

SPECIFICATIONS, PROPOSAL AND CONTRACT DOCUMENTS

**Contract No. 2022-01;
Grinder Pump Stations 1-4 Replacement**

Northshore Utility District
King County, Washington

NOVEMBER 2022
C2003

**NORTHSHORE UTILITY DISTRICT
King County, Washington**

District Commissioners

**D. Bruce Gardiner, President
Suzanne Greathouse, Secretary
Matt Breysse
Thomas D. Mortimer
Trudy C. Rolla**

General Manager

Alan G. Nelson

District Office

**6830 NE 185th Street
Kenmore, WA 98028
Phone (425) 398-4400
Fax (425) 398-4430
www.nud.net**

CERTIFICATE OF ENGINEER



Unless noted otherwise, these Contract Documents have been prepared or assembled by Northshore Utility District under the direction of the following registered professional engineers, licensed in accordance with the laws of the State of Washington, to practice in the State of Washington.



Specification Section(s) listed below were developed by, or under the direct supervision of Eric Delfel, of Gray & Osborne, Inc.



Specification Section(s):

- 1.1 Project Description
- 2.2 Contract Plans
- 2.3 Permits, Franchises and Easements
- 3.0 Technical Specifications
- 4.0 Measurement and Payment
- 5.0 Proposal

NORTHSHORE UTILITY DISTRICT

**6830 NE 185TH STREET
KENMORE, WASHINGTON 98028-2684**

SPECIFICATIONS, PROPOSAL AND CONTRACT DOCUMENTS

**FOR
CONTRACT 2022-01
Grinder Pump Stations 1-4 Replacement**

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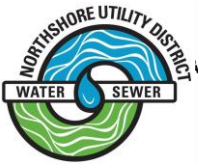
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NORTHSHORE UTILITY DISTRICT

6830 NE 185TH STREET
KENMORE, WASHINGTON 98028-2684

CALL FOR BIDS

Notice is hereby given that Northshore Utility District ("District") will receive sealed bids for the following construction project. Bids will be received at the District office, located at 6830 - NE 185th Street, Kenmore, Washington, by mail or other courier up to the hour of **2:00 PM on Tuesday, November 29, 2022**, after which all bids will be publicly opened and read to determine the apparent lowest bidder. The public bid opening will be conducted remotely and bidders may attend the Bid Opening online by using the following Microsoft Teams link or by dialing into the conference call at the phone number listed below:

Microsoft Teams meeting

Join on your computer, mobile app or room device

Click here to join the meeting <https://teams.microsoft.com/l/meetup-join/19%3ameeting_M2E5YmYxOTAtNjllOS00YjdmLWFhY2QtYTnkYjUwNmQ4MTdh%40thread.v2/0?context=%7b%22Tid%22%3a%2212be7aec-d322-415c-ade4-47fe173f2e89%22%2c%22Oid%22%3a%22a06502fc-d4b2-4352-82c3-001b22565af0%22%7d>

Meeting ID: 277 796 506 865

Passcode: w9x4Ng

Or call in (audio only)

+1 253-328-7749,,273208145#

Phone Conference ID: 273 208 145#

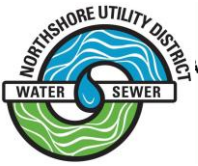
Please contact the District's IT Department at 425-521-3714 if you experience any issues.

Project Description

Contract 2022-01; Grinder Pump Stations 1-4 Replacement

The project consists of the following work:

Rehabilitation of the District owned Grinder Pump Stations 1 through 4 located along the shore of Lake Washington within the City of Kirkland. Upgrades to each of the four stations in order to retrofit the existing 36-inch diameter fiberglass wet wells as shown on the Plans and specified herein includes, but is not limited to, demolition of the existing components of the stations, furnishing and installing piping, fittings, valves, check valves, valve boxes, instrumentation, electrical equipment and accessories, and electrical pad and



mounting rack, as well as installation of District procured submersible grinder pumps, base elbow and guide rail system, float switches, and control panels.

This project also includes site restoration and landscaping.

Each grinder pump station site is within an existing easement on private lakefront property with limited accessibility for large equipment and motor vehicles. The means and methods for mobilization of materials and equipment to each site shall be at the option of the Contractor. Hand digging and/or barging in equipment may be necessary for completion of the work shown on the Plans and as described in the Specifications.

Approximate locations of the proposed improvements are shown on the project construction plans.

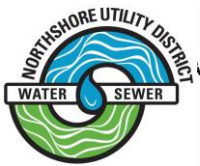
The engineer's construction cost estimate is \$660,200.00 including sales tax.

Free-of-charge access to project bid documents (plans, specifications, addenda, and Bidders List) is provided to Prime Bidders, Subcontractors, and Vendors by going to www.bxwa.com and clicking on "Posted Projects", "Public Works", and "Northshore Utility District". This online plan room provides Bidders with fully usable online documents with the ability to: download, view, print, order full/partial plan sets from numerous reprographic sources, and a free online digitizer/take-off tool. It is recommended that Bidders "Register" in order to receive automatic email notification of future addenda and to place themselves on the "Self-Registered Bidders List". Bidders that do not register will not be automatically notified of addenda and will need to periodically check the on-line plan room for addenda issued on this project. Contact Builders Exchange of Washington at (425) 258-1303 should you require assistance with access or registration.

