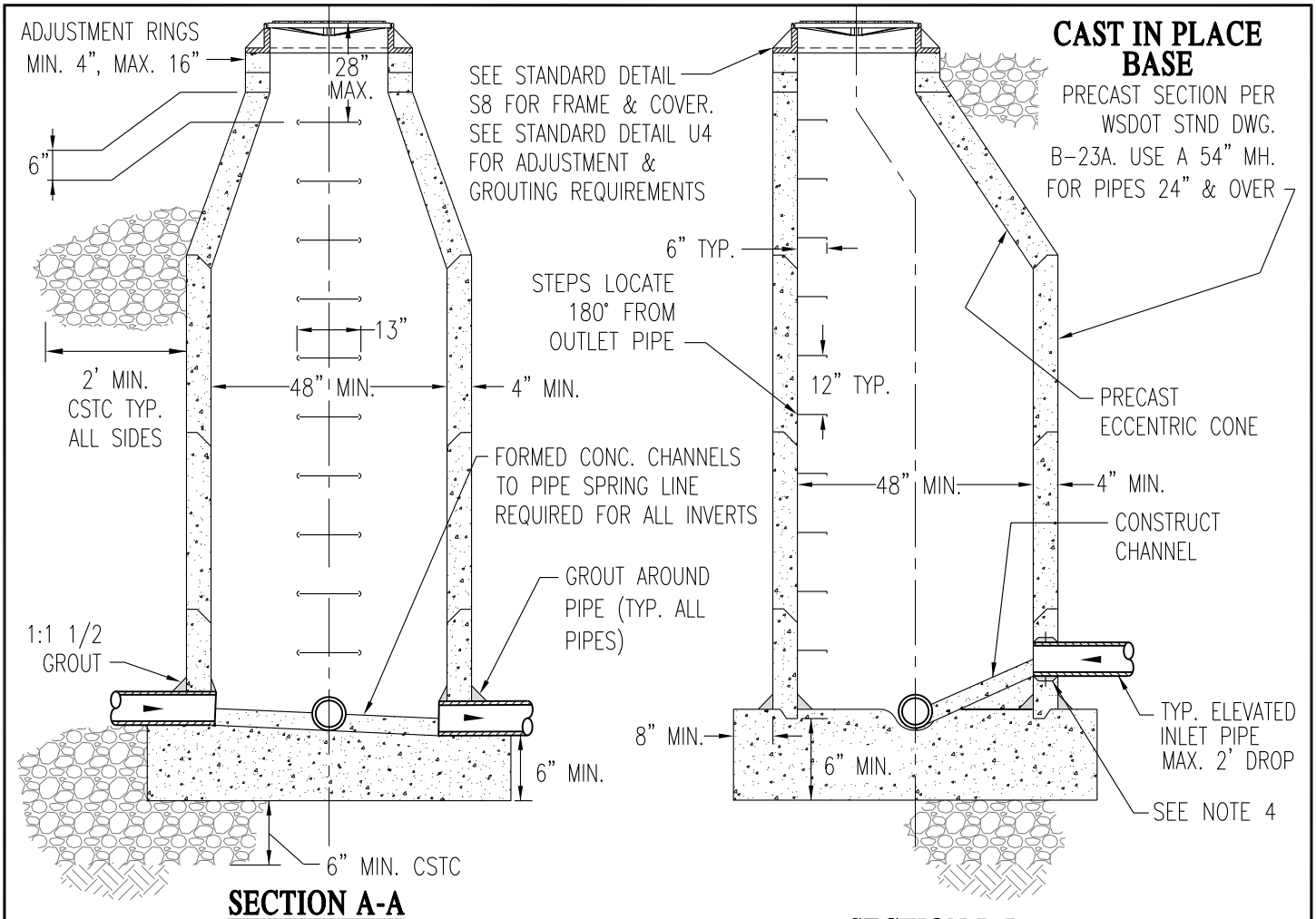
SECTION

NOTE:

1. STRAIGHT SADDLE CAN BE USED ON 12" OR LARGER PIPE ONLY (NOT SHOWN ABOVE)

SEWER WYE CONNECTION TO NEW MAIN

CIVIL & UTILITY ENGINEERING	
APPR. BY: PKR	DATE: 02.12
DRAWN BY: JKS	DWG: S2
CAD FILE: 2012_S2_02_2012	

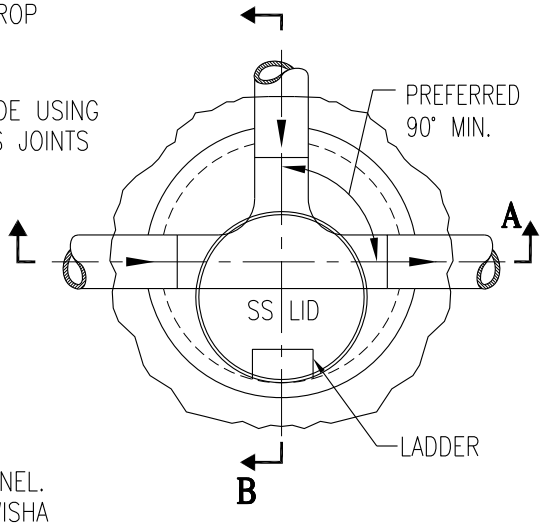


SECTION A-A

SECTION B-B

NOTES:

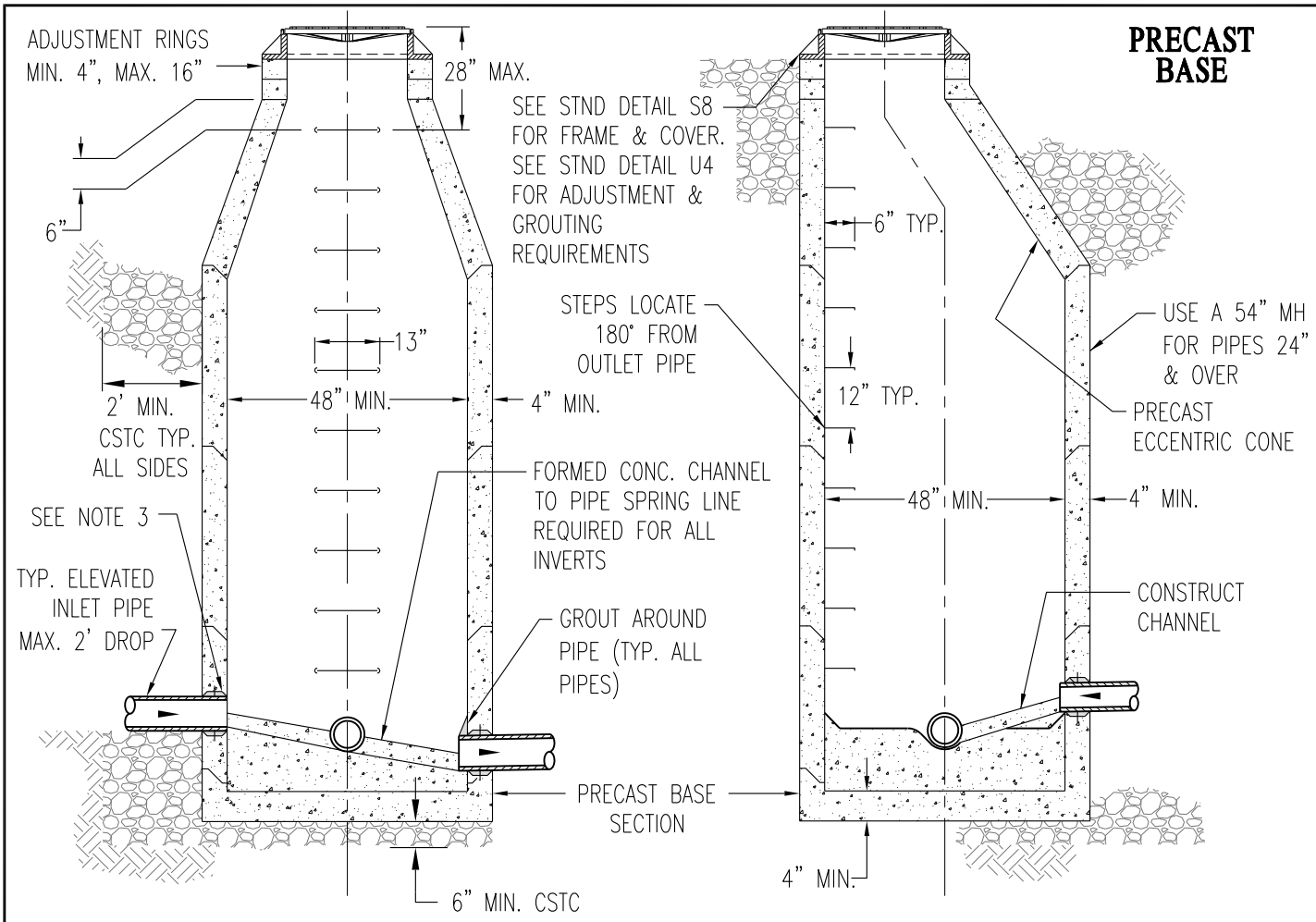
1. FOR NEW MAINLINE PIPES: PROVIDE A MINIMUM 0.10 FOOT IN-OUT DROP FOR STRAIGHT RUN AND 0.20 FOOT IN-OUT DROP FOR ANGLE RUNS. PIPES OF DIFFERENT SIZES SHALL ALIGN CROWN TO CROWN.
2. IN GROUNDWATER INSTALLATIONS: ALL MANHOLE JOINTS SHALL BE MADE USING A CONTINUOUS FLEXIBLE RUBBER MANHOLE GASKET JOINT. ALL HOLES JOINTS CONNECTIONS SHALL BE SEALED WITH GROUT ON THE OUTSIDE.
3. ALL NEW PRECAST MANHOLE SECTIONS SHALL BE PROVIDED WITH CAST-IN FLEXIBLE PIPE CONNECTORS A-LOK X-CEL ONLY. NO PIPE PENETRATIONS ALLOWED INTO PRECAST CONE SECTIONS.
4. WHEN CONNECTING PIPE TO AN EXISTING MANHOLE, SAND COLLAR SHALL BE USED. THE ENTRANCE HOLE SHALL BE SAWCUT, AND THE SAND COLLAR SHALL BE GROUTED INSIDE AND OUT.
5. A SHALLOW MANHOLE SHALL BE USED WHEN IT'S DEPTH IS 5.5' OR LESS FROM INVERT TO TOP OF RIM.
6. STEPS SHALL BE PLACED OVER BENCH, NOT OBSTRUCTING ANY CHANNEL. MANHOLE STEPS SHALL CONFORM TO AASHTO M199 AND MEET ALL WISHA REQUIREMENTS. STEPS REQUIRED ON SANITARY SEWER ONLY.
7. CHANNEL INTERSECTIONS SHALL BE SMOOTH AND DIRECTED DOWNSTREAM.



PLAN

STANDARD MANHOLE (W/CAST IN PLACE BASE)

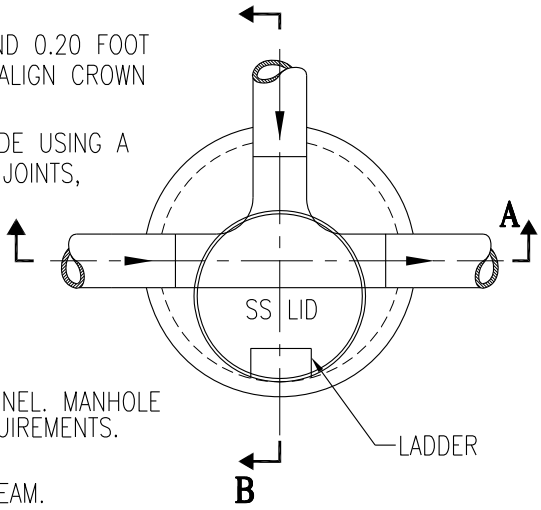
CIVIL & UTILITY ENGINEERING	
APPR. BY: PKR	DATE: 09.13
DRAWN BY: LD	DWG: S3
CAD FILE: 2013_S3_09_2013	



SECTION A-A **SECTION B-B**

NOTES:

1. PROVIDE A MINIMUM 0.10 FOOT IN-OUT DROP FOR STRAIGHT RUN AND 0.20 FOOT IN-OUT DROP FOR ANGLE RUNS. PIPES OF DIFFERENT SIZES SHALL ALIGN CROWN TO CROWN.
2. IN GROUNDWATER INSTALLATIONS: ALL MANHOLE JOINTS SHALL BE MADE USING A CONTINUOUS FLEXIBLE RUBBER MANHOLE GASKET JOINT. ALL HOLES, JOINTS, CONNECTIONS SHALL BE SEALED WITH GROUT ON THE OUTSIDE.
3. ALL NEW PRECAST MANHOLE SECTIONS SHALL BE PROVIDED WITH CAST-IN FLEXIBLE PIPE CONNECTORS A-LOK X-CEL ONLY. NO PIPE PENETRATIONS ALLOWED INTO PRECAST CONE SECTIONS.
4. A SHALLOW MANHOLE SHALL BE USED WHEN IT'S DEPTH IS 5.5' OR LESS FROM INVERT TO TOP OF RIM.
5. STEPS SHALL BE PLACED OVER BENCH, NOT OBSTRUCTING ANY CHANNEL. MANHOLE STEPS SHALL CONFORM TO AASHTO M199 AND MEET ALL WISHA REQUIREMENTS. STEPS REQUIRED ON SANITARY SEWER ONLY.
6. CHANNEL INTERSECTIONS SHALL BE SMOOTH AND DIRECTED DOWNSTREAM.



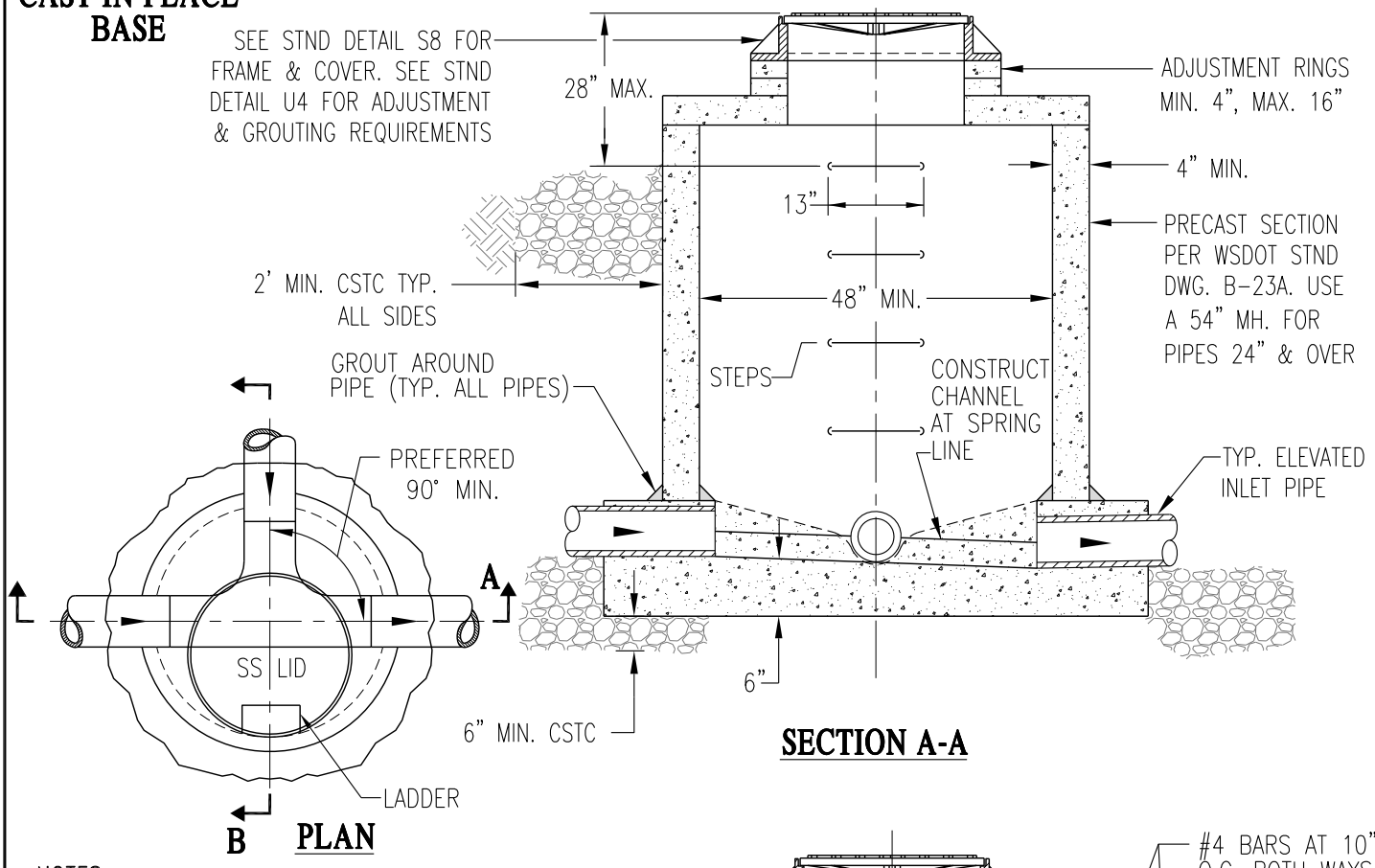
PLAN

Richland Washington

STANDARD MANHOLE (W/PRECAST BASE)

CIVIL & UTILITY ENGINEERING	
APPR. BY: PKR	DATE: 09.13
DRAWN BY: LD	DWG: S4
CAD FILE: 2013_S4_09_2013	

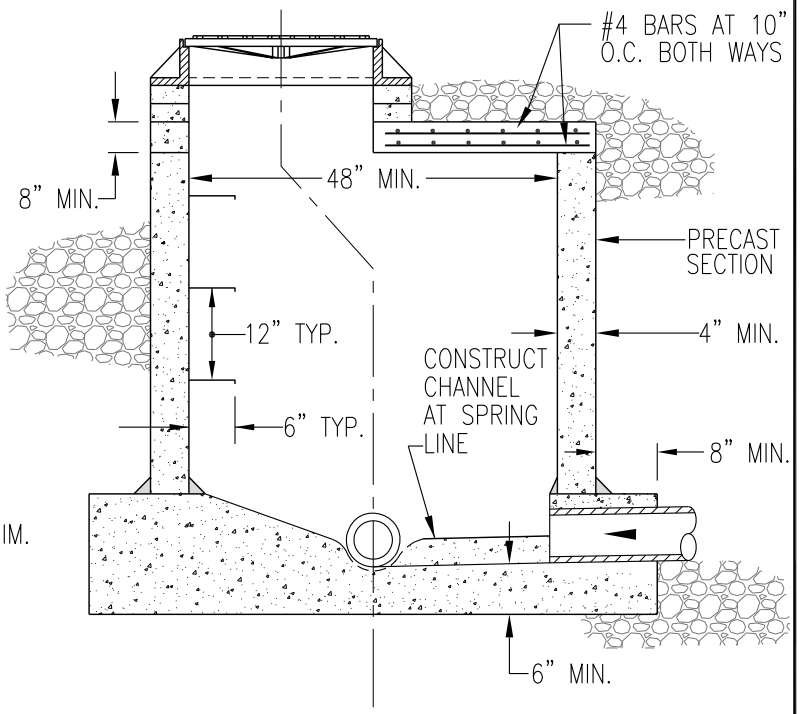
CAST IN PLACE BASE



SECTION A-A

NOTES:

1. FOR NEW MAINLINE PIPES: PROVIDE A MINIMUM 0.10 FOOT IN-OUT DROP FOR STRAIGHT RUNS AND 0.20 FOOT IN-OUT DROP FOR ANGLE RUNS. PIPES OF DIFFERENT SIZES SHALL ALIGN CROWN TO CROWN.
2. IN GROUNDWATER INSTALLATIONS: ALL MANHOLE JOINTS SHALL BE MADE USING A CONTINUOUS FLEXIBLE RUBBER MANHOLE GASKET JOINT. ALL HOLES, JOINTS, CONNECTIONS SHALL BE SEALED WITH GROUT ON THE OUTSIDE.
3. ALL NEW PRECAST MANHOLE SECTIONS SHALL BE PROVIDED WITH CAST-IN FLEXIBLE PIPE CONNECTORS A-LOK X-CEL ONLY.
4. A STANDARD MANHOLE SHALL BE USED WHEN IT'S DEPTH IS 5.5' OR MORE FROM INVERT TO TOP OF RIM.
5. STEPS SHALL BE PLACED OVER BENCH, NOT OBSTRUCTING ANY CHANNEL. MANHOLE STEPS SHALL CONFORM TO AASHTO M199 AND MEET ALL WISHA REQUIREMENTS. STEPS REQUIRED ON SANITARY SEWER ONLY.
6. CHANNEL INTERSECTIONS SHALL BE SMOOTH AND DIRECTED DOWNSTREAM.