Bid documents (in PDF format) are also directly available from the District's website at the following address:

<https://www.nud.net/permits-construction/rfp-posts-list/>

Each bid must be submitted on the "Proposal" forms provided in Section 5 of the "Specifications, Proposal and Contract Documents" and shall be accompanied by a bid proposal deposit in the form of a surety bond, postal money order, cashier's check or certified check made payable to King County Treasurer, King County, Washington for a sum of not less than 5 per cent of the total bid. A bid shall not be considered unless accompanied by such bid proposal deposit.



CONTRACT AWARD

A contract, if awarded, will be based upon the lowest responsive and responsible bid or bids as defined in more detail in the bid documents.

Northshore Utility District reserves the right to reject any and all bids, to delete portions or all of the work, to substitute alternative bid item prices for base bid item prices, to waive any informality in bidding, and to make the award deemed to be in the best interest of the District.

Proposals received after the time announced for the opening will not be considered. No bidder may withdraw its bid after the time announced for the opening or before the award and execution of the contract(s) unless the award is delayed for a period exceeding sixty (60) calendar days.

Advertised in the Daily Journal of Commerce on Monday, November 07, 2022, and Monday, November 14, 2022.

NORTHSHORE UTILITY DISTRICT
Suzanne Greathouse, Secretary
Board of Commissioners

INSTRUCTIONS TO BIDDERS

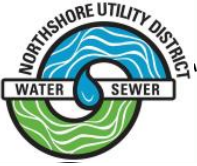


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Section 1 - Instructions to Bidders

1.0 GENERAL

Plans and specifications are on file at:

Northshore Utility District
6830 NE 185th Street
Kenmore, WA 98028

Free-of-charge access to project bid documents (plans, specifications, addenda, and Bidders List) is provided to Prime Bidders, Subcontractors, and Vendors by going to Builders Exchange of Washington's web site at the following address: http://www.bxwa.com/bxwa_toc/pub/827.html. This online plan room provides Bidders with fully usable online documents with the ability to: download, view, print, order full/partial plan sets from numerous reprographic sources, and a free online digitizer/take-off tool. It is recommended that Bidders "Register" in order to receive automatic email notification of future addenda and to place themselves on the "Self-Registered Bidders List". Bidders that do not register will not be automatically notified of addenda and will need to periodically check the online plan room for addenda issued on this project. Contact Builders Exchange of Washington at (425) 258-1303 should you require assistance with access or registration.

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<https://www.nud.net/permits-construction/rfp-posts-list/>

1.1 PROJECT DESCRIPTION

Contract 2022-01; Grinder Pump Stations 1-4 Replacement
The project consists of the following work:

Rehabilitation of the District owned Grinder Pump Stations 1 through 4 located along the shore of Lake Washington within the City of Kirkland. Upgrades to each of the four stations in order to retrofit the existing 36-inch diameter fiberglass wet wells as shown on the Plans and specified herein includes, but is not limited to, demolition of the existing components of the stations, furnishing and installing piping, fittings, valves, check valves, valve boxes, instrumentation, electrical equipment and accessories, and electrical pad and mounting rack, as well as installation of District procured submersible grinder pumps, base elbow and guide rail system, float switches, and control panels.



This project also includes site restoration and landscaping.

Each grinder pump station site is within an existing easement on private lakefront property with limited accessibility for large equipment and motor vehicles. The means and methods for mobilization of materials and equipment to each site shall be at the option of the Contractor. Hand digging and/or barging in equipment may be necessary for completion of the work shown on the Plans and as described in the Specifications.

1.2 EXAMINATION OF PLANS, SPECIFICATIONS AND SITE

Bidders shall satisfy themselves as to construction conditions by personal examination of the plans, specifications and site of the proposed work and by any other examination and investigation, which they may desire to make as to the nature of the work, estimate of quantities and difficulties to be encountered. Bidders shall consider Federal, State, and local laws and regulations that may affect cost, progress, or performance of the work.

The Bidders are hereby notified that geotechnical investigations were not conducted by the District for this project.

Before submitting a bid, each bidder will, at the bidder's own expense, make or obtain any additional examinations, investigations, explorations, tests and studies and obtain any additional information and data which pertain to the physical conditions (surface, subsurface, and underground utilities) at or contiguous to the site or otherwise which may affect cost, progress, or performance of the work in which the bidder deems necessary to determine its bid for performing the work in accordance with the time, price, and other terms and conditions of the Specifications, Proposal and Contract Documents. The bidder shall be responsible for all costs associated with these additional examinations including all restoration work and damages which may be a result of such investigation.

1.3 PROPOSALS

Proposals shall be made on the forms included herewith under the "Proposal" section and shall be provided to the District in a sealed envelope addressed as follows:

Northshore Utility District
6830 NE 185th Street
Kenmore, WA 98028
Attention: Proposal Enclosed



Proposals shall arrive not later than Tuesday, November 29, 2022, at 2:00 PM, at which time and place they will be opened and publicly read aloud. No proposal may be withdrawn after the time stated above or before award of contract unless said award is delayed for a period exceeding sixty (60) calendar days.

1.4 BID PROPOSAL DEPOSIT

As a guarantee of good faith and as required by law, each bid shall be accompanied by a bid proposal deposit in the form of a certified check, cashier's check, postal money order or surety bond payable to the order of the King County Treasurer, King County Washington for an amount not less than five per cent (5%) of the total amount of the bid. The deposits of the three low bidders will be retained until a contract has been entered into between the successful bidder and the District and until a performance bond in an amount of 100 percent of the contract price has been filed as required under these contract documents. The deposits of other bidders will be returned as soon as it is determined that they are not one of the three low bidders.

1.5 BIDDING ERRORS

The District will not consider a claim of error in a proposal unless such claim is made to the District within eight (8) business hours after the time of bid opening as stated in the "Call for Bids" and unless supporting evidence of such claim, including cost breakdown sheets, is delivered to the District within ten (10) business hours after the time of bid opening as stated in the "Call for Bids."

If the District is, at its sole determination, convinced that the bidder has committed an unintentional error, the bidder will be allowed to withdraw, but not correct, its bid.

1.6 COMPLETION TIME AND LIQUIDATED DAMAGES

Subject to time lost due to inclement weather and delay in delivery of materials, should such delay not be the result of the Bidder's actions, the Bidder must agree to complete all of the work in 90 calendar days, all beginning with the date of written "Notice to Proceed" with the work.

In summary, the District's intended schedule for the project is as follows:

Contract Award	Monday, December 05, 2022
Execute Contract	Friday, December 16, 2022
Receive & Review Material Submittals	Monday, January 16, 2023
Preconstruction Conference	Tuesday, February 14, 2023



Issue Notice to Proceed
Complete Construction

Tuesday, February 14, 2023
Monday, May 15, 2023

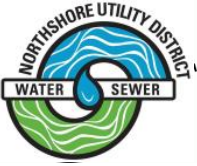
The Bidder agrees to complete the work within the contract time as above-specified plus any Extension as provided for herein ("Completion Time"). Such Extension and events producing them shall not be grounds for claim by the Bidder of damages or for additional costs, expenses, overhead, profit or other compensation. It is the responsibility of the Bidder to complete the work within the Completion Time. The District makes no promise or representation that this can or will be done.

The District and the Bidder recognize that time is of the essence of this Contract and that the District will suffer financial loss if the work is not completed within Completion Time. They also recognize the delays, expense, and difficulties in proving the actual loss suffered by the District if the work is not completed on time. Accordingly, instead of requiring any such proof, the District and the bidder agree that as liquidated damages for delay (but not as a penalty) the bidder shall pay the District \$1400.00 for each day that expires after Completion Time.

1.7 AWARD OF CONTRACT AND NOTICE TO PROCEED

A contract will not be awarded until the District is satisfied that (1) the successful bidder is reasonably familiar with the class of work contemplated and has the necessary capital, tools and experience to satisfactorily perform the work within the time stated, (2) the successful bidder meets the mandatory responsibility criteria identified in RCW 39.04.350 (for prime contractors) and RCW 39.06.020 (for first tier subcontractors and subcontractors of any tier that are hired by other subcontractors), and (3) the successful bidder demonstrates its compliance with any Supplemental Bidder Responsibility Criteria or requirements identified herein. Completion of the work within Completion Time is essential and prior commitments of the bidder, failure to complete other work on time, or reasonable doubt as to whether the bidder would complete the work on time, would also be cause for the rejection of any bidder as not responsible.

The right is reserved by the District to waive any immaterial bid errors or irregularities in the bidding and reserves the right to correct arithmetical errors or discrepancies between unit prices and extended amounts if the intended bid is ascertainable from the face of the bid. Bidders are also advised that the District may reject any bid or proposal or all bids or proposals for any or no reason, including (1) any bid or proposal that in the opinion of the District is unbalanced or that contains unit prices that fail to reflect the actual cost of construction, (2) any bid or proposal that lacks necessary detail or specificity or is otherwise found to be non-responsive, and (3) any bid that violates the terms



of these instructions. Bidders acknowledge that they are not entitled to any compensation, costs or damages related to bid preparation or resulting from District's decision to cancel the procurement, reject any or all bids or otherwise refuse to execute a contract. District, in its sole discretion, may re-advertise for new proposals or to otherwise carry out the work. The District further reserves the right to delete portions or all of the work or schedules of the work in its sole discretion and thereafter to award a contract to the successful bidder on the remaining portions of the work.