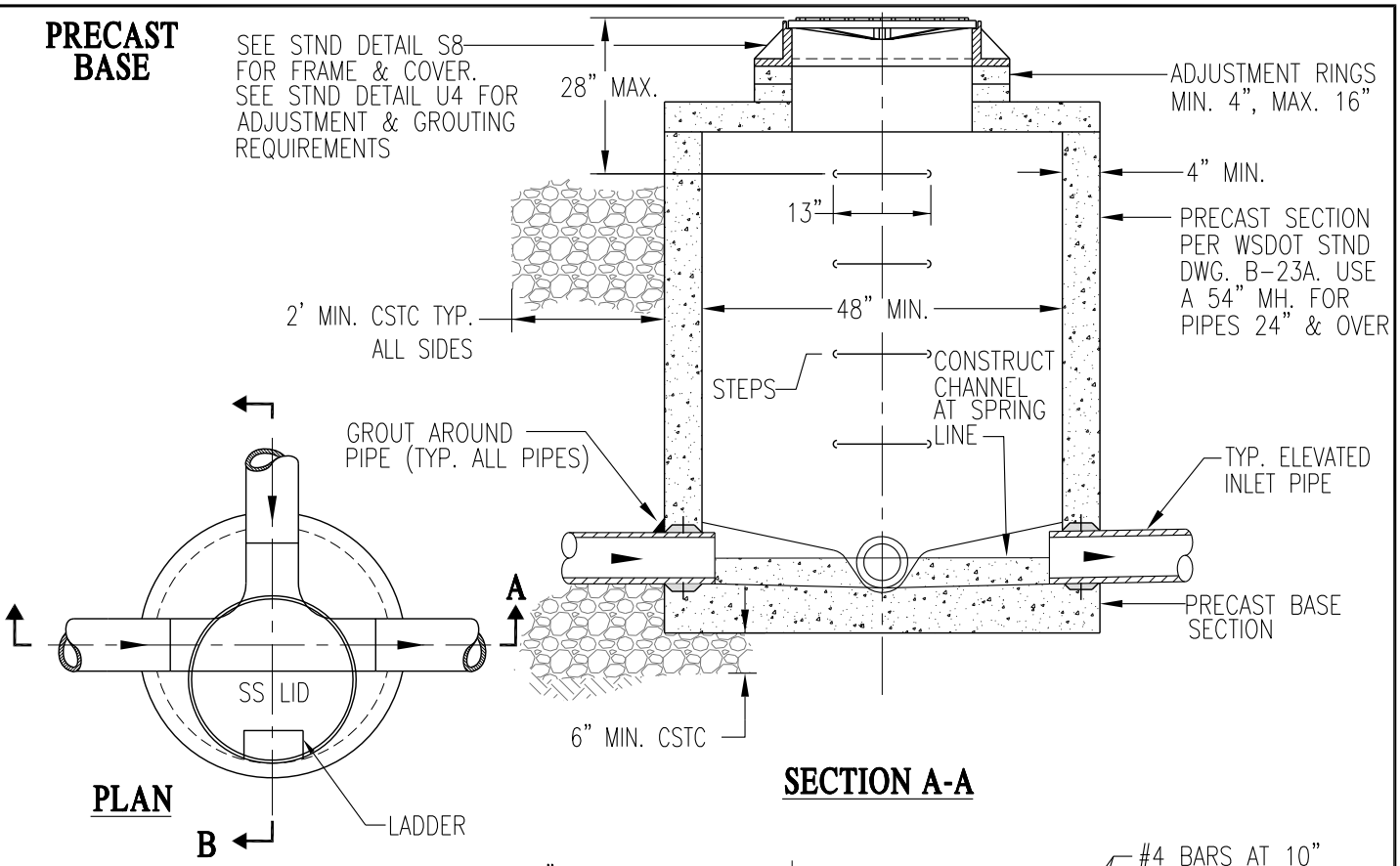


SECTION B-B

SHALLOW MANHOLE (W/CAST IN PLACE BASE)

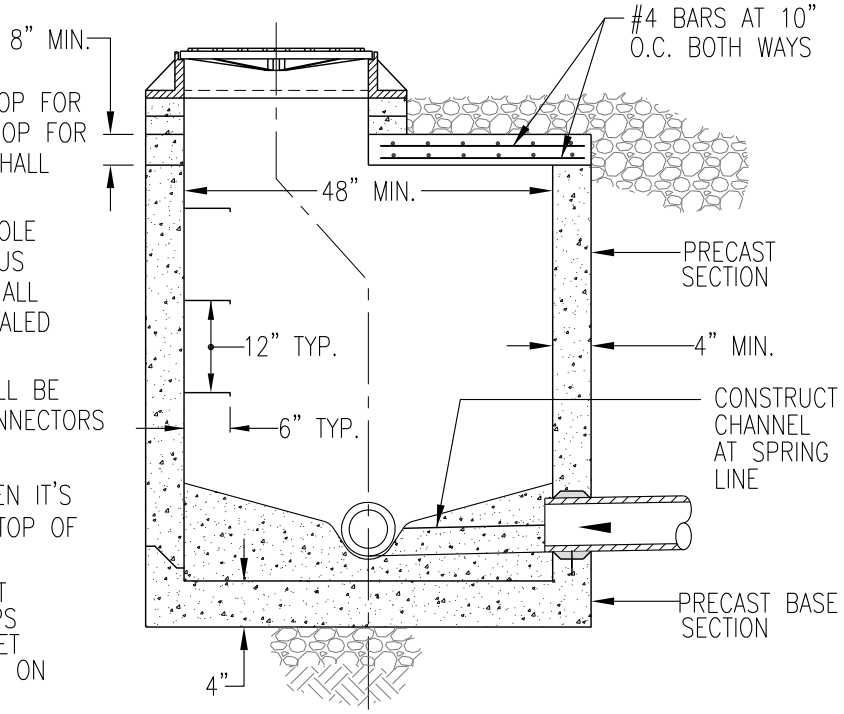
CIVIL & UTILITY ENGINEERING	
APPR. BY: PKR	DATE: 09.13
DRAWN BY: LD	DWG: S5
CAD FILE: 2013_S5_09_2013	

PRECAST BASE



NOTES:

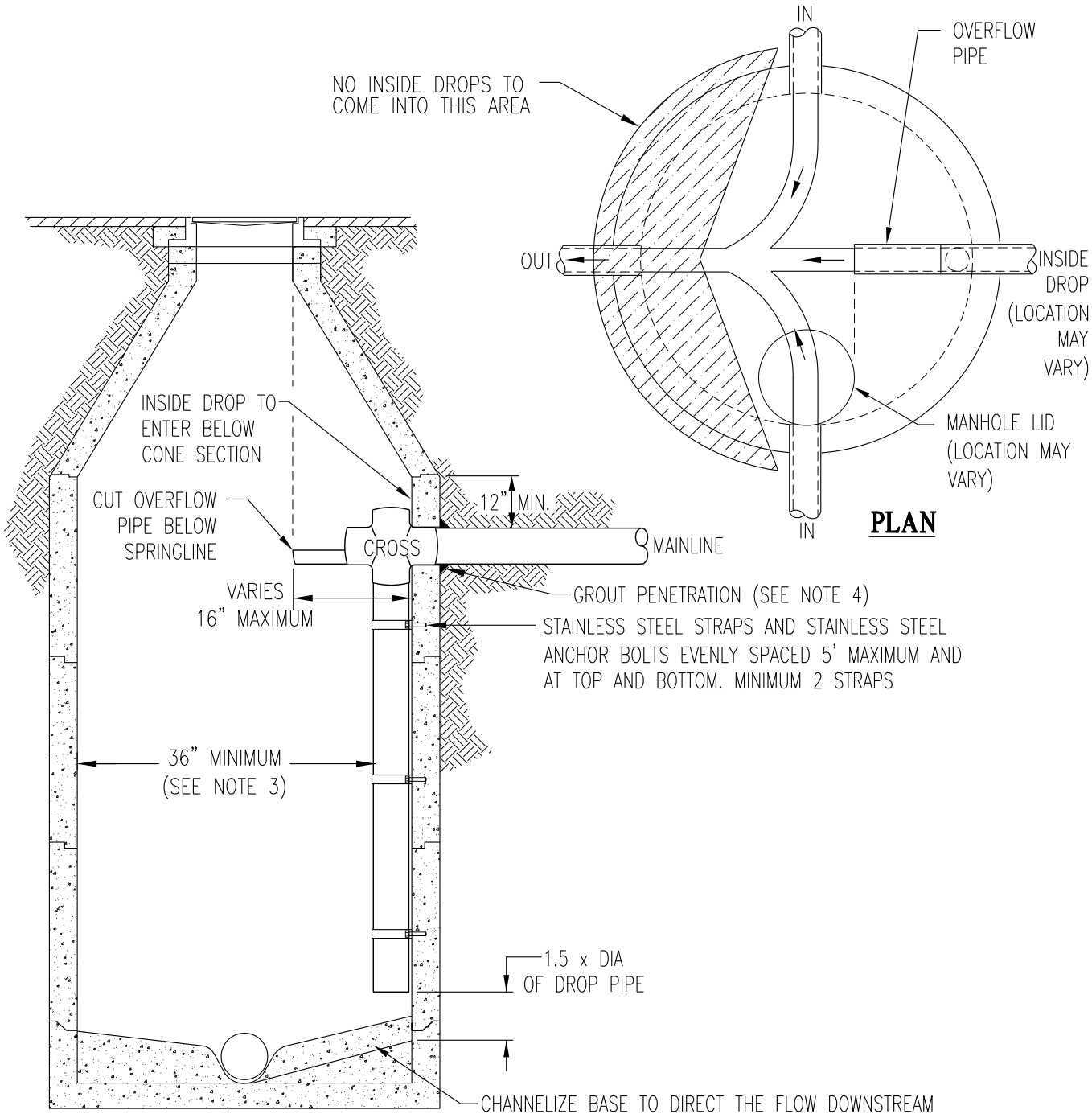
1. PROVIDE A MINIMUM 0.10 FOOT IN-OUT DROP FOR STRAIGHT RUNS AND 0.20 FOOT IN-OUT DROP FOR ANGLE RUNS. PIPES OF DIFFERENT SIZES SHALL ALIGN CROWN TO CROWN.
2. IN GROUNDWATER INSTALLATIONS: ALL MANHOLE JOINTS SHALL BE MADE USING A CONTINUOUS FLEXIBLE RUBBER MANHOLE GASKET JOINT. ALL HOLES, JOINTS, CONNECTIONS SHALL BE SEALED WITH GROUT ON THE OUTSIDE.
3. ALL NEW PRECAST MANHOLE SECTIONS SHALL BE PROVIDED WITH CAST-IN FLEXIBLE PIPE CONNECTORS A-LOK X-CEL ONLY.
4. A STANDARD MANHOLE SHALL BE USED WHEN IT'S DEPTH IS 5.5' OR MORE FROM INVERT TO TOP OF RIM.
5. STEPS SHALL BE PLACED OVER BENCH, NOT OBSTRUCTING ANY CHANNEL. MANHOLE STEPS SHALL CONFORM TO AASHTO M199 AND MEET ALL WISHA REQUIREMENTS. STEPS REQUIRED ON SANITARY SEWER ONLY.
6. CHANNEL INTERSECTIONS SHALL BE SMOOTH AND DIRECTED DOWNSTREAM.



SECTION B-B

SHALLOW MANHOLE (W/PRECAST BASE)

CIVIL & UTILITY ENGINEERING	
APPR. BY: PKR	DATE: 09.13
DRAWN BY: LD	DWG: S6
CAD FILE: 2013_S6_09_2013	



NOTES:

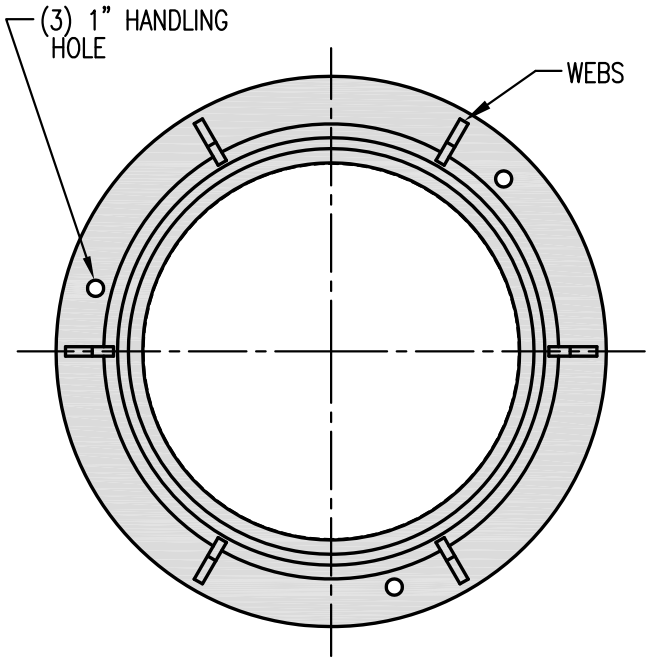
1. DROP CONNECTION PIPE DIAMETER AND FITTINGS SHALL BE EQUAL TO OR GREATER THAN THE DIAMETER OF THE SEWER SERVICE.
2. THE LENGTH OF THE OVERFLOW PIPE VARIES (DEPENDING ON THE MANHOLE LID LOCATION) TO ALLOW ACCESS FROM THE MANHOLE LID.
3. SPECIAL PERMISSION FROM CITY ENGINEER FOR INSTALLATIONS RESULTING IN LESS THAN 36" CLEARANCE.
4. THE ENTRANCE HOLE SHALL BE CORE DRILLED TO A DIAMETER LARGE ENOUGH THAT THE LEG OF THE CROSS WILL FIT THROUGH THE MANHOLE WALL AND SHALL BE GROUTED INSIDE AND OUT.
5. CHANNELIZE BASE TO DIRECT THE FLOW DOWNSTREAM FROM THE DROP PIPE TO THE EXISTING CHANNEL.

Richland Washington

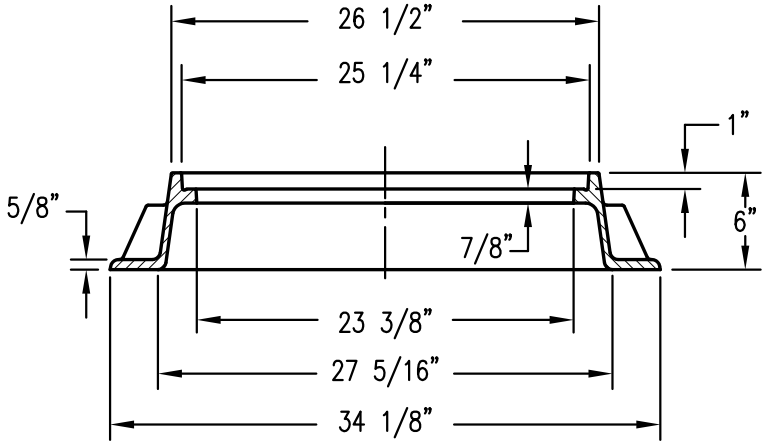
DROP CONNECTION INSIDE SEWER ON EXISTING MANHOLES

CIVIL & UTILITY ENGINEERING	
APPR. BY: PKR	DATE: 09.13
DRAWN BY: LD	DWG: S7
CAD FILE: 2013_S7_09_2013	

FRAME
NOT TO SCALE

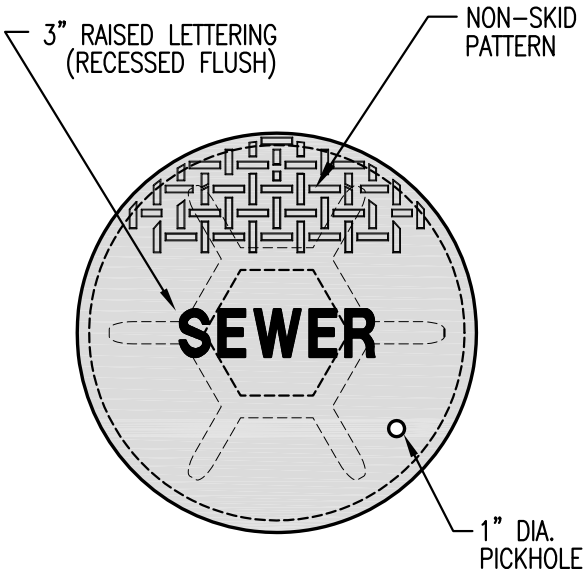


PLAN VIEW

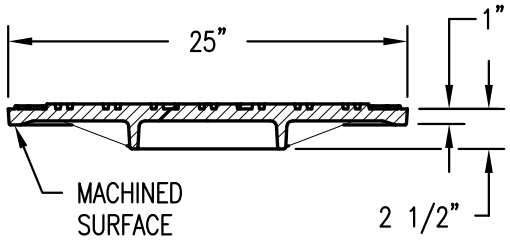


SECTION VIEW

COVER
NOT TO SCALE



PLAN VIEW



SECTION VIEW

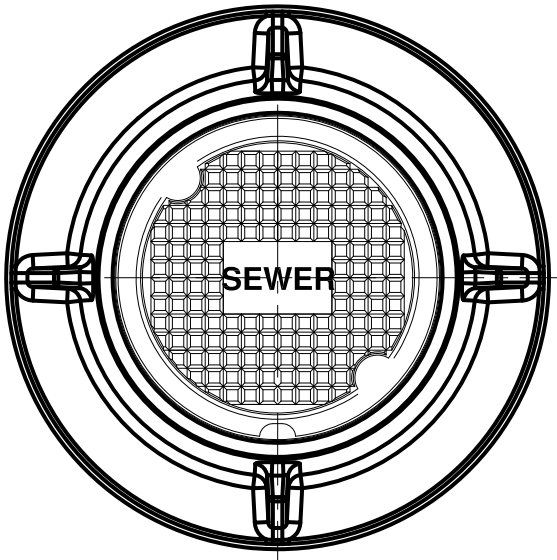
NOTES:

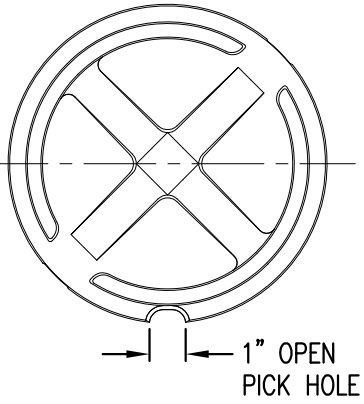
1. COVER
   WEIGHT – 122 LBS. MIN.
   FRAME
   WEIGHT – 136 LBS. MIN.
2. MACHINE COVER SEAT & COVER FACE.
3. LOADING – MINIMUM AASHTO H20
4. MANHOLE COVERS TO BE LETTERED AS "WATER," "SEWER," OR "DRAIN" AS REQUIRED BY TYPE OF APPLICATION.