1.8 FAILURE TO EXECUTE CONTRACT

In the event the successful bidder fails to furnish an approved bond and to sign the contract within ten days after notification by the District, an amount equal to 5 percent of the amount of the bid shall be forfeited to the District as liquidated damages. Said liquidated damages shall be paid from the certified check or bid bond submitted with the bid. Other proposals will then be reconsidered for award by the District.

1.9 CORRECTIONS, INTERPRETATIONS AND ADDENDA

Any omissions, discrepancies or need for interpretations or explanations of the Contract Documents shall be in the form of an addendum and no oral statements by the District, District Engineer, District's Consulting Engineer, or other representative of the District shall, in any way, modify these contract documents, whether made before or after letting the contract.

1.10 ENGINEER AND NOTICES

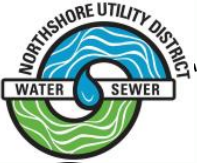
Notices as required shall be mailed to the attention of the project engineer as follows:

Northshore Utility District
Attention: George Matote
6830 NE 185th Street
Kenmore, WA 98028

1.11 BIDDER RESPONSIBILITY CRITERIA

Bidder must meet the following Bidder Responsibility Criteria (RCW 39.04.350) to be considered a responsible bidder. Bidder will be required to complete and submit the Bidder Responsibility Checklist, included with the "Proposal" section of this document, with the bid. The bidder must:

(a) Have a current certificate of registration as a contractor in compliance with



- chapter 18.27 RCW, which must have been in effect at the time of bid submittal;
- (b) Have a current Washington Unified Business Identifier (UBI) number;
 - (c) Have Industrial Insurance (workers' compensation) coverage for the bidder's employees working in Washington, as required in Title 51 RCW;
 - (d) Have a Washington Employment Security Department number, as required in Title 50 RCW;
 - (e) Have a Washington Department of Revenue state excise tax registration number, as required in Title 82 RCW.
 - (f) Not be disqualified from bidding on any public works contract under RCW 39.06.010 or 39.12.065(3).

1.12 SUB-CONTRACTORS

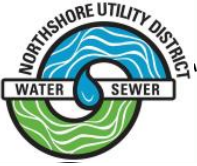
Consistent with RCW 39.30.060, each bidder on a project in excess of \$1,000,000 is required to submit the completed "Proposed Subcontractors" list included in the "Proposal" section either with the bid or within one hour of the required bid submittal time as stated in the Call for Bids or by written addendum. The completed list must identify each subcontractor who will perform heating, ventilation and air-conditioning, or plumbing as described in Chapter 18.106 RCW, and electrical as described in Chapter 19.28 RCW, or the contractor must name itself for the work. The form may be submitted in person or by facsimile (FAX number (425) 398-4430) to:

Northshore Utility District
Attention: George Matote
6830 NE 185th Street
Kenmore, WA 98028

Receipt of the form by Northshore Utility District within the time prescribed is the responsibility of the bidder.

The bidder shall not list more than one subcontractor for each category of work identified, unless subcontractors vary with bid alternates, in which case the bidder must indicate which subcontractor will be used for which alternates.

Failure of the bidder to submit as part of the bid the names of such subcontractors, or name itself to perform such work, or the naming of two or more subcontractors to perform the work, shall render the bidder's bid as nonresponsive and therefore void.



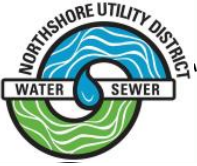
1.13 SUBCONTRACTOR RESPONSIBILITY CRITERIA

To comply with RCW 39.06.020, the following is required:

- (a) The successful bidder shall provide documentation to District demonstrating that the first-tier subcontractor meets the Subcontractor Responsibility Criteria below. The requirements of this subsection apply to all subcontractors regardless of tier.
- (b) At the time of subcontract execution, the successful bidder to whom the Contract is to be awarded shall verify that each of its first tier subcontractors meets the following bidder responsibility criteria:
 - 1. Have a current certificate of registration in compliance with chapter 18.27 RCW, which must have been in effect at the time of subcontract bid submittal;
 - 2. Have a current Washington Unified Business Identifier (UBI) number;
 - 3. Have Industrial Insurance (workers' compensation) coverage for the subcontractor's employees working in Washington, as required in Title 51 RCW;
 - 4. A Washington Employment Security Department number, as required in Title 50 RCW;
 - 5. A Washington Department of Revenue state excise tax registration number, as required in Title 82 RCW;
 - 6. An electrical contractor license, if required by Chapter 19.28 RCW;
 - 7. An elevator contractor license, if required by Chapter 70.87 RCW.
 - 8. Not be disqualified from bidding on any public works contract under RCW 39.06.010 or 39.12.065 (3).
- (c) Bidder will be required to complete and submit the "Subcontractor Responsibility Criteria" form, included in the "Proposal" section of this document, either with the bid or within two hours of the required bid submittal time.

1.14 NON-COLLUSION DECLARATION

Submit the non-collusion declaration as part of the bid. No person, firm, or corporation shall be allowed to make, file, or be interested in more than one proposal for the same work, unless alternative proposals are invited. A person, firm, or corporation who has submitted a sub-proposal to a bidder, or who has quoted prices on materials to a bidder, is not thereby disqualified from submitting a proposal, or quoting prices to other bidders.