Richland Washington

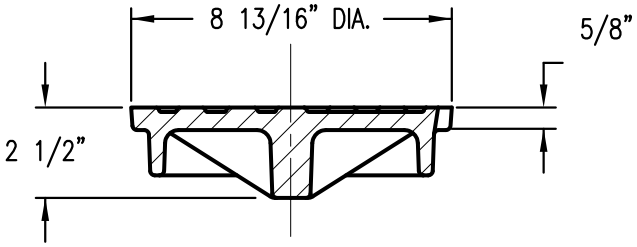
MANHOLE FRAME AND COVER

CIVIL & UTILITY ENGINEERING	
APPR. BY: PKR	DATE: 12.10
DRAWN BY: LD	DWG: S8
CAD FILE: 2012_S8_02_2012	



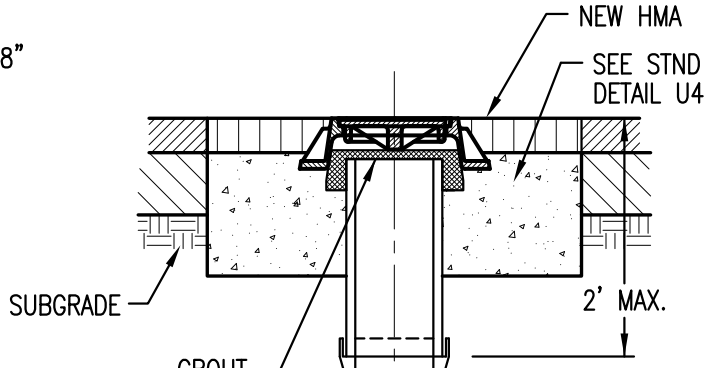


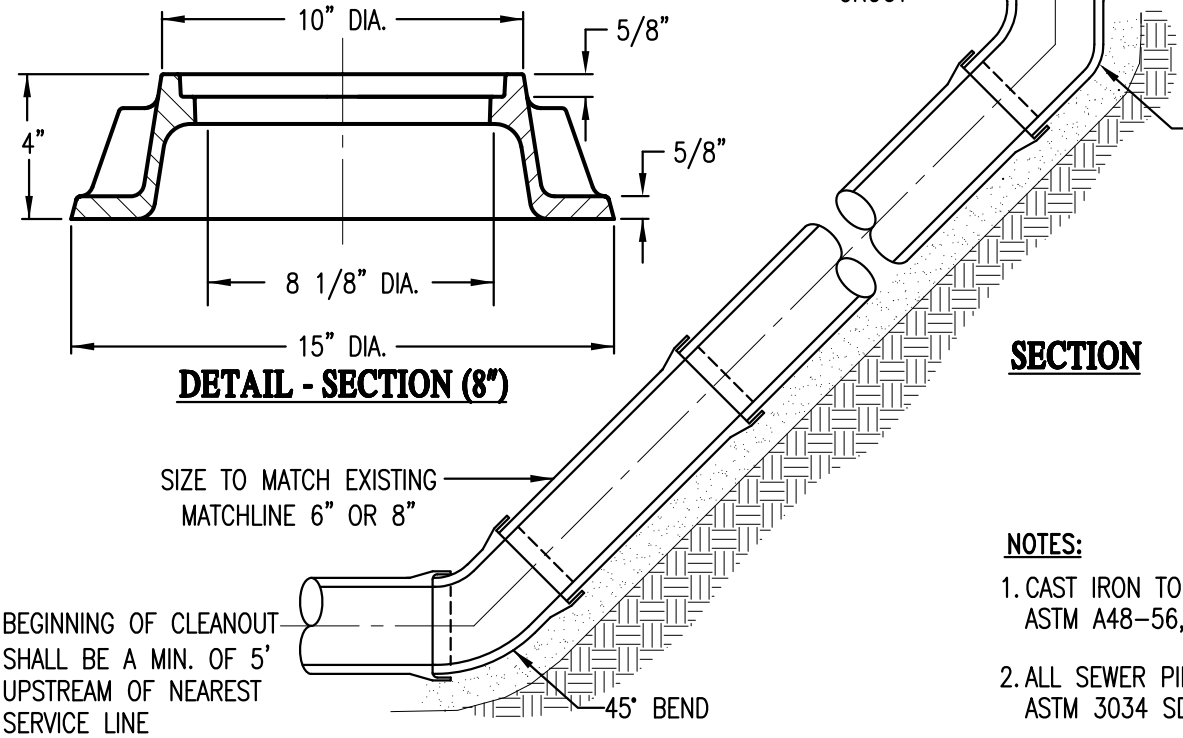
COVER -BOTTOM



COVER - SECTION

DETAIL - SECTION (8")





SECTION

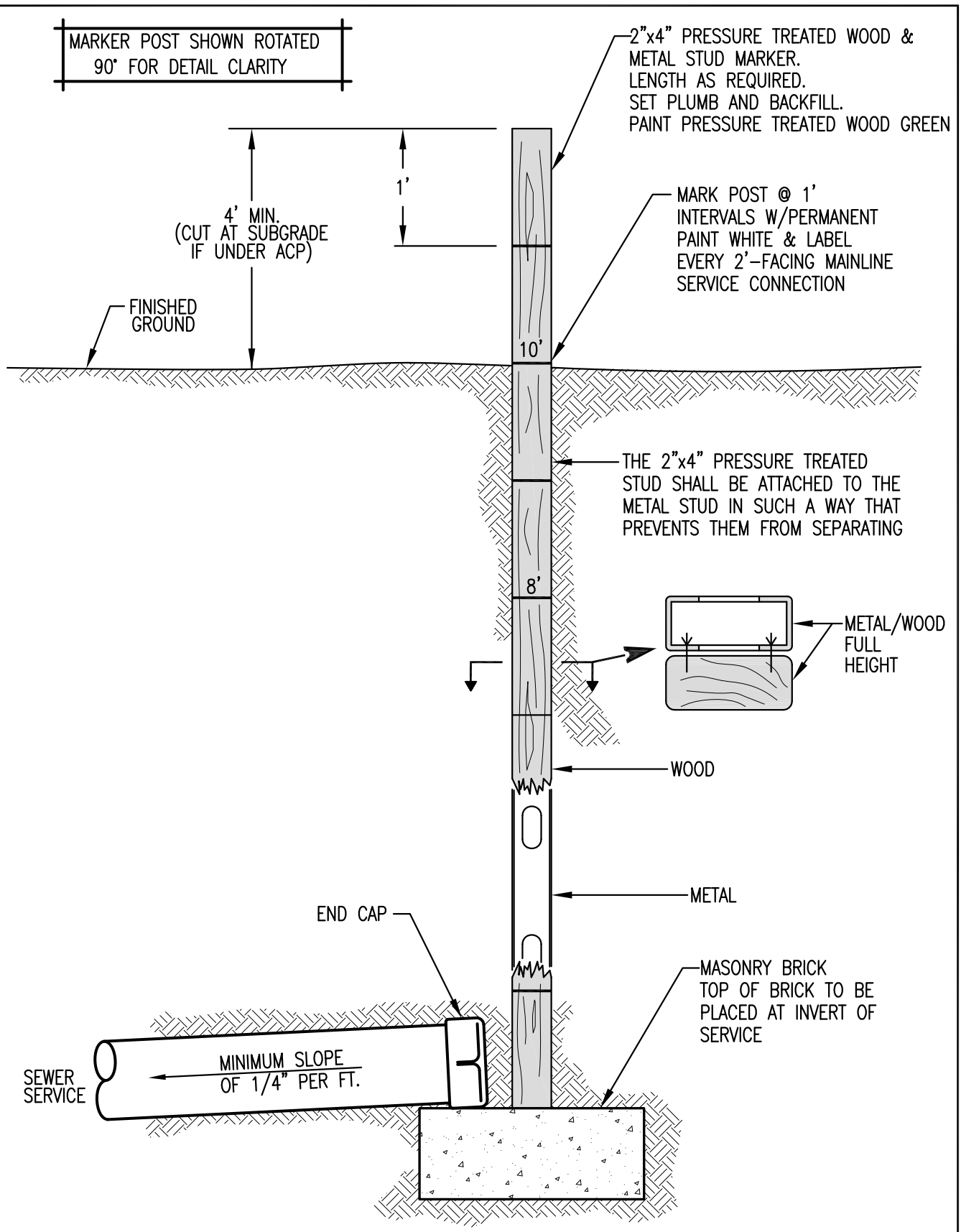
NOTES:

1. CAST IRON TO CONFORM TO ASTM A48–56, CLASS 35 B.
2. ALL SEWER PIPE SHALL BE ASTM 3034 SDR 35.

Richland Washington

6" & 8" CLEANOUT ASSEMBLY

CIVIL & UTILITY ENGINEERING	
APPR. BY: PKR	DATE: 02.12
DRAWN BY: JKS	DWG: S9
CAD FILE: 2012_S9_02_2012	



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CITY OF RICHLAND

DESIGN GUIDELINES AND STANDARD SPECIFICATIONS AND DETAILS FOR SEWAGE PUMP STATIONS

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DESIGN GUIDELINES AND STANDARD SPECIFICATIONS AND DETAILS FOR SEWAGE PUMP STATIONS

1.1 SCOPE

This document provides design guidelines and standard specifications and details for sewage pump stations between 20,000 and 0.5 million gallons per day average daily flow that are to be accepted for ownership, operation, and maintenance by the City of Richland.

Pump stations serving private developments will not be maintained or owned by the City. At the option of the City, the pump station may be located in public right-of-way and dedicated to the City for ownership, operation, and maintenance.

Any of these requirements may change without notice, and the City may grant variances from individual requirements on a case-by-case basis. Project approval by the City is independent of any other agency approval, and it is the responsibility of the Owner to secure approvals and permits from all other regulatory agencies.

1.2 DESIGN GUIDELINES

1.2.1 Submittals to City for Review and Approval

1.2.1.1 Submittal for Design Review and Approval

Despite the specific information provided herein, the drawings, specifications and details ("Designs") only show minimum requirements, should be considered conceptual in nature, and may require revision and/or modification to conform to project conditions and applicable laws, codes, ordinances, standards and other current requirements and/or best practices. Designs shall be checked, completed and stamped by a Washington State Professional Engineer and Registered Electrical Engineer.

All deviations from City standards shall be clearly identified in a written transmittal attached to preliminary, design, construction, and record “as-built” drawings or plans.

Four (4) copies of the following shall be submitted to the City for design review and approval:

- Full or half size design drawings showing similar views and details of the pump station site and components as shown on the attached City Standard Drawings for Sewage Pump Stations
- Construction specifications

- Design calculations showing the following:
  - Existing and design influent flow estimates
  - System curves superimposed on pump curves
  - Pump(s) and wet well sizing including stops/starts per hour
  - Storage capacity during projected peak hourly flows from high water alarm elevation to overflow conditions through collection lines at the nearest manhole or dwelling sewer stub
  - Design assumptions
  - Analysis showing impact of discharge on City's existing collection system
  - Factor of safety against buoyancy

1.2.1.2 Submittal for Final Acceptance

Prior to final acceptance of the pump station, the applicant must submit the following:

- Testing: Provide results of testing, inspections, and certification by the Engineer of Record that the system passed the specified tests.

- Record "As-Built" Drawings: Submit final record drawings of the completed facility. Prepare record drawings in AutoCAD format and provide electronic files on CD. Provide one (1) reproducible full-size and reduced (11"x17") hard copy. Also provide one (1) PDF copy. Provide submittal within thirty (30) calendar days of completion of the project and prior to City final acceptance. All wires shall be tagged and all programs shall be submitted to the City on CD. Record drawings shall also be placed in Operation and Maintenance Manuals.

- Easements: Right-of-ways and/or easements for construction, operation and maintenance of the system shall be recorded with the County Assessor's Office and copies placed in the Operation and Maintenance Manuals.

- City Costs: Verify that all user equity fees and City administration, inspection, and other costs have been paid in full.

- O&M Manuals: Submit six (6) paper copies of the Operation and Maintenance Manuals approved by the City per Section 1.3.1.1.2. Also provide one (1) PDF copy.

1.2.2 General Design Guidelines

1.2.2.1 Design Criteria

Pump station design shall be in conformance with the latest versions of the City of Richland's Comprehensive Sewer Plan, City of Richland's Standard Specifications and Details, and Washington Department of Ecology's Criteria for Sewage Works Design. The requirements in this standard specification are intended to supplement and supersede the criteria in these documents if they conflict.

1.2.2.2 Configuration

The pump station shall utilize a duplex submersible pump and wet well configuration with a separate valve vault. The pump station shall include the appurtenances and generally conform to the layout and configuration depicted in the attached standard drawings modified as necessary for each individual site requirements.

The station shall be designed with provisions for lifting the submersible pumps out of the wet well without disassembling fittings or the pump station structure and without entering the wet well.

1.2.2.3 Design Flows

Current and design flows including minimum daily, average daily, maximum daily, minimum hourly, peak hourly, and any other important flow conditions for the pump station shall be calculated for sizing the pumps and verifying the operating characteristics of the pump station. A design life of 20 years minimum shall be used unless otherwise approved by the City.

1.2.3 Pumps

1.2.3.1 Number and Size of Pumps

The station design shall include a minimum of two (2) pumps (i.e. duplex) each capable of handling, at a minimum, the design peak hourly flow. If the 20-year projected peak hourly flow exceeds 500 gpm, three (3) pumps (i.e. triplex) shall be provided with the ability to handle, at a minimum, the design peak hourly flow with the largest pump out of service.

If the flow from the ultimate service area exceeds the needs of the particular area under consideration, the City may require pump station capacities greater than the size required for the 20-year design period. The City may participate in the project to the extent of the incremental cost of materials for oversizing the pump station.

1.2.3.2 Operational Criteria

The pumps and wet well should be sized to limit the number of starts per hour to less than or equal four (4) per pump. In addition, the pumps and wet well should be sized to limit the maximum cycle time to less than 30 minutes to avoid septic conditions.

1.2.3.3 Pump Type

Pumps shall be submersible sewage pumps capable of passing spheres of at least 3 inches in diameter. Pump suction and discharge openings shall be at least 4 inches in diameter. All sewage pumps shall be rated explosion-proof and meet National Electrical Code (NEC) requirements.

1.2.3.4 Pump Manufacturer

Pumps shall be manufactured by ITT Flygt.

1.2.4 Wet Well and Valve Vault

1.2.4.1 Size

The wet well shall be adequately sized to accommodate the pumps and any other required equipment and piping. If additional pumps are planned to be added in the future to serve the ultimate flow projections, the wet well shall be upsized appropriately. The storage capacity in the wet well shall be sized to provide 30 minutes minimum response time during design peak hourly flows between the high water alarm elevation and overflow conditions at the nearest manhole or dwelling sewer stub. The wet well shall be a minimum of 72 inches in diameter.

The valve vault shall be sized to provide adequate space for access to and maintenance of appurtenances.

1.2.4.2 Access Hatches

The wet well and valve vault access hatches shall be sized to encompass and fully expose the entire interior to the atmosphere when opened.

1.2.4.3 Wet Well Liner

All interior surfaces of the wet well shall be lined with a non-corrodible lining system.

1.2.4.4 Confined Space Entry System

The wet well design shall provide for confined space entry by including a core mount sleeve base with sleeve cap. The components shall be incorporated into the design and installed per the manufacturer's instructions.

1.2.4.5 Miscellaneous Design Details

The valve vault shall drain back into the wet well. A check valve or flapper shall be provided on the drain line.

All P-traps shall be filled with water.

The wetwell and vault shall be designed to be watertight and for AASHTO H-20 traffic loads.

The corners of the wetwell bottom shall be filleted to minimize solids accumulation at the pump intakes at the bottom of the wet well.

Pipe inverts entering and exiting the structures, top slabs, and base elevations shall be shown on design drawings.

All materials shall be corrosion resistant. All nuts, washers, bolts and other steel hardware inside the structures shall be stainless steel.

Only rigid, ductile iron piping (Class 52) shall be used within and between the wetwell and valve vault. Where possible, interior fittings shall be flanged fittings with manufacturer-approved gaskets for sewage applications. Ductile iron piping and fittings shall have an interior and exterior epoxy coating. A dual flexible coupling system shall be provided between the valve vault and the wetwell to accommodate differential settlement between the two structures.

Stainless pipe supports shall be provided for the piping inside the valve vault.

1.2.5 Sun Shelter

A sun shelter shall be provided to shield the electrical, control, and telemetry panels from the prevailing winds and southwestern sun.

1.2.6 Electrical

The electrical system shall include, but shall not be limited to, electrical service, service equipment, power distribution equipment, motor control equipment, as well as control, instrumentation and telemetry equipment. The standard design shall

include a manual transfer switch and generator connection device to allow the City's portable generator to be connected to the station.

The electrical system shall be constructed with two enclosures. The Power Panel shall contain a main circuit breaker, transfer switch, power distribution blocks, branch circuit breakers, combination stepdown transformer/panelboard, and motor starters. The Control Panel shall contain the control, instrumentation and telemetry equipment. These enclosures shall be NEMA 3R construction and shall be freestanding enclosures mounted adjacent to each other on a concrete pad.

The electrical installation shall meet NEC and other applicable codes in effect at the station location.

Electrical service shall be from the serving utility at the location of the station. Utility service requirements shall be adhered to.

Specific requirement for the electrical system are found in Section 1.3.5 of these specifications.

1.2.7 Controls

Controls for the lift station shall be provided to cause the pumps to cycle on and off based on wet well level. Motor starters shall be across the line starters or solid state soft starters, depending on motor size and City preference. Controls shall be provided for redundant means of starting and stopping pumps. One means shall be a level controller with programmable start and stop levels for lead and lag pumps. The second means shall be a high level float switch and timers to start both pumps and operate them for a time period after the float switch return to normal.

Wet well level shall be monitored by a level transducer mounted in the wet well and connected to the level controller.

1.2.8 Telemetry

The Contractor shall provide telemetry equipment to permit the City to monitor the lift station over the existing telemetry system. Telemetry equipment shall be as described in Section 1.3.6.

1.2.9 Standby Power

Standby power will be via the Owner's portable generator set. The Contractor shall include a manual transfer switch and generator connection device (matching the Owner's generator set) to permit operation of the station when utility power fails.

1.2.10 Site Layout

1.2.10.1 Easements

The pump station shall be on dedicated right-of-way or easement with easy all-weather access. Written copies of all easements and right-of-ways shall be provided to the City, shown on all drawings, and recorded with the County Assessor's Office.

1.2.10.2 Access and Drainage

Access and drainage shall be clearly shown on design drawings. The pump station access road shall be paved in conformance to City Street Standards and provide direct truck vehicle access to the wet well and valve vault. Access location(s) shall be approved by City and authorized maintenance operator(s). Unpaved finish grade surfaces inside the pump station site shall be finished with a 4-inch layer of crushed surfacing top course over subgrade all compacted to 95% maximum density. Drainage facilities shall be constructed so that the access road, pump station, and surrounding properties are not subject to flooding from stormwater runoff.

1.2.11 Force Main

1.2.11.1 Size

Force mains should be not less than 4 inches in diameter. At design peak pumping capacity (with one pump running), a minimum self-scouring velocity of 3.5 feet per second (fps) should be maintained. Alternatively, with City approval, this velocity may be provided by automatically cycling two pumps simultaneously according to a programmable schedule. Design velocity should not exceed 5 fps.

1.2.11.2 Alignment and Grade

Uniform grade and straight alignment between high and low points, fittings, and appurtenances shall be maintained in new force mains. The force main shall be installed at a positive grade so that it can be drained and emptied if necessary. A combination air valve, Apco or approved equivalent, shall be placed at all high points in the force main to release trapped air and relieve air/vacuums during filling/draining.

1.2.11.3 Materials

Force main piping shall be constructed of C-900 and C-905 PVC water pipe, although epoxy-lined ductile iron may be allowed on a case-by-case basis. Fittings shall be epoxy-lined ductile iron. Materials and construction of piping and fittings shall meet City of Richland's Standard Special Provisions Section 7-17 for pressure pipe. All nuts, washers, bolts and other steel hardware shall be stainless steel.

1.2.12 Other Considerations

These standards generally apply to typical residential pump stations, although the City reserves the right to impose other requirements as necessary. Also, additional requirements may apply to pump stations receiving commercial or industrial sewage.

The following is a list of additional items that may be considered on a case-by-case basis:

- Screening
- Grinding
- Grit handling/removal
- Grease handling/removal
- Flow metering
- Odor control
- Noise control
- Standby emergency power
- Site lighting
- Site fencing
- Hydrogen sulfide corrosion control

1.3 STANDARD SPECIFICATIONS

1.3.1 Submittals

1.3.1.1 General

This section describes the requirements for construction and operation and maintenance (O&M) submittals and the review procedures.

1.3.1.1.1 Construction Submittals

Submittals not following these procedures or requirements will be returned to the Contractor without being reviewed.

Provide a Submittal Control Document showing the project submittals required by the Special Provisions, Project Plans, and Specifications. Submit this log to the Engineer as a spreadsheet in EXCEL® format within fifteen (15) working days after the effective date of the Notice to Proceed.

Number the submittals as shown in the Submittal Control Document. Specific items submitted under a general item shall be given a dashed number suffix. For example, under a general item “Valves” (Submittal No. 6), product data for gate valves would be submitted with a dashed number suffix such as Submittal No. 6-01. Resubmittals

of the same item shall be given the original number with an alphabetic suffix. For example, the first resubmittal of the product data for the gate valve would be designated Submittal No. 6-01a.

Transmit each submittal with a submittal form identifying the Project Name, Contractor, Subcontractor or supplier, corresponding plans sheet or specification section, submittal name, and number.

Provide a Contractor's stamp or cover letter, signed or initialed, certifying that the submittal has been reviewed by the Contractor and is in accordance with the requirements of the Work and Contract Documents. SUBMITTAL WILL BE RETURNED IF NOT CERTIFIED.

Schedule submittals to expedite the Project, and deliver to the City Engineer at 840 Northgate Drive, Richland, Washington. Coordinate submission of related items.

The Contractor shall coordinate submittals with the work so that work will not be delayed. The Contractor shall coordinate and schedule different categories of submittals, so that one will not be delayed for lack of coordination with another. No extension of time will be allowed because of failure to properly schedule submittals. The Contractor shall not proceed with work related to a submittal until the submittal process is complete.

Provide sufficient information together with technical cuts and technical data to allow an evaluation to be made to determine that the item submitted is in compliance with Contract Documents.

The Contractor shall submit a copy of the technical specification with each subsection clearly marked for conformance or nonconformance with the subsection. Where the proposed equipment deviates from the specification, all necessary information and supporting calculations to evaluate the deviation shall be attached. The City retains its right to reject without justification the proposed deviation in favor of the specification, as written. Identify variations from Contract Documents and Product or system limitations which may be detrimental to successful performance of the completed Work. Identify requests for “or equal” “or equivalent” items. Justify the said deviation or “substitution” in detail in a separate letter immediately following transmittal sheet (written requests through Contractor only):

- If the justification is not given, shop drawing can be rejected and returned without further action.
- If justification is not given, deviation is not approved even if shop drawing is approved.

In making request for “or equal” “or equivalent” item, Contractor represents:

- He has personally investigated proposed item, has determined that it is adequate or superior in all respects to that specified, and that it will perform the function for which it is intended.
- He will provide same guarantee for “or equal” “or equivalent” item as for item specified.
- He will coordinate installation of accepted “or equal” “or equivalent” into work, to include building modifications if necessary, making such changes as may be required for work to be complete in all respects.
- He waives all claims for additional costs and/or time related to “or equal” “or equivalent” which subsequently arise.

(Note: This section does not address substitutions for major equipment during the bidding period.)

Provide space for Contractor and Engineer review stamps.

Unless noted otherwise, submit the number of copies which the Contractor requires to be returned, plus three (3) copies which will be retained by the Engineer. Special operation and maintenance submittal requirements are discussed below.

The Contractor shall be responsible for submitting complete and accurate information in accordance with the Contract Documents. All submittals requiring a third review by the Engineer shall be considered unresponsive and the Owner will charge the Contractor on a time and materials basis for all subsequent reviews and all related administrative costs.

Distribute copies of reviewed submittals to affected parties. Instruct parties to promptly report any inability to comply with provisions.