Reasonable grounds for believing that any bidder is interested in more than one proposal for the work will cause the rejection of all proposals in which said bidder is interested. If there is reason to believe that collusion exists among the bidders, none of the participants in such collusion will be considered.

SPECIAL PROVISIONS

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Section 2 – Special Provisions

2.1 OBSERVATION OF THE WORK

Work will not be allowed on Saturdays, Sundays or legally recognized holidays without written permission from the Engineer. If the Contractor is granted permission for such work, then the District may, at the District's sole discretion, deduct moneys from the Contractor in the amount of One Thousand Four Hundred Dollars (\$1,400) per day or fraction thereof for reimbursement to the District for its reasonable inspection and engineering fees.

District Holidays

- New Year's Day January 1
- Martin Luther King Day Third Monday in January
- President's Day Third Monday in February
- Memorial Day Last Monday in May
- Juneteenth June 19
- Independence Day July 4
- Labor Day First Monday in September
- Veteran's Day November 11
- Thanksgiving Day Fourth Thursday in November
- Day After Thanksgiving Fourth Friday in November
- Christmas Day December 25

2.2 THE CONTRACT PLANS

The Contract Plans consist of the following sheets:

SHEET NO.	SHEET TITLE
1	COVER
2	ABBREVIATIONS & AREA MAP
3	GENERAL NOTES, LEGEND, AND TESC
4	GENERAL DETAILS
5	GRINDER PUMP STATION 1 EXISTING SITE & TESC PLAN
6	GRINDER PUMP STATION 1 BYPASS PUMPING PLAN
7	GRINDER PUMP STATION 1 DEMOLITION
8	PROPOSED GRINDER PUMP STATION 1
9	GRINDER PUMP STATION 1 RESTORATION PLAN
10	GRINDER PUMP STATION 2 EXISTING SITE & TESC PLAN
11	GRINDER PUMP STATION 2 BYPASS PUMPING PLAN
12	GRINDER PUMP STATION 2 DEMOLITION
13	PROPOSED GRINDER PUMP STATION 2
14	GRINDER PUMP STATION 2 RESTORATION PLAN

SHEET NO.	SHEET TITLE
15	GRINDER PUMP STATION 3 EXISTING SITE & TESC PLAN
16	GRINDER PUMP STATION 3 BYPASS PUMPING PLAN
17	GRINDER PUMP STATION 3 DEMOLITION
18	PROPOSED GRINDER PUMP STATION 3
19	GRINDER PUMP STATION 3 RESTORATION PLAN
20	GRINDER PUMP STATION 4 EXISTING SITE & TESC PLAN
21	GRINDER PUMP STATION 4 BYPASS PUMPING PLAN
22	GRINDER PUMP STATION 4 DEMOLITION
23	PROPOSED GRINDER PUMP STATION 4
24	GRINDER PUMP STATION 4 RESTORATION PLAN
25	ELECTRICAL SYMBOLS, ABBREVIATIONS, NOTES AND WORK SUMMARY
26	GRINDER PUMP 1 ELECTRICAL PLAN
27	GRINDER PUMP 2 ELECTRICAL PLAN
28	GRINDER PUMP 3 ELECTRICAL PLAN
29	GRINDER PUMP 4 ELECTRICAL PLAN
30	ELECTRICAL DETAIL

2.3 PERMITS, FRANCHISES AND EASEMENTS

The District is in possession of, or will be responsible for obtaining the applicable building permits and Shoreline Substantial Development permits from the following public agencies:

- City of Kirkland

Permits for the project are included in the Appendix B. The Contractor shall comply with the requirements of the permits.

The Contractor shall be responsible for obtaining and paying all fees associated with all other required permits, licenses, approvals, and construction permits for the execution of this Contract for all applicable jurisdictions.

The Contractor shall confirm that all permits, franchises, and easements have been obtained and are in effect prior to commencing work on the portion of the Project covered by such instruments.

2.4 STAKING

All work done under this Contract shall be done to the lines and grades shown on the Plans. The District will provide one set of construction stakes. Stakes removed or destroyed will be replaced by the District at the Contractor's request and expense.

The Contractor shall notify the District a minimum of 10 working days in advance of the need for staking.

2.5 CERTIFICATE OF INSURANCE

The Contractor shall specifically note and comply with the limits of liability amounts, additional insured named and terms of cancellation included in Subsection 8.9 of the General Conditions. Additional insureds shall include Northshore Utility District, its agents and representatives, and the City of Kirkland. All Risk Builders' Risk coverage will not be required for this Project.

The Insurance Questionnaire and Endorsement included at the end of this section must be completed in addition to the Certificate of Insurance.

2.6 PAYMENT FOR MATERIALS ON HAND

Payment for materials on hand will not be provided for this project.

Insurance Coverage Questionnaire

This Questionnaire must be completed and attached to Certificate of Insurance.

Name of Contractor: _____

Contract Number: Contract 2022-01; Grinder Pump Stations 1-4 Replacement
 Project Owner: Northshore Utility District

Are the following coverage's and/or conditions in effect?

Please circle "yes" or "no" regarding the applicable policy		
This Policy Form is ISO Commercial General Liability form CG 00 01 or CG 00 02 (circle one). If no, attach a copy of the policy with required coverage clearly identified.	Yes	No
Products and Completed Operation Coverage	Yes	No
Cross Liability Clause (or equivalent wording)	Yes	No
Personal Injury Liability Coverage (with Employee Exclusion Deleted)	Yes	No
Broad Form Property Damage with X, C, U Hazards Included	Yes	No
Blanket Contractual Liability Coverage Applying to this Contract	Yes	No
Employers Liability - Stop Gap	Yes	No

	GL	AL	Excess
Deductibles or SIR's			
Insurer's A.M. Best Rating			

This Questionnaire is issued as a matter of information. This questionnaire is not an insurance policy and does not amend, extend or alter the coverage afforded by the policies indicated on the attached Certificate of Insurance.

Agency/Broker

COMPLETED BY (PRINT NAME)

Address

Completed by (signature)

Name of Person to Contact

Phone Number

Property Owner's Approval of Restoration

CONTRACT _____

I, (We), the undersigned Owner(s) of property identified as:

Address: _____

Property Description Or Tax Lot Number: _____

do hereby approve and accept the restoration work done on, over and across
my, (our), property by:

_____, the

Contractor for the Contract 2022-01; Grinder Pump Stations 1-4 Replacement

SIGNED: _____ Date: _____

SIGNED: _____ Date: _____

TECHNICAL SPECIFICATIONS

DIVISION 1

GENERAL TECHNICAL REQUIREMENTS

SECTION 01110

SUMMARY OF WORK

PART 1 GENERAL

1.1 SCOPE OF WORK

The work specified in this Section consists of furnishing all labor, materials, and equipment necessary for construction of the Grinder Pump Station 1 – 4 Replacement, as shown on the Plans, and hereinafter specified, at each of the four existing grinder pump station sites 1 through 4 all located within existing easements on private property along the shore of Lake Washington. Work shall include, but not be limited to, the following:

- A. Temporary erosion and sedimentation control as required during construction.
- B. Dewatering and disposal of groundwater as required during construction.
- C. Remove and wastehaul existing trees, shrubbery, and vegetation as required to construct the new facilities as shown on the Plans.
- D. Bypass pumping as required to maintain sanitary sewer service to the grinder pump station basins during construction.
- E. Demolish, remove, and wastehaul of existing grinder pump station facilities at each site as required to install new facilities as shown on the Plans.
- F. Modifications to the existing fiberglass wet wells including patching and repair of existing penetrations into the existing fiberglass wet wells, cable supports, and appurtenances at each site as shown on the Plans and specified herein.
- G. Furnish and install valve boxes, piping, valves, check valves, bypass pumping connections, and appurtenances at each site as shown on the Plans.
- H. Furnish and install all required discharge piping, buried valves, valve boxes, and fittings and connect to the existing force main at each station as shown on the Plans.

- I. Install District procured grinder pumps, guide rails, and discharge elbows in existing fiberglass wet wells.
- J. Furnish and install all required electrical work including conduit, wiring, cement concrete pad for electrical equipment, electrical support structures, and electrical handholes/pull boxes as shown on the Plans.
- K. Install electrical conduit for Grinder Pump Station 4 under existing stream via trenchless construction.
- L. Install District procured float switches, cables, and control panels at each site.
- M. Restoration of all surfaces disturbed by construction activities.
- N. Furnish and install required landscaping.
- O. Provide all associated work as shown on the Plans and specified herein, for a complete and workable system.

1.2 PROJECT INFORMATION

The Contract Documents show the location, arrangement, and type of work to be performed under the proposed project.

The Contractor shall be responsible for proper notification to and coordination with all property owners, and all other persons and services that will be affected by this project at least one week in advance of beginning any construction that affects them.

It is the intent and purpose of these Contract Documents to have constructed complete facilities in good working order for the least practical cost to the Owner. Suggestions, recommendations, as well as inquiries from the Contractor that will serve this purpose are welcome and will be given consideration by the Owner and the Engineer.

Materials and equipment furnished by the District that are to be installed by the Contractor are as listed in Appendix B and C. The District's Integrator, Quality Controls Corporation (QCC), will provide all programming. Startup and training services will be scheduled by the Contractor and provided by QCC and Pump Tech, LLC and are included as part of the District's pre-procured pumps and control panels contracts. All other materials required for the construction of this project shall be furnished by the Contractor.

1.3 CONTRACTOR USE OF SITE AND PREMISES

Construction operations shall be limited to the areas noted on the Plans and subject to the approval of the Engineer.