1.3.1.1.2 O&M Submittals

O&M Information shall be provided for all major equipment items as required by the Drawings and Specifications and indicated in the Submittal Control Document including but not limited to:

- All piping, fittings and valves.
- Pumps and motors.
- Electrical and control equipment.

IMPORTANT: Prior to startup, submit and bind together all O&M information in one complete manual binder that includes all of the O&M information for the entire booster station including mechanical and electrical. Only submittals provided in this format and as described below will be reviewed for acceptance. The manual binders shall be the heavy-duty, three-ring type. If O&M information does not fit in a single binder, multiple binders labeled “Volume 1”, “Volume 2”, etc. may be submitted.

Each binder shall be labeled on the front and on the binder spine as follows: "[*project name*] Sewage Pump Station O&M Information (Volume _)".

Provide six (6) paper copies of the specified O&M manuals, which will be retained by the Owner. For ease of identification, each manufacturer's brochure and manual shall be appropriately labeled with the equipment name and equipment number as it appears in the project drawings and specifications. The manuals shall be indexed and reference the discrete equipment number on all manuals, data sheets and drawings. The manuals shall be provided with a table of contents and tab sheets to permit easy location of desired information.

If manufacturers' standard brochures and manuals are used to describe O&M procedures, such brochures and manuals shall be modified to reflect only the model or series of equipment used on this project. Extraneous material shall be crossed out neatly or otherwise annotated or eliminated.

Submit operation and maintenance information printed on 8½ in. x 11 in. size heavy quality paper (20 lb. or heavier). Reduce drawings or diagrams bound in manual to 8½ in. x 11 in. or 11 in. x 17 in. size.

Following the acceptable installation and operation of an equipment item, the item's instructions and procedures shall be modified and supplemented by the Contractor to reflect any field changes or information requiring field data.

Include manufacturer contact data, operating instructions, preventive and corrective maintenance requirements, warranty information, parts lists, and any other applicable information.

Operation and Maintenance Manuals shall contain operation and maintenance instructions, repair data, parts lists, manufacturer's warranty, record drawings, permits, easements, photo graphs, test results, schematics for mechanical, electrical, and civil design components, and other pertinent information.

1.3.1.1.3 Review Procedure

Unless otherwise specified, within thirty (30) days after receipt of the submittal, the Engineer will review the submittal. The returned submittal will indicate one of the following actions:

- If the review indicates that the material, equipment or work method is in general conformance with the contract drawings/specifications, the submittal copies shall be marked "Reviewed". In this event the Contractor may begin to incorporate the material/ equipment/work method covered in the submittal, subject to the full requirements of the Contract Documents.

- If the review indicates that the submittal is insufficient or that limited corrections are required, the submittal copies shall be marked “Furnish as Corrected”. The Contractor may begin to implement the work methods or incorporate materials/equipment covered in the submittal, in accordance with the corrections/comments noted. Where submittal information is to be incorporated in O&M data, a corrected copy shall be provided; otherwise no further action is required.

- If the review reveals that the submittal is insufficient or contains incorrect data and that the comments require revision and resubmittal, the submittal copies shall be marked “Revise and Resubmit”. (In this case, except at its own risk, the Contractor shall not undertake work covered by this submittal until the attached comments have been confirmed by a separate written communication of the submittal that has been revised, resubmitted, and returned to the Contractor).

- If the review indicates that the material, equipment, or work method is not in general conformance with the design concept or in compliance with the contract drawings/specifications, or if the submittal is incomplete, the submittal copies shall be marked “Rejected”. Submittals containing deviations from contract drawings/specifications that have not been clearly identified and that have not been noted previously in correspondence also shall be considered rejected, even if the Engineer fails to note the deviation. No deviation will be accepted unless clearly marked on the submittal. (In this case, except at its own risk, the Contractor shall not undertake work covered by this submittal until the attached comments have been confirmed by a separate written communication or the submittal has been revised, resubmitted, and returned to the Contractor).

1.3.1.1.4 Effect of Review of Contractor’s Submittals

Review of drawings, methods of work, or information regarding materials or equipment the Contractor proposes to provide, shall not relieve the Contractor of its responsibility for errors therein and shall not be regarded as an assumption of risks or liability by the Engineer on behalf of the City, or by any officer or employee of the City, and the Contractor shall have no claim under the Contract on account of the failure, or partial failure, of the method of work, material, or equipment so reviewed.

1.3.1.2 Materials

Not used.

1.3.1.3 Workmanship

Not used.

1.3.1.4 Payment

All labor, material, and equipment required to provide submittals shall be considered incidental and included in other bid prices.

1.3.2 Pumps and Motors

1.3.2.1 General

This section covers the wastewater submersible pumps and accessories.

1.3.2.1.1 Pump Performance Requirements

The pump shall meet the following performance requirements:

- Design Duty Point: _____ gpm at _____ feet total dynamic head (TDH)
- Design Static Head Lift: _____ feet
- Minimum Shutoff Head: _____ feet
- Minimum Efficiency: _____

The motor horsepower shall be adequate so that the pump is non-overloading throughout the entire pump performance curve from shut-off through run-out.

The pump and motor unit shall be suitable for continuous operation at full nameplate load while the motor is completely submerged, partially submerged or totally non-submerged.

The drawings and specifications for this project are based on the following pump and motor:

- Wastewater Submersible Pump: ITT FLYGT (w/N-Impeller) Model _____
- Motor: _____ Hp.

1.3.2.1.2 Submittals

Submit the following under provisions of Section 1.3.1:

- Manufacturer's Certificate: Certify that products meet or exceed specified requirements, and are suitable for the use intended.

- Pump and motor performance data.
- Shop drawings showing pump dimensions, detailed drawings for installation requirements, pump connections and sizes, rail system and connections, and access hatch requirements.
- Pump curves with both one and two pumps operating and superimposed system duty points showing performance requirements are satisfied.
- Operation and maintenance manuals and information.

1.3.2.1.3 Quality Assurance

Install and operate pumps and motors in accordance with the manufacturer's recommendations.

1.3.2.1.4 Warranty

Include coverage of all pumps, motors, bearings, seals, wear plates, and accessories, for a minimum of five (5) years from the date of shipment. Pro-rate the warranty after the first 18 months of operation.

1.3.2.2 Materials

1.3.2.2.1 General Requirements

Included under this section will be the pump, motor, discharge elbow, guide bar brackets and related and required accessories.

The pump supplier shall also supply compatible motor, discharge elbow, mechanical seals, guide bar brackets and related and required accessories.

The pumps shall be suitable for pumping raw unscreened wastewater comprised of domestic, commercial, and industrial waste and be easily removed for inspection and service requiring removal of no bolts, nuts, or other fastenings and not requiring personnel to enter the wet well.

All components and materials inside the wetwell shall be constructed of stainless steel or other non-corrodible materials.

Only ITT Flygt Corporation submersible raw sewage pumps and motors shall be allowed. No substitutes will be allowed. Pumps and motors shall meet applicable ITT Flygt Performance Specifications and the requirements of this specification:

1.3.2.2.2 Scope of Work

Furnish and install two submersible non-clog wastewater pump(s). In addition to the installation of the two pumps, furnish and deliver to the City of Richland Sewer Department Shop a spare pump, spare impeller and re-build kit.

Each pump shall be equipped with a submersible electric motor with ____ feet length of submersible cable (SUBCAB) suitable for submersible pump applications. The pump shall be supplied with a mating cast iron __ inch minimum discharge connection and be capable of meeting the performance requirements given in this specification.

1.3.2.2.3 Pump Design

The pump(s) shall be automatically and firmly connected to the discharge connection. There shall be no need for personnel to enter the wet-well. No portion of the pump shall bear directly on the sump floor. Sealing of the pumping unit to the discharge connection shall be accomplished by a machined metal to metal watertight contact.

1.3.2.2.4 Pump Construction

Major pump components shall be of gray cast iron, ASTM A-48, Class 35B, with smooth surfaces devoid of blow holes or other irregularities. All exposed nuts or bolts shall be AISI type 304 stainless steel construction. All metal surfaces coming into contact with the pumpage, other than stainless steel or brass, shall be protected by a factory applied spray coating of acrylic dispersion zinc phosphate primer with a polyester resin paint finish on the exterior of the pump. Lifting bails shall be stainless steel.

1.3.2.2.5 Cooling System

Each unit shall be provided with an integral motor cooling system. The cooling system shall provide for continuous pump operation in liquid temperature of up to 104 Degrees F or in free air. Restrictions below this temperature are not acceptable.

1.3.2.2.6 Cable Entry Seal

The cable entry seal design shall ensure a watertight and submersible seal.

1.3.2.2.7 Motor

The motor shall be totally enclosed for submersible service, explosion proof, and suited for operation on ____ volt, _____-phase, 60 hertz power.

The pump motor shall be induction type with a squirrel cage rotor, shell type design, housed in an air filled, watertight chamber, NEMA B type. The stator windings and stator leads shall be insulated with moisture resistant Class H insulation rated for 180

C (356 F). The stator shall be insulated by the trickle impregnation method using Class H monomer-free polyester resin resulting in a winding fill factor of at least 95%. The motor and pump shall be designed and assembled by the same manufacturer.

The combined service factor (combined effect of voltage, frequency and specific gravity) shall be a minimum of 1.15. The motor shall have a voltage tolerance of plus or minus 10%. The motor shall be designed for continuous operation up to 40 C (104 F) ambient and have a NEMA Class B maximum operating temperature rise of 80 degrees C. A motor performance chart shall be provided, upon request, showing curves for torque, current, power factor, input/output kW and efficiency. This chart shall also include data on starting and no-load characteristics.

The power cable shall be sized according to the NEC and ICEA standards and shall be of sufficient length to reach the junction box without the need of any splices.

1.3.2.2.8 Bearings

The pump shaft shall rotate on two permanently grease lubricated bearings.

1.3.2.2.9 Mechanical Seal

Each pump shall be provided with a positively driven dual, tandem mechanical shaft seal system consisting of two seal sets, each having an independent spring. The lower, primary seal unit, located between the pump and the lubricant chamber, shall contain one stationary and one positively driven rotating tungsten-carbide ring. The upper, secondary seal unit, located between the lubricant chamber and the motor housing, shall contain one stationary tungsten-carbide seal ring and one positively driven rotating tungsten-carbide seal ring. All seal rings shall be individual solid sintered rings. Each seal interface shall be held in contact by its own spring system. The seals shall require neither maintenance nor adjustment nor depend on direction of rotation for sealing.

Each pump shall be provided with a lubricant chamber for the shaft sealing system. The seal system shall not rely upon the pumped media for lubrication. Each pump shall be provided with a lubricant chamber for the shaft sealing system. The lubricant chamber shall be designed to prevent overfilling and to provide lubricant expansion capacity. The drain and inspection plug, with positive anti-leak seal shall be easily accessible from the outside. The seal system shall not rely upon the pumped media for lubrication. The motor shall be able to operate dry without damage while pumping under load.

Seal lubricant shall be FDA Approved, nontoxic.

1.3.2.2.10 Pump Shaft

Pump and motor shaft shall be the same unit. The pump shaft is an extension of the motor shaft. Couplings shall not be acceptable. The shaft shall be AISI Type 431 or ASTM A479 S43100-T stainless steel.

1.3.2.2.11 Impeller

The impellers shall be of N-impeller design and manufactured of gray cast iron, ASTM A-48 Class 35B, dynamically balanced, semi-open, multi-vane, back swept, screw-shaped, non-clog design. The impeller leading edges shall be mechanically self-cleaned automatically upon each rotation as they pass across a spiral groove located on the volute suction. The screw-shaped leading edges of the impeller shall be hardened to Rc 45 and shall be capable of handling solids, fibrous materials, heavy sludge and other matter normally found in wastewater. The screw shape of the impeller inlet shall provide an inducing effect for the handling of up to 5% sludge and rag-laden wastewater. The impeller to volute clearance shall be readily adjustable by the means of a single trim screw. The impellers shall be locked to the shaft, held by an impeller bolt and shall be coated with alkyd resin primer.

1.3.2.2.12 Volute

The pump volute shall be a single piece gray cast iron, ASTM A-48, Class 35B, non-concentric design with smooth passages of sufficient size to pass any solids that may enter the impeller. Minimum inlet and discharge size shall be as specified. The volute shall have a replaceable suction cover insert ring in which are cast spiral-shaped, sharp-edged groove(s). The spiral groove(s) shall provide trash release pathways and sharp edge(s) across which each impeller vane leading edge shall cross during rotation so to remain unobstructed. The insert ring shall be cast of (ASTM A-48, Class 35B gray iron or ASTM A-532 (Alloy III A) 25% chrome cast iron) and provide effective sealing between the multi-vane semi-open impeller and the volute housing.

1.3.2.2.13 Protection

All stators shall incorporate thermal switches in series to monitor the temperature of each phase winding. At 125 C (260 F) the thermal switches shall open, stop the motor and activate an alarm. A leakage sensor shall be included to detect water in the stator chamber. The Float Leakage Sensor(FLS) is a small float switch used to detect the presence of water in the stator chamber. When activated, the FLS shall stop the motor and send an alarm both local and/or remote. USE OF VOLTAGE SENSITIVE SOLID STATE SENSORS AND TRIP TEMPERATURE ABOVE 125 C (260 F) SHALL NOT BE ALLOWED. The thermal switches and FLS shall be connected to a Mini CAS (Control and Status) monitoring unit. The Mini CAS shall be mounted in the control panel and shall be provided with the pump.

Guide bars and brackets shall be stainless steel:

- Two continuous guide bars per pump used for raising and lowering the pump. Type 304 stainless steel.
- Lower guide bar holders to be integral with discharge elbow.
- Guide pump unit on guide bars utilizing guide brackets. Type 304 stainless steel.
- Use intermediate supports on guide bars as needed.
- Guide cables are not acceptable.
- Guide bars shall not support any portion of the weight of the pump.

1.3.2.3 Workmanship

1.3.2.3.1 Examination

Verify all pumps, motors, and materials are present and meet the requirements of these Specifications.

1.3.2.3.2 Installation

Install pumps and motors in accordance with shop drawings and manufacturer's recommendations.

Interface with suction and discharge piping to provide a complete waterproof seal.

Install electrical and pump controls in accordance with the manufacturer's recommendations and the electrical division of these Technical Specifications.

Center pump bowls and discharge column.

Furnish and deliver one (1) spare pump, spare impeller and re-build kit to the City Sewer Department Shop.

1.3.2.3.3 Acceptance Testing

Prior to acceptance, test lift station with representatives of the City Engineer present to verify proper operation. Coordinate and schedule acceptance testing with the City a minimum of five (5) working days before.

Conduct drawdown test with one and with both pumps in operation measuring drawdown and time to verify the flowrates and that the pumps are pumping at their rated capacity.

Simulate alarm and control conditions. Operate pumps through complete fill and pump cycles. Field adjust level float and HydroRanger level settings to achieve optimum performance.

1.3.2.3.4 Start-Up Services

Provide a factory-trained representative for four (4) hours minimum to oversee, inspect and to certify the installation of each type of pump. Prior to operator training, demonstrate to the Engineer that the equipment is ready for operation. Coordinate and schedule operator training with the Engineer a minimum of five (5) working days before.

Provide required Equipment Operation and Maintenance (O&M) Manuals to the Owner as per the requirements of Section 1.3.1.1.2.

1.3.2.4 Payment

Payment shall be made at the unit price or lump sum bid price as stated in the Contractor's bid proposal. Payment shall be considered full compensation for all labor, material, and equipment to install the pump and motors, complete and operational.

1.3.3 Precast Wetwell and Valve Vault

1.3.3.1 General

1.3.3.1.1 Scope

This work shall consist of constructing the pump station wetwell and valve vault in accordance with these specifications, as shown on the plans, and as staked by the Engineer.

In addition to the requirements of this specification, the wetwell and valve vault shall also comply, where appropriate, with the requirements of the City of Richland's Standard Special Provision's Section 7-05, Manholes, Inlets, Catch Basins and Drywells.

1.3.3.1.2 Submittals

Submit shop drawings for the lift station wetwell and valve vault. Shop drawings shall be complete and shall show overall layout, unit locations, fabrication details, reinforcement, connection details, hatch orientation and opening direction, location of uni-sleeve, support items, dimensions, and relations to adjacent materials.

Submit concrete mix design, concrete materials, accessories, epoxy adhesive and concrete test results.

Manufacturer shall provide structural design calculations sealed by a Professional Structural Engineer licensed in the State of Washington.

1.3.3.2 Materials

1.3.3.2.1 Precast Concrete

All cast-in-place and structural concrete for this project shall meet the requirements of Class 4000. Contractor shall submit concrete mix design, concrete materials, accessories, epoxy adhesive and concrete test results.

Design the wet well and vault for AASHTO H-20 loadings.

1.3.3.2.2 Wet Well

The lift station wet well shall conform to ASTM C-478, Standard Specification for Precast Reinforced Concrete Manhole Sections. The valve vault shall be a precast concrete vault sized as shown on the drawings. Cast hatches and/or frame and covers in the top slabs (coordinate opening location and size with pump manufacturer). Design the wet well and vault for H-20 loadings.

All interior surfaces of the lift station precast wet well shall be lined with non-corrodible lining systems.

A. The wet well walls, floor (including the fillet taper), and roof slab surfaces shall be lined with a protective epoxy, polyamine, fiber reinforced coating. Coating shall be a 100% solids and spray applied. Minimum thickness shall be 100 mills.
B. The lining shall be Series 436 Perma Shield FR Epoxy Coating as manufactured by Tnemec, or approved equivalent.
C. Filler-resurfacer shall be Series 64-1500, 218, 219 or 434 as manufactured by Tnemec, or approved equivalent.
D. Installation of the lining shall be done in accordance with the recommendations of the liner manufacturer.
E. Joints between the lining/coating and other lift station components shall be sealed with butyl rubber sealant material.

1.3.3.2.3 Valve Vault

The valve vault shall be a pre-cast concrete vault sized as shown on the drawings. Provide plastic coated access steps where shown on the plans.

Check valves for the pump station discharge line shall be rubber flapper swing check valves, APCO Series 100R.

1.3.3.2.4 Top Slabs

Cast access hatch frames in the top slabs.

Design the wetwell and vault for AASHTO H-20 traffic loads.

Produce a smooth, troweled finish on the surfaces of all slabs including the station area slab. Slab shall be level and flat. All finished concrete and hatches shall be at same elevation.

1.3.3.2.5 Access Hatches

The access hatches shall be double-leaf aluminum with stainless steel hardware. Hatches shall be rated for AASHTO H-20 traffic loads unless this load rating is not available in the required size. Then hatches may be rated for a reduced traffic loading rating of 16,000 pounds over a 20 inch x 20 inch area. Provide a recessed, lackable hasp covered with a hinged lid flush with the surface. Provide a stainless steel safety chain for a safety barrier between the door leafs when open. Route the hatch drains to a drywell or drain. Hatches shall be Bilco or approved equivalent.

1.3.3.2.6 Non-Shrink Grout

Non-shrink grout shall be premixed compound consisting of non-metallic aggregate, cement, water reducing and plasticizing agents, capable of developing minimum compressive strength of 2,400 psi (17 MPa) in 48 hours and 7,000 psi (48 MPa) in 28 days, Gifford-Hill "Supreme," L&W "Crystex," or UPCO "Upcon High Flow.

1.3.3.2.7 Joint Filler Material

Install 1/2-inch joint filler material between the wetwell and concrete slab and where called for on Drawings. Joint filler material shall be asphalt impregnated fiberboard or felt, tongue and groove profile, set 1/8-inch below floor slab elevation, meeting the requirements of ASTM D-1751.

1.3.3.2.8 Exterior Coatings

The below ground level exterior surfaces of lift station precast wetwell and valve vault sections shall be coated with Asphalt for Waterproofing (ASTM D312, Type 4) in accordance with Section 6-08 of the WSDOT Standard Specifications.

1.3.3.2.9 Confined Space Entry System

A confined space entry system shall be furnished with the lift station. The system shall be Miller DuraHoist ^{TM} and shall consist of the following primary components:

A. One-piece adjustable mast, Model No. DH-3, deliver to City Shop;
B. Core Mount Sleeve Base, Model No. DH-9SS, and Sleeve Cap, Model No. DH-10SS, install per drawings and manufacturer's recommendations on the wet well and valve vault;
C. Digital Winch, Model No. DH100/70FT, Miller 100 Series Digital Winch with 70 feet of 3/16 in. stainless steel cable, deliver to City Shop;
D. Work Winch, Model No. DH50S/50FT, Miller Basic Winch with 50 feet of 3/16 in. stainless steel cable, deliver to City Shop;
E. All other necessary brackets, hardware, and components required for a complete, operable confined space entry system.

1.3.3.3 Workmanship

Do not place backfill for at least 24 to 48 hours after application of exterior coating. Place backfill in a manner that will not rupture or damage the film or cause the coating to be displaced on the wall.

A minimum of one compaction test shall be taken at each structure location as follows: foundation subgrade, base under floor slab, midpoint of the backfill, and finished subgrade elevation.

1.3.3.4 Payment

Payment shall be at the unit price or lump sum price as stated in the Contractor's bid schedule.

1.3.4 Force Main Sewer

1.3.4.1 General

In addition to the requirements of this specification, the force main sewer shall also comply, where appropriate, with the requirements of the City of Richland's Standard Special Provisions.