Each grinder pump station site is within an existing easement on private lakefront property with limited accessibility for large equipment and motor vehicles. The means and methods for mobilization of materials and equipment to each site shall be at the option of the Contractor. Hand digging and/or barging in equipment may be necessary for completion of the work shown on the Plans and specified herein.

The Contractor shall allow representatives of the Owner and regulatory agencies access to the project site at all times.

The Contractor shall notify the Owner (or other utility purveyor) at least 48 hours in advance of any proposed water shut downs. The Contractor shall also be responsible for notifying all impacted users 48 hours in advance of any water shutoff.

1.4 ORDER OF WORK

The order of work will be at the option of the Contractor, except as noted below, in keeping with good construction practice, time restrictions, requirements of the permits applicable to this project, and the order of work as outlined herein, all costs of which shall be included in the various bid amounts. The Contractor shall conduct the order of work to allow the existing facilities to remain operational during the construction of the Project and shall coordinate all of their activities through the Engineer with the Owner's operations and maintenance staff. The Contractor shall provide a written plan of activities to the Engineer and Owner each Thursday for the following week, for review and coordination with existing facility operations.

The implementation of any measure required to protect the environment shall supersede any order of work designated within these Specifications. The Contractor shall meet the conditions as outlined in any and all permits and requirements of the Federal, State, County, and City regulatory agencies.

The Contractor shall keep the disruption of the existing facility operations to a minimum. Water system shutdowns shall be limited to 8 hours during any 24-hour period. Bypasses of untreated sewage to the environment will not be permitted. The Contractor shall be responsible for all

temporary pumping to include all connections, piping, pumping equipment, temporary electrical service and controls, and appurtenances.

Access to the existing operations areas shall be maintained. Disruption of this access shall be kept to a minimum and must be prearranged and scheduled through the Engineer with the Owner's operations and maintenance staff.

The Contractor shall limit construction activities to one grinder pump station site at a time. Work on each grinder pump station must be complete in its entirety prior to demobilization and mobilization to another grinder pump station site unless otherwise approved by the District.

All materials and equipment required to complete the construction of a complete and operable grinder pump station shall be in hand prior to mobilization to each grinder pump station.

The Contractor shall confirm that all permits, franchises, and easements have been obtained and are in effect prior to commencing work on the portion of the Project covered by such instruments.

The following proposed order of work shall be used as a general guideline of the construction tasks to be performed at each of the grinder pump stations. The tasks are generally listed in the order of completion. The tasks, however, can be completed in a different order than listed herein as approved by the District prior to construction, including performance of two or more tasks concurrently. Prior to starting construction, the Contractor shall prepare a complete project schedule for District approval, which shall be provided in accordance with the limitations specified herein.

A. TEMPORARY EROSION AND SEDIMENTATION CONTROL

Temporary erosion and sedimentation control BMPs shall be installed prior to any excavation, grading, or removal of landscaping or trees.

B. NEW CHECK VALVE VAULT AND PIPING

Construct new check valve vault, valves, bypass pumping connection, piping, cleanouts, and connections to the existing force main.

C. TEMPORARY BYPASS PUMPING

The temporary bypass pumping around the existing grinder pump station shall be in place prior to demolition of any existing facilities. Once the new bypass pumping port inside the valve vault is installed and the new force main piping is connected, it may be used to bypass wastewater flows through the existing force main. All shutdowns of the main existing power conductor from Lift Station 15 will require a shutdown of all four grinder pump stations. The Contractor shall monitor all grinder pump stations during any electrical shutdowns of the main conductor feeding all stations and bypass sewer flows as required.

D. INSTALL NEW ELECTRICAL PULL BOX(ES)

Install new pull boxes, conduit, and conductors.

E. DEMOLITION

Demolish existing facilities as required to install new facilities as shown on the Plans.

F. PREPARATION OF EXISTING WET WELL

Prior to installation of new equipment within the existing wet well, thoroughly clean the existing wet well and then patch all holes and penetrations in the existing wet well with fiberglass fabric and resin laminate or approved equal.

G. NEW GRINDER PUMP STATION

Install new pumps, guide rails, discharge elbows, piping, valves, wet well penetrations, float switches, electrical equipment pad and supports, control panels, electrical, and all other appurtenances required to provide a complete and operable grinder pump station as shown on the Plans and specified herein.

H. STARTUP, TESTING, AND COMMISSIONING

Upon completion of the grinder pump station modifications, the contractor shall coordinate with the District, QCC, and Pump Tech, LLC and perform startup and testing of the new station. After completion of the operational testing and certifications by the Owner that the systems meets all performance requirements, the commissioning phase will begin. Once commissioning of the new

station begins, the Contractor shall remove all temporary bypass pumping equipment and piping.

I. SITE RESTORATION AND LANDSCAPING

Once the grinder pump station has been fully tested, is completely operational, and temporary bypass pumping facilities are no longer needed and have been removed, final surface restoration and landscaping may be completed.

***** END OF SECTION *****

SECTION 01310

PROJECT MEETINGS

PART 1 GENERAL

1.1 SCOPE

The work specified in this Section includes information pertaining to the various meetings that will be held during the course of constructing this project.