1.3.4.2 Materials

The sewer main line materials, as indicated on the plans for the sanitary sewer force main, shall be "Polyvinyl Chloride Pipe" (PVC) C-900 as specified in Section 7-17 of the City of Richland's Standard Special Provisions. Fittings for the force main shall be also as specified in the Standard Special Provisions. Ductile iron pipe conforming to ANSI/AWWA C151/A21.51 Class 50 as specified in the Standard Special Provisions, is a pre-approved substitute, but ductile iron pipe shall be epoxy lined. Cement mortar lining will not be allowed.

Tracer wire shall be insulated 12 gauge copper.

Valves and valve boxes for the sanitary sewer force main shall meet the requirements of Section 7-12 of the City's Standard Special Provisions. All valve box lids shall be marked with the letter "S".

1.3.4.3 Workmanship

The sewer force main shall be laid at a uniform grade as called for or as shown on the plans and as required to not create high or low points in the line.

Tracer wire for the sanitary sewer force main, valves and valve boxes shall be installed in accordance with the detail in the plans.

The Contractor shall hydrostatic test the sanitary sewer force main in accordance with Section 7-09 of the City's Standard Special Provisions.

1.3.4.4 Payment

Payment for fitting and valves including valve boxes shall be at the contract unit price as stated in the bid schedule for each type and size fitting and valve.

Payment shall be at the contract unit price as stated in the bid schedule for "Force Main Sanitary Sewer Pipe _____ In. Diam." The contract unit price shall be considered full compensations for all labor, materials and equipment to include trench excavation and backfill, pipe installation, and testing.

A separate payment will not be made for testing the sanitary sewer force main. All costs to perform the test shall be inclusive to the contract unit price for the sanitary sewer force main.

1.3.5 Electrical System

1.3.5.1 General

1.3.5.1.1 Scope

The Contractor shall provide a complete electrical system for the project site including: electrical service (in conjunction with the local electric utility), service equipment, distribution equipment, motor control equipment, telemetry equipment, instrumentation equipment, conduit, conductors, fittings, hangers, and associated devices/equipment required for a complete and operational system.

This section is intended to delineate the minimum requirements of the system, but in no way do they relieve the Contractor from providing all hardware and programming necessary to accomplish the functional tasks indicated by the system specifications.

The control panel (CP) shall be furnished by a single supplier, and that supplier shall supervise the construction, installation and testing of the telemetry and control system. The supplier shall also coordinate with the City representative to ensure the correct interface of the telemetry equipment with the City's existing man-machine interface software program. The supplier shall be a firm which can demonstrate significant experience in the design and installation of computerized radio telemetry instrumentation and control systems associated with the wastewater industry, with a minimum of five projects during the last five years in performing such work.

The system shall be complete with any incidental items necessary to provide proper and reasonable operation of the component parts. This may include, but shall not be limited to: power supplies, filters, isolation transformers, delay or suppression devices, interconnecting devices, or any items which are ordinarily furnished as a part of a system, or which are necessary to successful operation of the system and/or equipment.

1.3.5.1.2 Submittals

All submittal information shall be submitted to the City representative by the Contractor, in accordance with Section 1.3.1. Extraneous or non-applicable material and information shall be omitted, or clearly denoted as inapplicable when such omission is impractical.

Shop drawings, where required, shall be accurately drawn to a scale or scales appropriate to show overall arrangement, pertinent features, details, and methods of connection or joining. Figure dimensions shall be used, as opposed to scaled dimensions.

For the following specific equipment items, shop, catalog, and other appropriate drawings, along with pertinent descriptive information shall be submitted to the City for review prior to fabrication:

- Telemetry and Control Panel
- Antenna and antenna cable
- Motor Controllers
- Power Panel and enclosed components
- Level Controller and Transducer
- Radio Transceiver

A single complete package shall be submitted including all of the above referenced equipment items. Submit the number of copies specified in Section 1.3.1.

1.3.5.1.2.1 Telemetry/Control Panel Information Submittal

The submittal shall contain a detailed diagram showing the proposed hardware and interconnections to be used for the Telemetry/Control Panel. The diagram shall contain references to discrete supplementary submittal information on each supplied component. The supplemental information shall contain, but not be limited to, physical and functional attributes of the hardware including manufacturer's name, specific model numbers and series numbers of proposed equipment, accessory items, cut sheets, and operating/maintenance instructions for each equipment item. Where more than one type or item exists on a single page, the item proposed shall be clearly indicated. Information on accessory items such as power supplies, fuses, batteries, relays, signal converters, and enclosures shall also be included.

A dimensioned outline drawing of the control panel enclosure, inner door, and backplate showing device locations within the enclosure and conduit connection locations shall be submitted, along with an elementary wiring diagram showing connections of all devices and equipment contained within the panel and clearly showing connection of all field located devices.

1.3.5.1.2.2 Antennas, Support Structures, And Associated Devices

The submittal shall contain complete information on antennas and antenna support equipment, including antenna cable, cable connectors, masts, brackets, and mounting hardware.

1.3.5.1.2.3 Motor Controllers

The submittal shall contain complete information on motor controller, including ratings, dimensions, features, options, and operation and maintenance manuals.

1.3.5.1.2.4 Power Panel

The submittal shall contain information on the Power Panel enclosure along with dimensioned interior and exterior elevations showing locations of all contained equipment/devices. In addition, it shall contain information on devices contained within the enclosure such as motor starters, transformers, panelboards/loadcenters, fuses, and similar items, including wiring and/or connection diagrams.

Mounting details shall be submitted, including information on mounting relative to the utility service meter.

1.3.5.1.2.5 Support Structure for Power Panel and Control Panel

The submittal shall contain a dimensioned layout, schedule of materials of construction, and anchoring hardware for the support structure for the Power Panel

and the Control Panel. Supporting calculations demonstrating the adequacy of the proposed anchoring method, including concrete pad dimensions and seismic considerations, shall be submitted for the designed location.

1.3.5.1.2.6 Instrumentation Devices

The submittal shall contain information on the level controller and ultrasonic transducer including model numbers, features, ratings, and dimensions, along with all manufacturer's installation, operation, and maintenance manuals. Submit a configuration sheet showing proposed parameters for operation of the controller specific to this application.

1.3.5.1.2.7 Radio Transceivers

Submit information on radio transceivers, including manufacturer and model number, and the radio frequencies to be programmed.

1.3.5.1.2.8 Operations & Maintenance Information

The Contractor shall provide the number of copies of Operation and Maintenance Manuals specified in Section 1.3.1. The following operations and maintenance information shall be furnished for all installed equipment specified in the contract documentation:

- Complete identification, including model and serial numbers.
- Installation and initial start-up instructions.
- Complete instructions regarding operation and maintenance requirements, including procedures and recommended intervals.
- Identification of any special materials, software, or tools required for maintenance.
- Record wiring diagrams
- Parts lists.
- Warranty information, including the name, address, and telephone number of the manufacturer's representative to be contacted for warranty, parts, or service information.

Operation and maintenance information shall be comprehensive and detailed, specific for the items of equipment installed on the project. Material not directly applicable shall be removed, omitted, or clearly marked as inapplicable.

It is the responsibility of the Contractor to ensure that all operation and maintenance materials are obtained and formally transmitted to the City. Material submitted must meet the requirements of Section 1.3.1 and the approval of the City prior to project acceptance.

1.3.5.1.3 Record Information

The Contractor shall be furnished one full set of plans to be used as record drawings. During construction, the Contractor shall maintain an accurate and complete record of all changes in red ink on this set of record drawings. All dimensions shall be field-verified and clearly shown on the drawings. The red-marked set shall be submitted to the City prior to project closeout and approval of final payment.

Three copies of complete record wiring diagrams for all equipment and electrical circuits shall be submitted to the City when the as-built installation differs from that shown on previously submitted drawings or on the plans. Record diagrams shall be clearly marked indicating all such differences, and shall be coordinated with the plat record drawings.

The Contractor shall also maintain records of the hardware and firmware versions, settings, and configurations for the equipment provided. These records shall be updated as necessary during testing and start-up of the system to indicate the final configuration at closeout of the project. These records must be submitted prior to final contract closeout.

The record drawings shall be checked by the Contractor and bear his approval prior to submittal to the City.

1.3.5.1.4 Substitutions

It is the intent of this set of specifications that equipment be provided as specified for uniformity with the existing radio telemetry system. The City will consider proposals for substitution of certain materials, equipment, and methods only when such proposals are accompanied by full and complete technical data and other information required by the City to evaluate the proposals.

Substitution requests will not be considered for telemetry equipment (RTU's and radio) or motor starter equipment.

To obtain acceptance of items for substitution, the Contractor shall submit requests not later than seven days after the start of Contract execution.

Submission of a substitution proposal shall not relieve the Contractor from the requirement to provide equipment as specified. Substitution proposals will be reviewed by the City for conformance with the functional requirements and intent of these specifications. It is the Contractor's responsibility to demonstrate that the proposed substitute equipment will meet the requirements and the intent of these specifications. The City retains the exclusive right to approve or disapprove all proposed substitutions; all decisions by the City regarding these matters are final.

Therefore, the Contractor is responsible for abiding by any decision made by the City regarding proposed substitutions for any equipment and/or system component.

A shop test of the power panel and control panel shall be conducted prior to shipment of the equipment to the job site. The shop test shall be conducted by the panel fabricator and witnessed by the City's representative. Drawings of the panels shall be provided at the shop test. The City representative will compare the drawings to the actual panels. Drawings and actual panel fabrication must match prior to panels being shipped to the job site.

1.3.5.1.5 Tests/Inspection

The shop test shall demonstrate proper operation of the power panel and control panel. Controls shall be operated in each state (for example, hand, off, and automatic for HOA switches); inputs shall be tested by shorting across inputs or actuating devices connected as inputs; and outputs shall be tested by measuring resistance across terminals or contacts. Analog inputs shall be tested at not less than three points, nominally near zero, mid-range, and full range. Test result shall be documented in writing by the panel fabricator. The City representative may choose to bring a laptop computer to the test and monitor I/O on the RTU by connecting the laptop to the RTU. Deficiencies indentified as a result of the shop test shall be corrected and retested prior to shipment of the panels to the job site.

The system shall be field tested after installation. Equipment at the site shall be checked for proper operation and functionality. This functional test shall be performed in the presence of a City representative to demonstrate that the entire system is in proper working order and that it will perform the functions for which it was designed. Since the control system will be operating using an existing telemetry system, the field test must be coordinated with the City to ensure that the testing does not negatively impact operation of the existing wastewater telemetry system.

The Contractor shall obtain and pay fees for applicable permits and inspections required by any authority having jurisdiction.

1.3.5.2 Materials

1.3.5.2.1 Basic Materials and Methods

Provide new materials and equipment approved and labeled for the purpose for which they are to be used by a nationally-recognized electrical testing laboratory. Similar items of equipment shall be of the same manufacturer and quality. The equipment and materials shall meet applicable NEMA, IEEE, and ANSI standards.

Furnish materials, devices, equipment, or supplies of materials that are inherently non-corrosive, or are coated or covered in a manner acceptable to the City which

renders them non-corrosive. Do not install materials in a manner, location, or construction that produces galvanic action or any other materials which have the potential to facilitate corroding or eroding action.

Equipment or devices fabricated in the field shall be equal in every respect to manufactured items used for the same purpose. Where cutting, drilling, grinding, etc., is done to galvanized or painted metal, it shall be regalvanized or painted to match original finish.

1.3.5.2.2 Raceways

Rigid steel conduit shall be hot-dipped, galvanized, or sherardized steel conduit meeting ANSI C80.1. Couplings shall be unsplit, NPT-threaded, steel cylinders with galvanizing equal to conduit. Threadless couplings are not permitted. Nipples shall be factory-made through 8-inch length. Running threads are not permitted. Intermediate steel conduit is not permitted.

Liquid-tight flexible metal conduit shall be flexible, galvanized steel convolutions covered by a liquid-tight PVC layer with manufacturer's marking at 3-foot or less intervals. Connectors shall be UL approved for grounding and employ a ferrule which covers the end of the conduit inside and out. Conduit shall be Electri-Flex Type LA or American Sealtite, Type UA.

Flexible metal conduit shall be flexible galvanized steel convolutions forming a continuous raceway. Connectors shall be galvanized screw-in type, approved by UL for grounding. Flexible aluminum or light-wall steel conduit is not acceptable.

Rigid plastic conduit shall be Schedule 40 or Schedule 80 PVC rigid conduit suitable for underground installation without concrete encasement, and shall meet NEMA TC-2 standards for plastic conduit. Manufacturers are Carlon, Johns-Manville, or equal.

Raceway supports shall be stainless steel, galvanized steel, or aluminum structural shapes, and cast hardware.

1.3.5.2.3 Conductors

Power wiring for service, feeder, and motor circuits shall be Class B stranded copper conductor, with Type RHH-RHW-USE insulation.

Branch circuit conductors shall be Class B solid copper conductor, THHN-THWN insulated in sizes No. 10 and No. 12 AWG. Minimum conductor size for all power wiring shall be No. 12 AWG.

Control wiring shall be Class C stranded copper conductor with Type MTW insulation. Minimum conductor size shall be No. 14 AWG, except conductors which connect to the

RTU or radio terminals or connectors shall be sized and fused to match the terminals or connectors (20 gauge nominal). DC circuits shall be color coded, red for positive and black for negative.

Low-voltage instrument wire shall be multi-conductor cable with overall neoprene or PVC jacket. Individual conductors shall be PVC or polyethylene/nylon insulated. Unshielded instrument cable shall be Beldon 9486 (#18 AWG), Beldon 9488 (#14 AWG), or equal. Shielded single pair instrument wire (2/C#18) shall be Belden 9341 or equal.

Ground rods shall be copper-clad steel, 3/4 inch round, 10-feet long. Grounding clamps shall be equal to T&B 3900 UB Series. Grounding wire and cable shall be solid copper for No. 4 and smaller diameter.

Connectors for splicing copper conductors shall be: "Scotchlok" insulated spring connectors for No. 18 through No. 6 AWG solid conductors; insulated, solid-barrel, crimp-type, plated copper alloy connectors for No. 18 through No. 6 AWG stranded conductors.

Connectors for terminating copper conductors shall be insulated, solid-barrel, crimp-type, spade tongue-plated copper alloy terminal for No. 18 through No. 10 AWG.

Insulating materials for splices shall be "Scotchfill", or equal, for filling bolted or irregular areas before taping with Scotch No. 88, 33 plus or equal 7-millimeter vinyl plastic tape.

Wire markers shall be slip-on sleeve, shrink to fit style. Brady, or approved equal.

1.3.5.2.4 Fittings

Fittings shall be galvanized, cast iron alloy with threaded hubs, neoprene gasket and galvanized cast iron alloy cover. Miscellaneous fittings shall be as follows:

- Clamp backs shall be galvanized cast iron alloy, one-hole style.
- Locknuts shall be extra-heavy, hot-dip galvanized steel through 2 inches trade size and hot-dip galvanized malleable iron above that size.
- Bushing shall be hot-dip galvanized iron with insulating thermosetting collar. Provide grounding connector on bushing where terminating at enclosures.
- Seals shall be provided in conduit runs where runs exit or enter from outdoor areas. Seal shall be EYA or EYS type; sealant shall be clear or colorless RTV silicone or equal.

1.3.5.2.5 Anchors, Supports, and Attachments

Attachments to building surface and structural shapes or members shall be as follows:

- Wood: Lag screws, Type A tapping screws.
- Masonry: Rawl hollow-set drop-in expansion anchor.
- Hollow Partitions: Molly or toggle bolts.
- Concrete: Rawl Lok-Bolt expansion anchors.
- Structural Shapes or Members: Clamps or U-bolts.
- Other Steel: Machine screw-in tapped hole.

Attachments shall be stainless steel or hot-dipped galvanized.

1.3.5.2.6 Motor Controller

Motor Controller shall be Square D/Schneider Electric LC1 Series Motor Starter with LRD Series electronic overload with remote reset. Starter shall include HMCP short circuit protection, fused control power transformer, auxiliary run contacts.

1.3.5.2.7 Main Circuit Breaker

Main circuit breaker shall meet NEMA Standard AB-1. The unit shall be a molded case circuit breaker with thermal magnetic trip. The circuit breaker shall have a short circuit withstand rating as required for the available short circuit current at the point of connection to the Electric Utility.

1.3.5.2.8 Enclosures for Power Panel and Control Panel

Power Panel shall be NEMA 3R double door enclosure nominally 48”W x 72” H. Control Panel shall be NEMA 3R single door enclosure nominally 36”W x 72”H. Depth of the enclosures shall be equal and as required for the devices and/or enclosures contained therein, but not less than 20”. The enclosures shall be provided with a pad-lockable, three-point latching system and handle, and panel backplates and mounting hardware as required for the installation. The control panel shall have an internal swing door for mounting of pilot devices and the level controller.

The enclosure shall be manufactured of stretcher leveled steel of 12 or 14 gauge thickness welded into a self-supporting rigid structure. Doors shall be piano hinged with stainless steel hinge pins. Reinforcement shall be provided around areas of the enclosure weakened by openings or mounting of heavy equipment/components. The panel subplate shall be sized to fit within the enclosure and shall be mounted on collar studs for easy installation and/or removal. Print pockets shall be provided on the door.

Panels shall be descaled, cleaned, and primed in preparation for painting. Painting shall consist of one coat of flat white enamel in the interior and two coats of hard finish exterior enamel, gray in color. Paint shall be suitable for field touch-up. Spare paint (one pint) shall be provided for exterior touch-up purposes.

1.3.5.2.9 Limit Switches

Proximity switches shall be provided for use as intrusion sensing devices at the Valve Vault, Main electrical and control enclosures, and at the wet well.

Proximity sensors shall be Turck Bi15-Q20-Y1X-H1141 2-wire NAMUR proximity sensor, 5-30 VDC, 4-pin M12 quick disconnect with Turck RK 4T-10 cable, 10 meter, 4-wire with M12 quick disconnect. (Note -- Modify Part number to meet actual cable length required for continuous run of cable from Proximity Sensor to Seal-off Electrical Vault.)

Limit switches shall be provided for use as intrusion sensing devices at the Control Panel and Power Panel enclosures. Limit switches shall be Hoffman, or approved equal.

1.3.5.2.10 Power Center

The power center shall be Cutler Hammer “Mini Power Center”, or approved equal.

1.3.5.2.11 Fuses

Fuses shall be as follows: Power fuses, Class RK-5 silver element. Control fuses, Bussman FNQ or equal.

1.3.5.2.12 Current Sensor

Current sensor shall be used as undercurrent to indicate pump fail-to-start condition.

Current Sensor for undercurrent detection shall be Bender Incorporated CME420 with 0.1-16 amp range and adjustable trip point, start-up delay, response delay, release delay, and SPDT contacts rated 5 amps. Where motor full load amps exceed 10 amps, provide appropriately rated current transformers.

1.3.5.2.13 Panel Heater

Panel Heater shall be 120 volt, single phase with built-in thermostat, fan, and aluminum enclosure. Hoffman D-AH2001A, or equal.

1.3.5.3 Workmanship

1.3.5.3.1 Clean-Up

Vacuum equipment clean after installation; remove metal cuttings with a magnet or suitable means before assembling equipment; wipe insulating supports, bushings, etc.

with a clean lint-free cloth; clean debris, shavings, etc. from equipment and enclosures before startup.

1.3.5.3.2 Raceways

Rigid steel conduit shall be used for all work except as noted in this item of the Specifications.

Rigid plastic conduit may be used as follows:

- Between the wetwell and the power and sensing manhole,
- Between the valve vault and the control enclosure, and
- For utility service circuits as permitted by the serving utility.

Where rigid plastic conduit is used, transition to rigid steel PVC coated conduit at stub-ups and locations where the conduit changes from buried to encased in concrete or exposed. Do not extend plastic conduit above grade, or into equipment.

Flexible conduit shall be provided for connections to equipment which is subject to vibration in normal service. Runs shall be kept as short as practical and shall not be used in place of elbows, offsets, or fittings to attach to fixed equipment. Flexible conduit shall not be strapped to structures or other equipment.

Circuits shall run in individual raceways unless specific combinations in one raceway are shown. Raceways shall not be ganged into wireways, pull boxes, junction boxes, etc., without specific approval.

Conduit connections to enclosures shall be made at the nearest practicable point of entry to the enclosure area where the devices are located, to which the circuits contained in the conduit will connect.

Where raceway exits from grade or concrete, provide the following: For runs exiting from grade, slabs or encasement, provide a rigid steel elbow and adapter. In "wet" areas, elbow shall be 20 mil PVC coated.

Direct-buried rigid steel conduit shall be installed where underground runs are shown. Rigid steel conduit, underground or encased in concrete, shall have a half lapped wrap of Scotchrap No. 51 plastic tape or a coat of Koppers Bitumastic No. 505 or factory PVC coating, 20 mils minimum thickness.

Install raceway as a complete, continuous system without wires, mechanically secure and electrically connected to all metal boxes, fittings, and equipment. Blank off all unused openings, using factory-made knockout seals. Keep conduits clean and dry until conductors are installed using caps, bushings, and "penny" or other suitable means.

Provide double locknuts and insulating bushings at all conduit connections to boxes and cabinets. Bushings shall be grounding type where connecting to concentric or eccentric knockouts. In "wet" areas, locknuts shall be sealing type or Myers hubs shall be used.

Use approved split or union type couplings only where permitted by the Engineer.

Cut ends of conduit square with hand or power saw or approved pipe cutter. Ream cut ends to remove burrs or sharp ends. Thread cuts on conduit in the field shall have same effective length and thread dimensions and taper as specified for factory-cut threads. Transitions from plastic to steel shall be made with a plastic threaded male adapter to a steel conduit coupling.

Provide anchors, hangers, supports, clamps, etc. to support the raceways from the structures in or on which they are installed. Provide sufficient clearance to allow conduit to be added to racks, hangers, etc. in the future.

Conduit couplings, fittings, and boxes where threaded male to female connections are made shall be waterproofed and rustproofed by application of a watertight, conductive thread compound. Clean threads of cutting oil before applying thread compound and making up joint.

1.3.5.3.3 Conductors

Insulated conductors and cables shall be installed in raceway systems after the system is complete. Damage due to missing bushings, burrs on conduit ends, etc. shall be cause to require removal and replacement of conductors. Damaged ends shall be considered sufficient indication of damaged insulation to require replacement. Cable lubricants, pulling sleeves, pullboxes, etc. shall be used to keep pulling tensions within allowable limits. Pulling compounds shall be Ideal Yellow 77 or equal. Pulls shall be by hand using cable grips or wrapping extra conductor around to form an eye. Cable and conductor ends shall be cut off after pulling and all compound cleaned from conductors before terminating.

Power circuits shall be continuous without splices from equipment terminal to equipment terminal. Instrumentation and control circuits shall be continuous except for termination on terminal strips in control panels or at terminal cabinets. Branch circuits may be spliced at taps.

Do not use white or green color for any conductor not intended for neutral or grounding purposes. This limitation applies to power, lighting, and control wiring, except smaller gauge (No. 18 or less), low voltage control circuits.

Use wire with the insulation of required color for conductors No. 8 AWG or smaller. DC circuits shall be color coded red for positive and black for negative.

Control wiring must be of colors different from power wiring or be supplied with a trace of color in addition to the basic color of the insulation. In general, use same color throughout a given system for any signal or control wires performing the same function.

Install wire neatly in all enclosures. Bend or form wires in neat runs from conduits to terminals. Arrange wires so that they may be grouped by conduit or by function in the enclosure. Install cable ties and straps to support and bundle wiring in enclosures. Arrange wires to allow wire tags and numbers to be easily read without bending or flexing wiring.

Terminate wiring with connectors made especially for the wire size and terminal size on which they are installed.

1.3.5.3.4 Anchors, Supports and Attachments

Install attachments to structures or surfaces in a manner which does not damage the structure or surface. Trim all excess length of studs, rods or bolts.

Provide stainless steel or galvanized fasteners in all outdoor, wet, or below grade locations, and any location exposed to the process. Support each raceway or device independently.

Do not drill, tap, punch or shoot structural metal or pre-stressed concrete structures; use clamping devices only to metal and expansion shields or inserts on concrete.

1.3.5.3.5 Power Panel

Power panel shall be assembled with open style devices, except for Mini Power center. Wiring shall be routed open or in plastic wireways. Distribution blocks, and other devices with open terminals shall have plastic, or similar material, guards to cover the terminals and prevent accidental contact. The assembled panel shall bear the label of an approved Electrical Testing Laboratory.

1.3.5.4 Payment

Payment shall be made at the unit price or lump sum bid price as stated in the Contractor’s bid proposal. Payment shall be considered full compensation for all labor, material, and equipment to install the electrical system, complete and operational.

1.3.6 Telemetry and Control System

1.3.6.1 General

1.3.6.1.1 System Capabilities

The existing wastewater telemetry system communicates via radio. The Contractor shall provide the radio for the new station. The City will configure the radio so that communications may be established with the existing telemetry controller.

The existing controller for the wastewater telemetry system, together with the control computer, provides for recording all analog variables and status inputs and maintaining a database of values for reports. Programming of the control computer man-machine interface shall not be the responsibility of the Contractor, but shall be performed by the City.

1.3.6.2 Materials

1.3.6.2.1 Enclosure

The telemetry equipment shall be contained in the control panel enclosure specified under 1.3.5.2 above.

1.3.6.2.2 Conductors

Conductors shall be as specified in 1.3.5.2 above.

1.3.6.2.3 Protection, Control, and Instrumentation Devices

Miscellaneous protection and control devices shall be as follows:

- Power fuses, Class RK-5 silver element. Control fuses, Bussman FNQ or equal.
- Lightning arresters shall be General Electric Company Catalog No. 9L15BBC008, Joslyn, Phoenix Control-Trabtech, or equal.
- Control relays shall have contacts rated 10A - 120VAC, unless higher ratings are required for the circuit being serviced. Coils shall be rated for the voltage of the coil circuit. Relays shall be Schneider Electric RUM or equal mounted in RUZ DIN rail mounted sockets. Relays shall have LED indicators of coil state. Provide surge suppressers and hold down springs.
- Time delay relays shall be Schneider Electric RUW101MW in combination with RUM relays and RUZ base units.
- Pilot devices (selector switches) shall be heavy duty, oil-tight type per NEMA ICS-1. Allen-Bradley, or equal.
- Phase monitoring relay shall be SSAC Model PLMU11.

- Float switches shall be Gems Sensors and Controls (Warrick Controls) Series M mechanical tilt float switches, form C wide angle.

1.3.6.2.4 Remote Telemetry Units

The telemetry equipment (RTU) shall be a Zetron model 1716 unit for conformity with the existing radio telemetry system. It shall be supplied with full capability for accumulator register and pulse counter data access.

1.3.6.2.5 Power Supply and Surge Protection

Provide a 120 Volt AC input, 12 VDC output power supply, Sola SPD3-15-100T. Provide a 7 Amp-hour battery backup system.

1.3.6.2.6 Level Controller

The level controller shall be Siemens HydroRanger 200 Level Controller with a XPS 15 (F Model) Transducer (for ranges up to 50 ft). Backup of the HydroRanger 200 shall be accomplished by a single level float and time delay off, which will run both pumps when the float is activated.

Float switches shall be Warrick Controls part # MBLU40W (hung with weight attached for tether method – NOT tethered to float switch mast).

Timer shall be Schneider Electric / Telemecanique:
Base RUZC3M – 11 Pin Base
Relay RUMC3AB2F7 – 11 Pin 120vac Relay
Timer Module RUW101MW – Multi Function Timer

1.3.6.2.7 Radio Transceiver

Radio transceiver shall be Microwave Data Systems Model MDS 9710B “SMART” Remote Data transceiver with programmable synthesized frequencies. The unit shall operate from 12 VDC, have a four-wire interface, and four LED indicator panel. The unit shall include a Remote Maintenance Diagnostics Module. Provide an interface cable for connection of the radio to the Remote Telemetry Unit.

1.3.6.2.8 Antenna Systems

A YAGI directional antenna shall be provided for the telemetry system. The antenna shall be a commercial antenna: Andrew DB-499K, or Kathrein SCALA TY-900. Antennas shall be provided with manufacturer’s standard stainless steel or galvanized steel mounting hardware for mounting antennas on up to 2.375” diameter standards or poles.

The Contractor shall be responsible for providing all equipment necessary for installation. This includes provision of all incidental items necessary for proper installation and operation, which may include, but shall not be limited to, structural supports, masts, anchoring hardware, supporting members, connection cables, cable connectors. Antenna mast bell reducers, if utilized, shall be drilled and tapped (1/4" minimum) in four locations and stainless steel bolts installed to prevent turning on the mast.

1.3.6.2.9 Antenna Cable

Provide antenna lead in cable and jumpers at each site.

All antenna coax shall be premium quality. The main antenna cable shall be 1/2" corrugated hardline with foam insulation. The inner and outer conductors shall be copper. The cable shall be Andrews Heliax or Cablewave FLC 12-50.

Provide two male Type "N" connectors for the main antenna cable that are recommended by the manufacturer. Provide two connector weatherproof kits for connections at the antenna.

Provide 18 inch antenna jumper cable with one male "N" connector to connect to antenna and a female "N" connector to connect to lead in cable. Jumper cable shall be Cablewave S-FLC12, or equal.

Provide 24 inch radio jumper cable with two male "N" connectors to connect between radio and antenna cable lightning arrester. Jumper cable shall be Cablewave S-FLC12 or equal.

Provide a coax cable grounding kit for each site to ground the antenna cable to the mast. Ground kit shall be Cablewave #916383, or equal.

Provide an antenna lightning arrester for each site. Antenna lightning arrester shall be Polyphasor #S-50NX-C2.

1.3.6.3 Execution

1.3.6.3.1 Control Panel

The telemetry equipment remote unit, radio, battery, relays, and associated wiring and components at the site shall be provided in the control panel. The assembled panel shall bear the label of an approved Electrical Testing Laboratory. This section of the specifications applies to the control panel.

1.3.6.3.2 Component Installation

Components mounted in the interior shall be fastened to an interior subpanel using machine screws plus adhesive to insure vibration-free attachment. No fastening devices shall project through the outer surfaces of the cabinet. Interior component mounting and wiring shall be grouped as much as possible by function and then by component type. Interiors shall be so arranged that control relays, terminal blocks, fuses, etc. can be replaced or added without disturbing adjacent components. Spare mounting space equal to at least 20 percent of each type of component shall be provided for all components in the system. This provision applies primarily to relays, gutter space, internal selector switches, fuses, and similar components.

Devices, including fuses, power supplies, relays and terminal blocks, installed on the panel subplate, shall be provided with a minimum spacing between the component and the wire duct of 1 inch. Minimum spacing between adjacent components shall be 1 inch. A minimum of 2 inches shall be provided between terminal strips and wireways or between terminal strips. DC fuses shall be mounted completely separate from AC fuses and not in the same horizontal plane.

Panel wireways shall be provided between each row of components, and adjacent to each terminal strip. Wireways shall be a minimum of 1 inch wide and 2 inches deep with removable snap-on covers and perforated walls for easy wire entrance. Wireways shall be constructed of non-metallic materials with a voltage insulation in excess of the maximum voltage carried therein. Wiring duct shall be Panduit "E" Type LG, Panel Channel, or equal.

Terminals shall be provided for the termination of external power, control, and instrument wiring. Where terminal blocks are used for low energy resistance, current, or voltage circuits, they shall be physically separated from line voltage circuit or current transformer secondary circuits. Where multiple terminals are required for a given wire number, additional terminals shall be provided and jumpered as necessary to provide terminal spaces for each individual outgoing wire. Terminal numbers shall correspond to those shown on the elementary wiring diagram. Provide space for a minimum of 10 percent additional terminals distributed at each group of terminals.

Power terminals shall have brass screws with straps suitable for No. 12 through No. 18 AWG wire. They shall be Buchanan, General Electric, Marathon, or Siemens. Control and instrument terminals shall be modular, rail mounted units, Phoenix, Entrelec, or equal.

Control power fuses shall be FRN for ratings above 10 amperes or FNQ for 10 amperes and below. FRN fuses shall be mounted in phenolic blocks and a fuse puller mounted adjacent to them. FNQ fuses shall be mounted in a buss HPC fuseholder. Label all fuseholders with fuse identification number and fuse size and type. Provide 3 spare

fuses of each type and size in each panel. Provide box or fuse clip mounted on panel interior marked "SPARE FUSES" to hold the spares.

1.3.6.3.3 Wiring

Panel wiring shall comply with National Electrical Code.

Panel wiring terminating on device or terminal block screw terminals shall be terminated using slip-on spade tongue insulated crimp (compression) terminators. Run wiring within the panel in wiring duct neatly tied and bundled with tie wraps or similar materials.

All wires to internal components shall be connected to the "inside" or panel side of the terminal strip. All wires to external components shall be connected to the "outside" or field side of the terminal strip. No more than two wires shall be connected to any one control terminal point.

Wiring inside the panel shall be arranged to separate low voltage control signals of the milliamp-millivolt or other low energy type from inductive power circuits, and all panel wiring shall be effectively shielded and grounded to a panel common which will be grounded by the electrical contractor in the field.

Shielding of instrumentation circuits shall be connected to insulated terminals provided adjacent to the circuit terminals, i.e. three terminals for 0-5VDC, 4-20 mA, or similar analog circuits. In general, analog circuits shall be run directly from instrument to instrument without termination. Loop wiring connections to devices shall be made by joining two runs of cable to the device, terminating one conductor of each cable on the device and splicing the other conductors.

1.3.6.3.4 Marking and Identification

Wiring which is an internal part of a device and is not connected to external terminal blocks may be wired using the manufacturer's standard wire designations. Wire which connects to external circuits, to terminal blocks, or other devices which are connected to external circuits shall be identified by the numbers shown on the elementary wiring diagrams. Every wire termination, including all jumpers, shall be identified with wire markers. Wire markers shall be installed over wire terminators or directly adjacent to them. Markers shall be arranged to permit reading of identification without the flexing or twisting of wires.

Nameplates shall be rigid phenolic plastic laminate with engraved lettering or engraved metal plate with filled lettering. Background shall be black. Lettering shall be white. Edges shall be beveled showing a white border. Abbreviations are not permitted unless approved by the Engineer or specifically shown on the nameplates,

schedules, or drawings. The engraving shall be as shown on the plans for the identification of each panel.

Nameplates shall be installed plumb and parallel to the lines of doors or structures to which they are attached. Nameplates shall be attached to the sheet metal structure by a thin coat of adhesive and sheet metal screws. Adhesive and screw application shall be made in a manner to avoid buckling or distorting nameplates due to use of excessive adhesive or over tightening of screws.

A nameplate shall be provided for each panel. It shall be 2"×10" minimum size with ½" minimum engraved letters. Nameplates shall be provided for all relays, timers, transformers, fuses, terminal blocks, switches mounted internally, and other components which are mounted to the internal mounting panel. These nameplates shall be sized to the scale of the device to which they refer. Lettering shall be white. Backgrounds shall be black. The engraving shall be as shown for the device on the elementary wiring diagrams.

1.3.6.3.5 System Integration

The telemetry and control system installation shall be performed by an installer who has been trained in system design, installation, operation, and maintenance of the RTU equipment.

The Contractor shall assume full responsibility for the proper installation, maintenance, and operation of all equipment provided under this contract, prior to acceptance. The operation of the man-machine interface, insofar as the program written for the City's Radio Telemetry System, shall not be the responsibility of the Contractor.

1.3.6.3.6 Radio System

The radio shall be installed in the control panel. The City shall install the cables and make connections of the antenna to the antenna cable, the antenna cable to lightning arrester, lightning arrester to antenna jumper cable, and antenna jumper cable to radio using connectors. The City will adjust the radio for proper transmission and reception of radio signals. The Contractor shall be prepared to assist the City in coordinating the work of this Contract with the work of the City, including, but not limited to, adjusting the RTU transmit and receive gain settings, adjusting antenna mounting height and directional orientation. This assistance shall include one additional callback of at least four hours for re-adjustment of the system within the first three months of operation.

1.3.6.3.7 Field Calibration And Startup

After equipment has been installed at the site, the Contractor shall test the telemetry system as described in 1.3.5.1. All analog inputs shall be verified with external devices providing signals of 4.0, 12.0 and 20.0 mA. All discrete inputs shall be verified by simulating contact closure and opening.

1.3.6.4 Payment

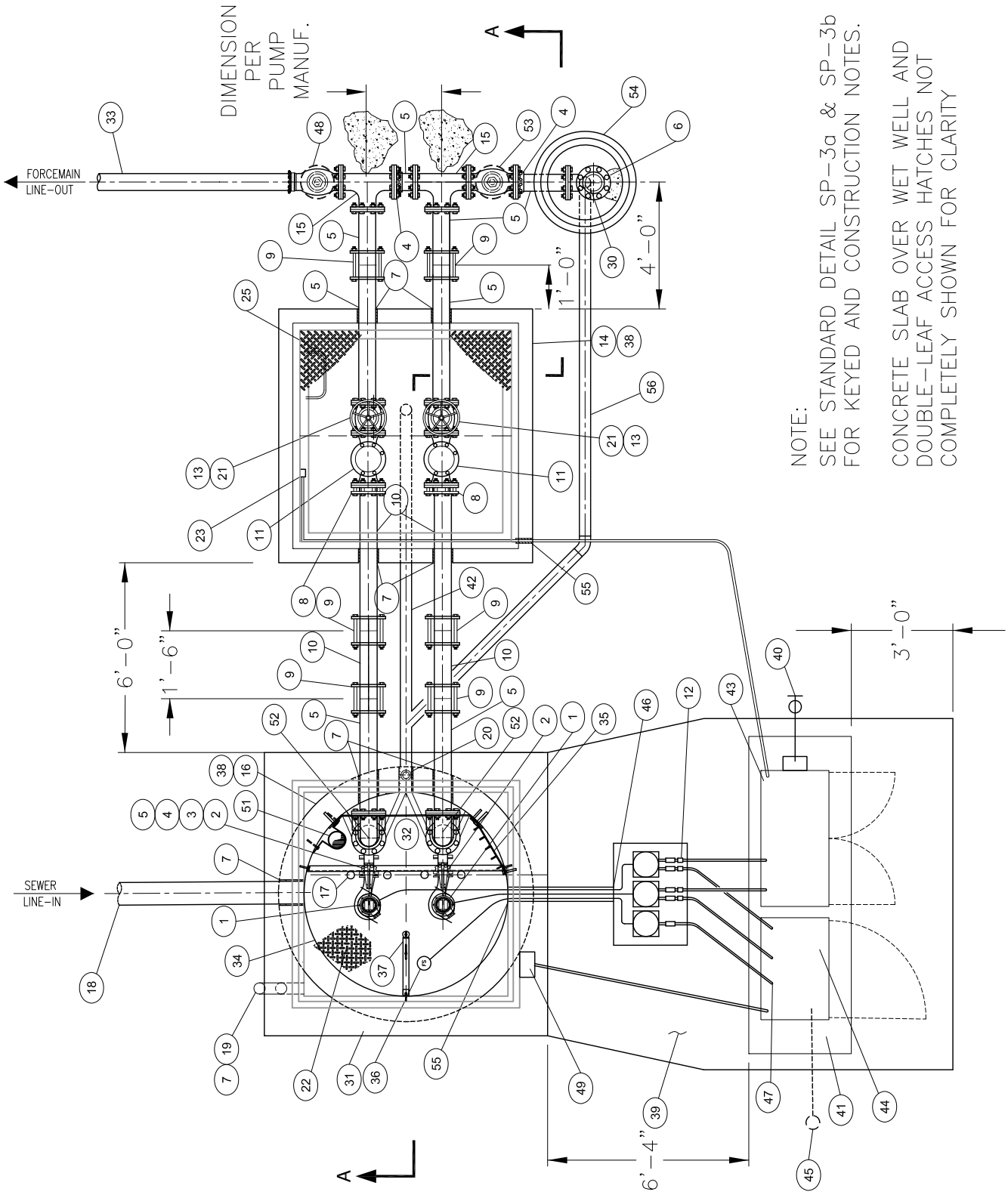
Payment shall be made at the unit price or lump sum bid price as stated in the Contractor's bid proposal. Payment shall be considered full compensation for all labor, material, and equipment to install the telemetry and control system, complete and operational.

1.4 STANDARD DETAILS

Despite the specific information provided herein, the drawings, specifications and details ("Designs") only show minimum requirements, should be considered conceptual in nature, and may require revision and/or modification to conform to project conditions and applicable laws, codes, ordinances, standards and other current requirements and/or best practices. Designs shall be checked, completed and stamped by a Washington State Professional Engineer and Registered Electrical Engineer.

The following standard detail sheets are attached:

- SP-1 Pump Station Mechanical Plan
- SP-2 Pump Station Mechanical Section
- SP-3a Pump Station Mechanical Notes
- SP-3b Pump Station Mechanical Notes
- SP-4 Vactor Suction Pipe Detail
- SP-5 Thrust Restraint Pipe Support Detail
- SP-6 Pipe Brace Detail
- SP-7 Typical Steel Pipe Support Detail
- SP-8 Ultrasonic Level Transmitter and Bracket Detail
- SP-9 Cable Support Bracket Detail
- SP-10 Pump Station Sun Shelter Detail
- SP-11 Transducer Cable J-Box Detail



SP-1
PUMP STATION
MECH. PLAN

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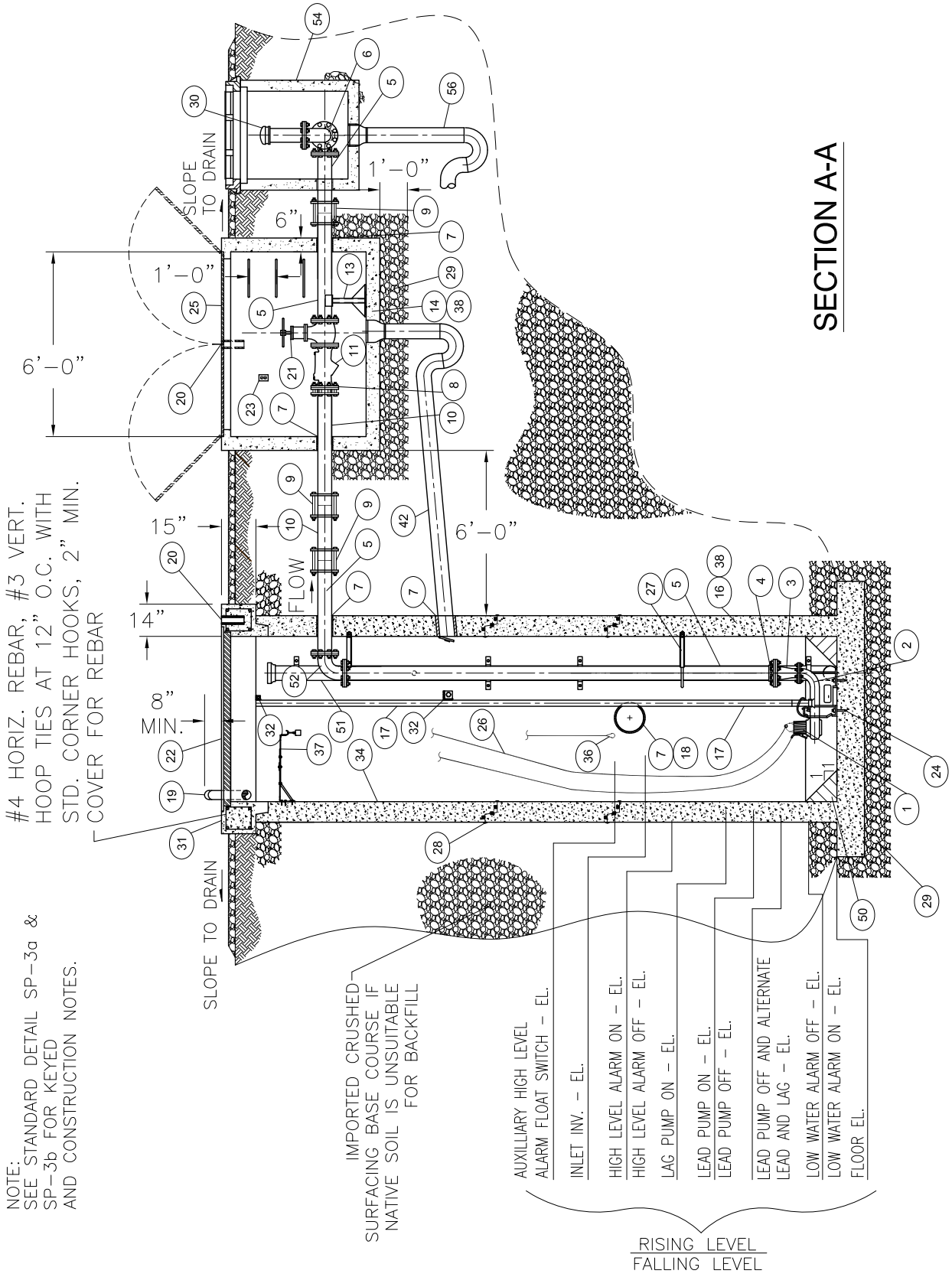

SP-2
PUMP STATION
MECH. SECTION

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CONSTRUCTION NOTES:

1. CONSTRUCT ALL WORK IN ACCORDANCE WITH CITY OF RICHLAND STANDARD SPECIFICATIONS.
2. ALL BOLTS, NUTS, WASHERS, FASTENERS, ETC. WITHIN WETWELL SHALL BE STAINLESS STEEL.
3. FIELD ADJUST LEVEL SETTINGS TO OBTAIN OPTIMAL PERFORMANCE.
4. ALL PIPING AND FITTINGS TO VALVE DOWNSTREAM OF VALVE VAULT SHALL BE D.I.P. CL-52. ALL PIPING AND FITTINGS INSIDE WET WELL AND VAULT SHALL HAVE AN INTERIOR AND EXTERIOR EPOXY COATING. ALL PIPING AND FITTINGS UNDERGROUND SHALL HAVE AN INTERIOR EPOXY COATING AND AN ASPHALTIC EXTERIOR COATING.

KEYED NOTES FOR MECHANICAL PLAN AND SECTION:

1. SUBMERSIBLE PUMP.
2. QUICK DISCONNECT ELBOW AND MOUNTING SYSTEM PUMP DISCHARGE ELBOW AND MOUNTING BASE
3. REDUCER, FLGxFLG
4. UNI-FLANGE
5. PIPE SPOOL (FLGxPE)
6. 90° ELBOW, (FLGxFLG) WITH THRUST BLOCK
7. WATERTIGHT WALL PENETRATION, MANHOLE ADAPTER "A-LOK PREMIUM", "KOR-N-SEAL" OR EQUIVALENT
8. FLANGE COUPLING ADAPTER
9. FLEXIBLE SLEEVE-TYPE PIPE COUPLING, ROMAC 501 OR EQUAL.
10. PIPE SPOOL (PExPE)
11. RUBBER FLAPPER SWING CHECK VALVE
12. THREE PIECE EXPLOSION PROOF COUPLING
13. STAINLESS STEEL VALVE/PIPE SUPPORT. PER DETAIL SP-7.
14. PRE-CAST CONCRETE VALVE VAULT. PROVIDE OPENINGS AS REQ'D TO ACCOMMODATE PIPING AND ACCESS HATCH AS SHOWN.
15. TEE, FLG WITH THRUST BLOCK
16. PRECAST MANHOLE WITH MONOLITHIC BASE. EXTEND AND SIZE BASE AS REQUIRED FOR BUOYANCY RESISTANCE WHEN GROUNDWATER IS PRESENT.
17. STAINLESS STEEL PUMP REMOVAL SYSTEM, COMPLETE WITH MOUNTING BRACKETS AND INTERMEDIATE SUPPORT BRACES.
18. INLET PIPE
19. 4" STAINLESS STEEL, SCH. 40, SCREENED VENT
20. CONFINED SPACE ENTRY SYSTEM-LIFTING SUPPORT PEDESTAL FLUSH MOUNT STAINLESS STEEL SLEEVE AND CAP. LOCATION TBD IN FIELD BY ENGINEER.
21. RESILIENT WEDGE GATE VALVE (FLGxFLG) WITH 12" HAND WHEEL
22. DOUBLE-LEAF, ACCESS HATCH
23. ELECTRICAL OUTLET
24. EPOXY-SET STAINLESS STEEL ANCHOR BOLTS
25. DOUBLE-LEAF ACCESS HATCH
26. STAINLESS STEEL LIFTING CABLE WITH S.S. CLEVIS FITTING AT EACH END.
27. DISCHARGE PIPE SUPPORT, PER DETAIL SP-6.
28. MANHOLE JOINT WITH EXTRUDED BUTYL RUBBER SEAL. GROUT JOINT INSIDE AND OUT, TYPICAL.
29. CRUSHED SURFACING BASE COURSE COMPACTED TO 95%
30. CAM-LOCK FITTING WITH PRESSURE CAP.
31. CONCRETE CURB FOR SUPPORT OF HATCH PER HATCH MANUFACTURER RECOMMENDATIONS. SEE SECTION DETAIL FOR REINFORCEMENT DETAILS.

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SP-3a
PUMP STATION MECH. NOTES

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KEYED NOTES FOR MECHANICAL PLAN AND SECTION (CONT.)

32. BOLT UPPER GUIDE RAIL SPACER TO FABRICATED SUPPORT BRACKET AS RECOMMENDED BY MANUFACTURER. POSITION SPACER AS REQUIRED TO LOCATE GUIDE RAIL PIPES IN TRUE VERTICAL POSITION. MOUNTING HARDWARE AND BRACKET TO BE S.S. AND TO INCLUDE 1/4" S.S. BAR STOCK HOOK FOR HANGING LIFTING CABLE.
33. FORCE MAIN
34. INTERIOR LINING SYSTEM
35. CABLE SUPPORT BRACKET. SEE DETAIL SP–9.
36. AUXILIARY HIGH LEVEL ALARM FLOAT SWITCH WITH NO/NC CONTACTS
37. ULTRASONIC LEVEL TRANSMITTER AND BRACKET. SEE DETAIL SP–8.
38. EXTERIOR ASPHALTIC COATING
39. 6" CONCRETE PAD ON 6" CRUSHED SURFACING BASE COURSE AND SUBGRADE COMPACTED TO 95%.
40. ELECTRICAL SERVICE CIRCUIT. COORDINATE CONNECTION WITH UTILITY.
41. SUN SHELTER, SEE DETAIL.
42. CAST IRON FLOOR DRAIN 4" SDR 35 PVC DRAIN PIPE WITH P–TRAP INSTALLED AT 2% SLOPE TO WETWELL. INSTALL FLAP GATE ON OUTLET IN WETWELL.
43. POWER PANEL
44. CONTROL PANEL
45. ANTENNA AND POLE
46. POWER AND SENSING HANDHOLE
47. GALVANIZED STEEL RIGID CONDUIT FOR POWER AND CONTROL CABLES
48. GATE VALVE W/VALVE BOX (FLGxMJ) WITH MEGALUG JOINT RESTRAINT
49. ULTRASONIC LEVEL TRANSDUCER JUNCTION BOX
50. CONSTRUCT CONCRETE FILLET (TYPICAL) APPLY WELDO–CRETE® OR APPROVED EQUIVALENT BONDING AGENT. APPLY IN CONFORMANCE WITH MANUFACTURERS RECOMMENDATION.
51. 6" SCH 80 PVC VACTOR SUCTION PIPE PER DETAIL. DRILL TWO 1" HOLES IN PIPE 7' BELOW TOP OF SLAB. PROVIDE ST.ST. PIPE SUPPORTS AND FEMALE CAMLOCK FITTING W/ CAMLOCK CAP.
52. 90° ELBOW, (FLGxFLG) W/ THRUST RESTRAINT, PIPE SUPPORT PER DETAIL SP–5
53. GATE VALVE W/ VALVE BOX (FLGxFLG)
54. CATCH BASIN WITH FRAME AND SOLID ACCESS COVER MARKED "SEWER". PER CITY OF RICHLAND STANDARD DETAILS.
55. ELECTRICAL CONDUIT WALL PENETRATION, "LINK–SEAL, MODEL S–316" OR EQUIVALENT.
56. CAST IRON FLOOR DRAIN 4" SDR 35 PVC DRAIN PIPE WITH P–TRAP INSTALLED AT 2% SLOPE. CONNECT TO 4" SDR 35 PVC DRAIN PIPE FROM VALVE VAULT W/ 4" PVC WYE.

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SP–3b PUMP STATION MECH. NOTES

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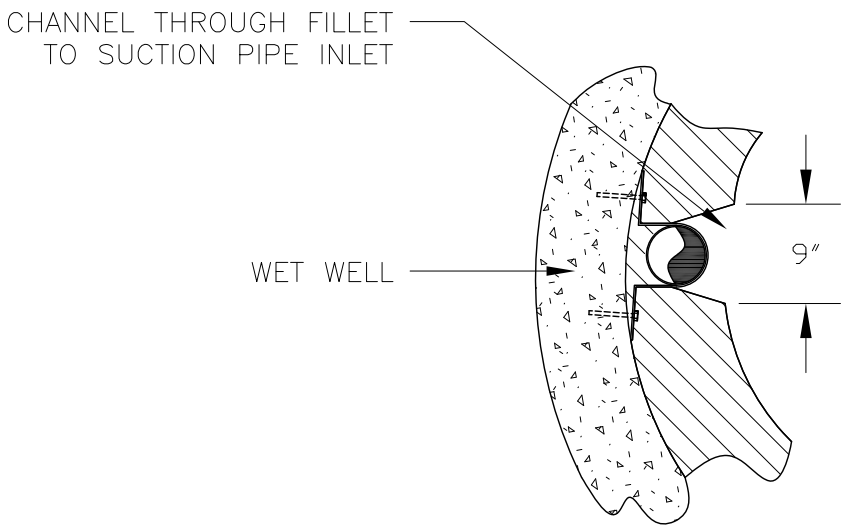

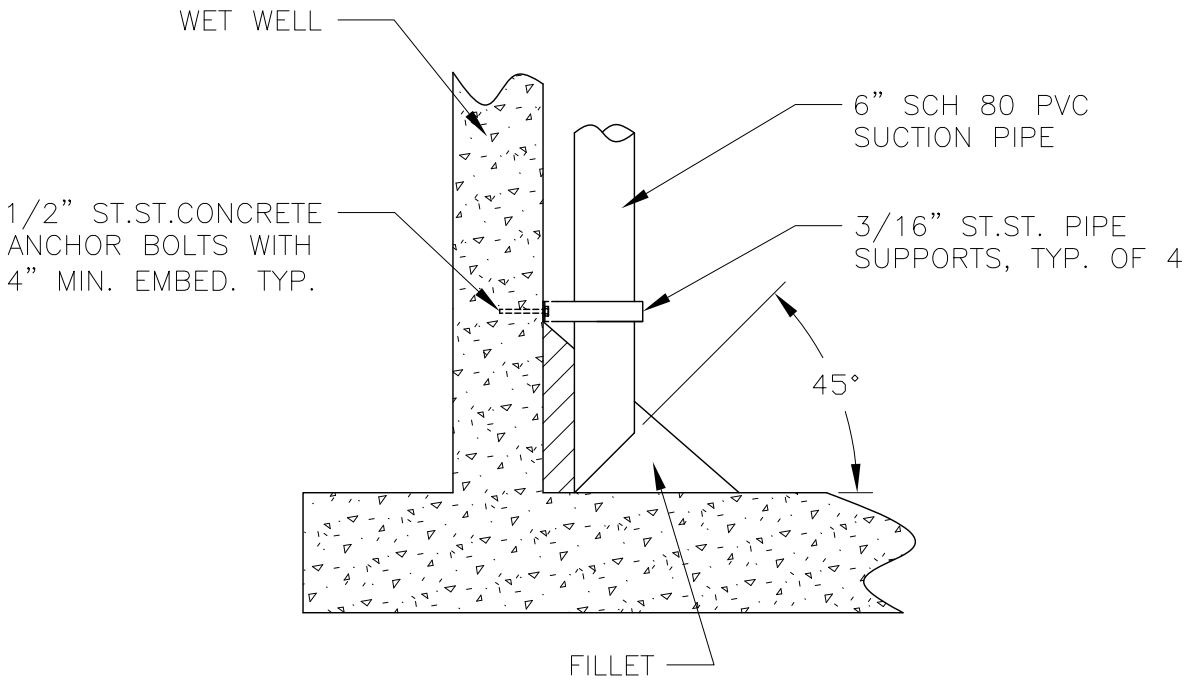

SP-4
VACTOR SUCTION PIPE DETAIL

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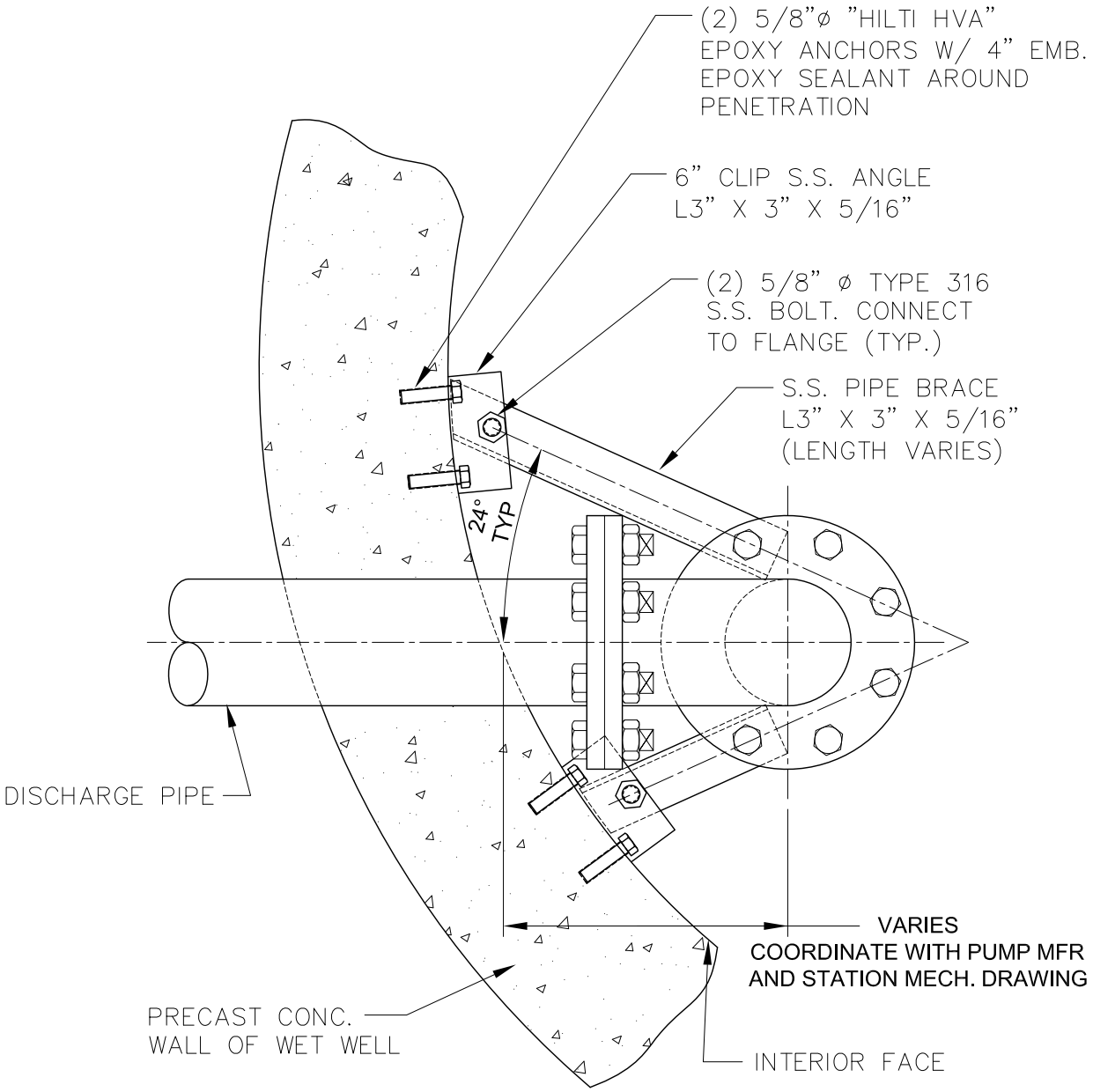

PLAN VIEW

NOTES:

1. ALL HARDWARE AND BRACE MATERIALS TO BE STAINLESS STEEL
2. MINIMUM SIZING SHOWN. ACTUAL SIZE TO BE AS REQUIRED FOR DESIGN THRUST RESTRAINT.

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SP-5
THRUST RESTRAINT PIPE SUPPORT DTL.

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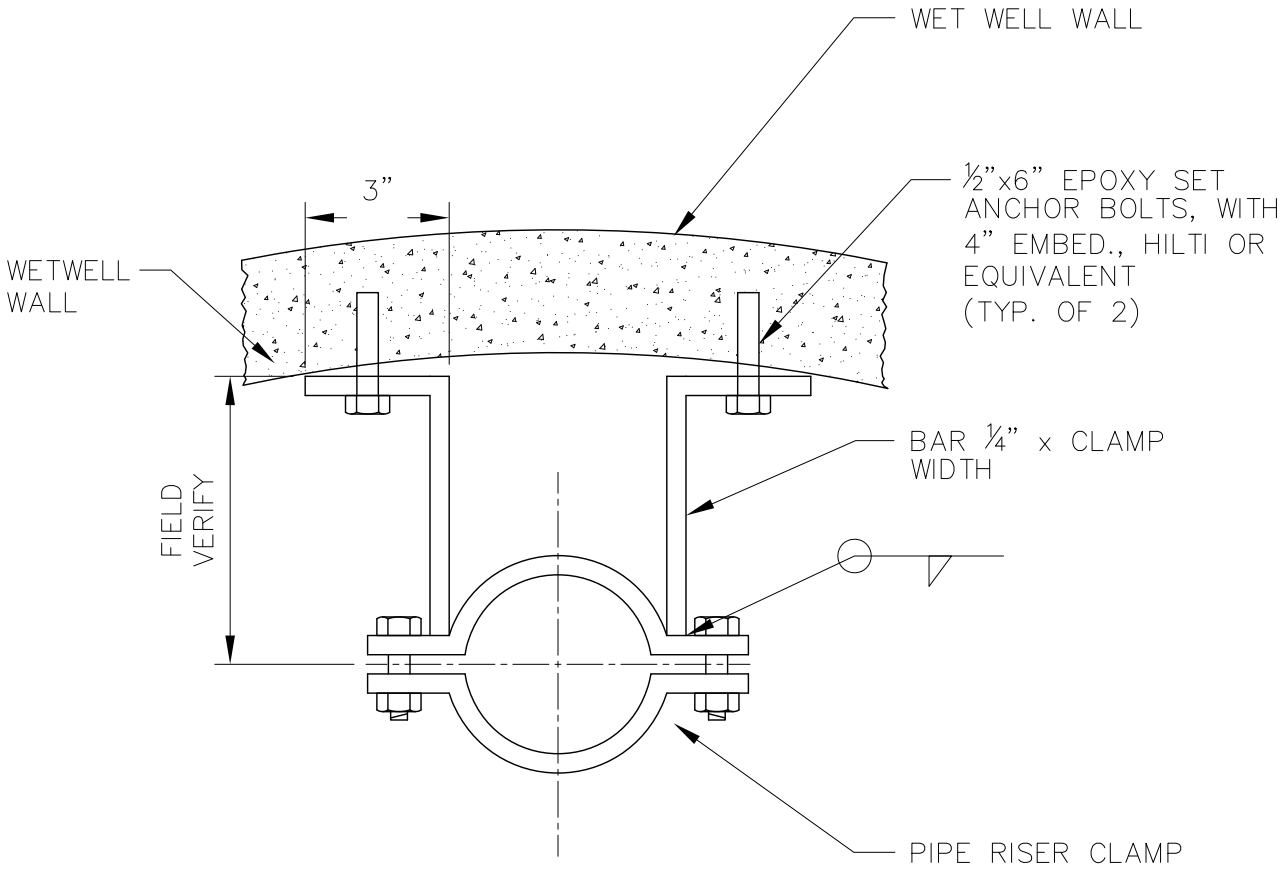

NOTES:

1. ALL HARDWARE AND BRACE MATERIALS TO BE STAINLESS STEEL
2. MINIMUM SIZING SHOWN. ACTUAL SIZE TO BE AS REQUIRED FOR DESIGN PIPE SIZE AND CONDITIONS.

Richland Washington

SP-6 PIPE BRACE DETAIL

CIVIL & ENVIRONMENTAL ENGINEERING	
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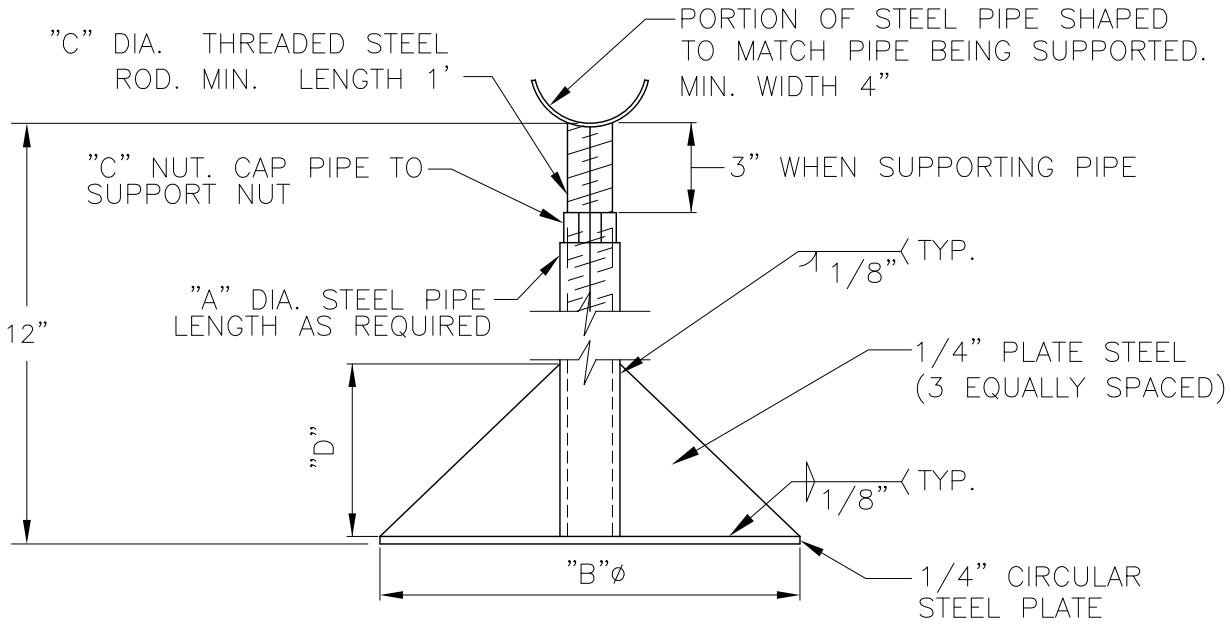
CAD FILE: SP-6	REV # –



A	B	C	D
2"	1'-0"	1-1/2"	0'-6"

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SP-7
TYP. STEEL PIPE SUPPORT DETAIL

CIVIL & ENVIRONMENTAL ENGINEERING	
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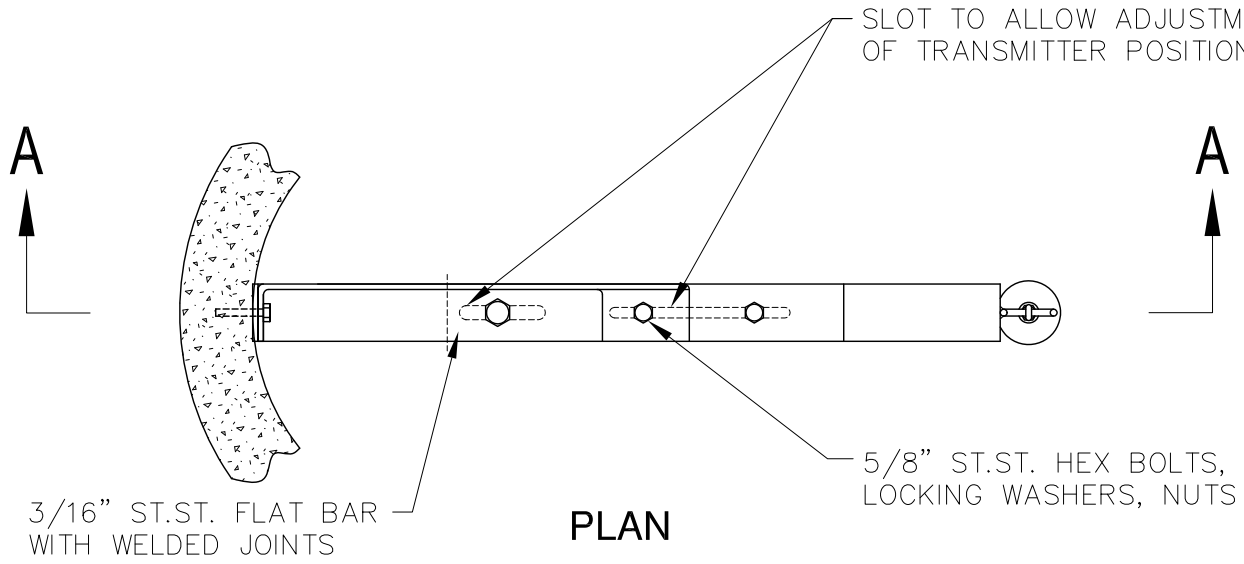
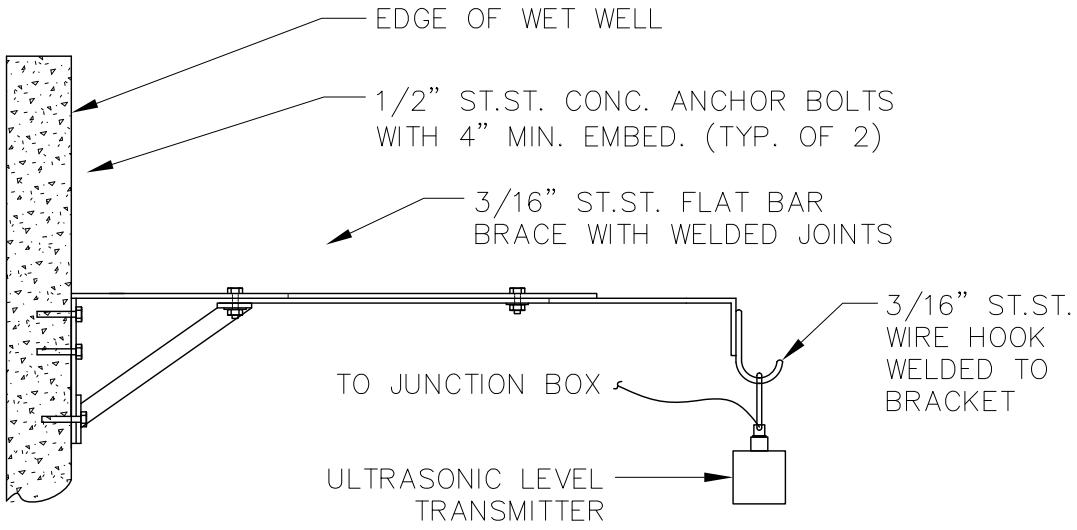
CAD FILE: SP-7	REV # -



PLAN



SECTION A-A

NOTES:

1. SEE PUMP STATION MECHANICAL PLAN FOR PROPER ORIENTATION.
2. FIELD ADJUST TO AVOID CONFLICTS WITH PUMP REMOVAL AND TO OPTIMIZE TRANSMITTER PERFORMANCE.
3. PROVIDE DIMENSIONED SHOP DRAWING SUBMITTAL.

Richland Washington

SP-8 ULTRASONIC LEVEL TRANSMITTER AND BRACKET DETAIL

CIVIL & ENVIRONMENTAL ENGINEERING	
APPR. BY: -	DATE: -
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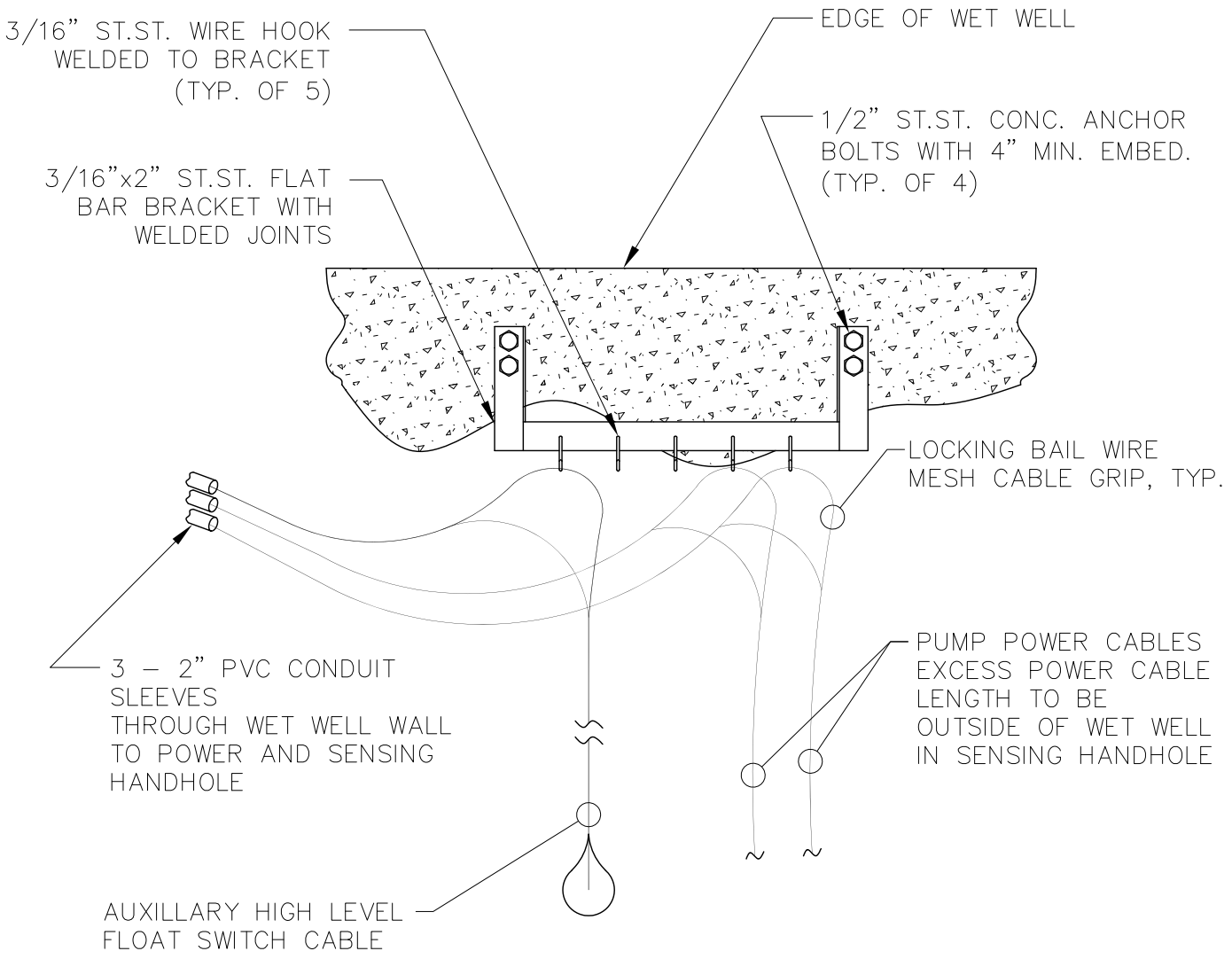
CAD FILE: SP-8	REV # -



NOTES:

1. SEE LIFT STATION MECHANICAL PLAN FOR PROPER ORIENTATION.
2. FIELD ADJUST TO AVOID CONFLICTS WITH PUMP REMOVAL AND TO OPTIMIZE FLOAT SWITCH PERFORMANCE.
3. PROVIDE DIMENSIONED SHOP DRAWING SUBMITTAL.

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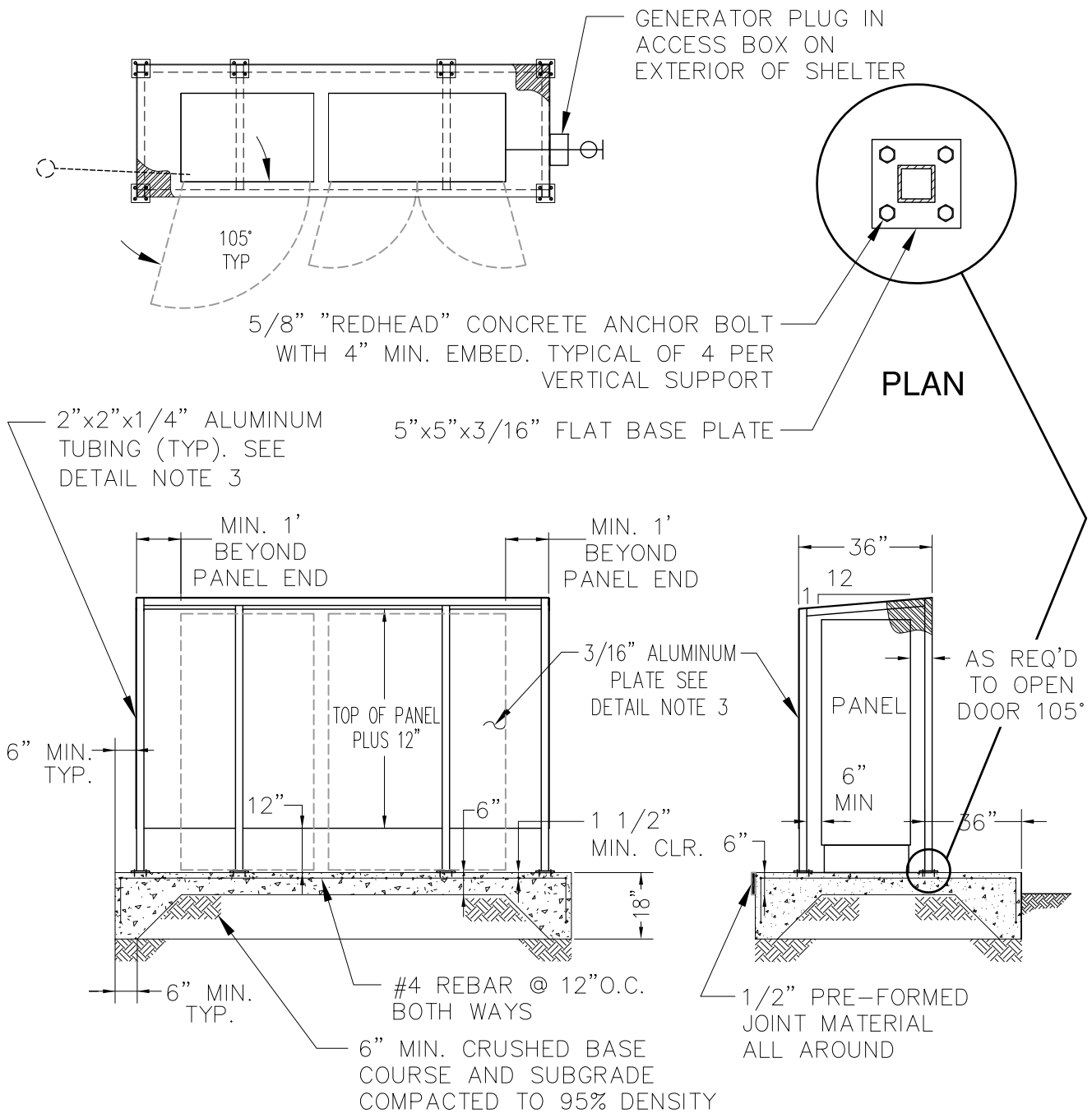
SP-9
CABLE SUPPORT BRACKET DETAIL

CIVIL & ENVIRONMENTAL ENGINEERING	
APPR. BY: –	DATE: –
DRAWN BY: –	PAGE: –
CAD FILE: SP-9	REV # –



NOTES:

1. ALL PANELS SHOP FABRICATED AND ANODIZED AFTER FABRICATION.
2. DOORS TO FACE NORTH OR EAST (±)
3. ALUMINUM MAY BE SUBSTITUTED WITH HOT-DIPPED GALVANIZED STEEL.
4. PROVIDE DIMENSIONED SHOP DRAWING SUBMITTAL.
5. MINIMUM TUBING AND BOLT SIZING SHOWN. ACTUAL SIZING TO BE AS REQUIRED FOR STRUCTURE SIZING AND LOCATION.

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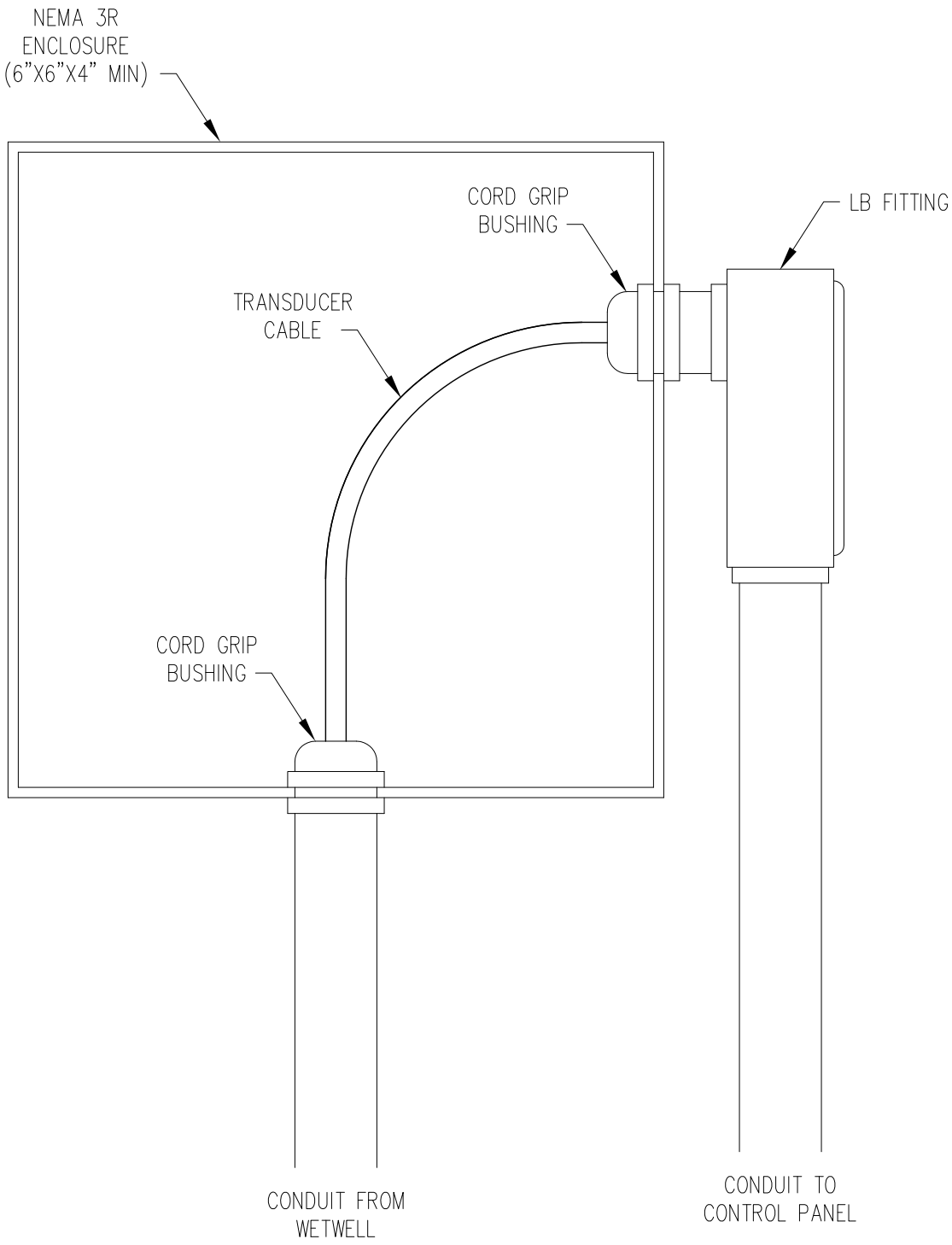
SP-10
PUMP STATION SUN SHELTER DETAIL

CIVIL & ENVIRONMENTAL ENGINEERING	
APPR. BY: -	DATE: -
DRAWN BY: -	PAGE: -
CAD FILE: SP-10	REV # -



SP-11
TRANSDUCER CABLE J-BOX DETAIL

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CIVIL & ENVIRONMENTAL ENGINEERING	
APPR. BY: -	DATE: -
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CAD FILE: SP-11	REV # -