1.2 PRECONSTRUCTION CONFERENCE

See Section 8.10 of the General Conditions.

1.3 PROJECT PROGRESS MEETINGS

The Owner and the Engineer will schedule and attend regular weekly meetings with the Contractor for coordination, administrative, and procedural requirements of the project. Project meetings will take place at the project location in Kirkland, Washington, or at the Northshore Utility District Headquarters in Kenmore, Washington.

1.4 CONSTRUCTION MEETINGS

The Contractor shall schedule and hold regular meetings during the project:

- A. Safety Meetings (Contractor's subcontractors shall attend if they are working onsite.)
- B. Project Progress Meetings
- C. Equipment Installation Meetings
- D. Coordination Meetings
- E. Startup and Testing Meetings

The Contractor shall notify the Owner and Engineer in advance of all meetings. The meetings may or may not be attended by the Owner and Engineer.

***** END OF SECTION *****

SECTION 01385

DOCUMENTATION OF EXISTING CONDITIONS

PART 1 GENERAL

1.1 SCOPE

The work specified in this Section includes the video recording requirements for the project.

The Contractor shall provide the Engineer with a computer-readable digital format of the project area prior to and upon completion of all construction. The video recording shall utilize equipment that will visually document an accurate audio-visual description of the existing and post-construction conditions.

The Contractor shall notify the Engineer prior to the recording to allow the Engineer to witness the video recording. The Contractor shall provide preconstruction video recording of the existing conditions for the entire project site.

Upon completion of the work, the Contractor shall provide video recording in the same manner and vantage point as the preconstruction video recordings. The intent of this Specification section is to provide a comparison between existing and post-construction conditions.

The rate of speed the documentation will be video recorded at, the panning rates, and the zoom-in/zoom-out rates will be controlled so that playback will produce a clear television picture of the areas video recorded.

The video recording shall be accomplished during a period of good visibility. Unless otherwise directed by the Engineer, video recording will not be allowed during times of precipitation or poor visibility.

When available light is not sufficient to produce a clear television image, additional lighting shall be supplied by the photographer to ensure good picture quality. The camera crew shall be able to work independent of any power source, utilizing battery power to operate the camera, and lighting.

A legible reader board shall be provided by the photographer to visually document the date, job title, and site identification. The audio portion of the video recording will be used for identification purposes, addresses, and any other audio required or as directed by the Engineer.

***** END OF SECTION *****

SECTION 01500

TEMPORARY FACILITIES

PART 1 GENERAL

1.1 SCOPE

The work specified in this Section includes the temporary facilities required for this project, but not necessarily limited to:

- A. Temporary utilities such as water, electricity, off-site staging, and off-site parking.
- B. Temporary piping, pumps, valves, fittings, manholes, vaults, and appurtenances necessary to keep existing facilities fully operational during construction.
- C. Sanitary facilities.
- D. Temporary enclosures such as fences, tarpaulins, barricades, and canopies.

1.2 RELATED WORK SPECIFIED ELSEWHERE

<u>Section</u>	<u>Item</u>
01530	Temporary Bypass Pumping

PART 2 PRODUCTS

2.1 UTILITIES

The Contractor shall be responsible for providing water necessary for construction. This includes costs for supplying potable water for hydrostatic pressure leak testing of all water-holding structures and operational testing of all equipment and processes. Water is available from the Owner free of charge, provided that it is used responsibly. The Contractor shall install a meter with backflow prevention device prior to obtaining water from the Owner.

2.2 TEMPORARY PIPING

The Contractor shall furnish and install all temporary piping and pumping and, upon completion of the work, remove all such temporary piping as required, except as designated on the Plans to remain as a part of the

Project. Prior to installation, the Contractor shall submit drawings to the Engineer showing the proposed installation of temporary piping and pumps, including location, type of pipe, fittings, and valves. The Contractor shall obtain the Engineer's approval for temporary piping and pumping plan prior to installation.

Temporary piping and pumping shall be provided as necessary to maintain the existing facilities in operation until the new facilities are constructed, operational. An effort has been made on the Plans and/or Specifications to note instances and locations where temporary piping and/or pumping may be required; however, this in no way limits the temporary piping and pumping to be provided by the Contractor at these locations.

2.3 SANITARY FACILITIES

The Contractor shall provide toilet and wash-up facilities for their workforce and the Engineer at the site of work. They shall comply with applicable laws, ordinances, and regulations pertaining to the public health and sanitation of dwellings and camps.

2.4 OFF-SITE STAGING AND PARKING

The Contractor shall note that space is limited throughout the construction site. Employees of the Contractor, all subcontractors, vendors, suppliers, and associated personnel shall not be allowed to park onsite during the course of construction without prior approval from the property owner. It shall be the responsibility of the Contractor to provide sufficient parking facilities in authorized area(s) other than the construction site for the above-mentioned personnel.

The Contractor shall not be allowed to stockpile and store equipment and materials throughout the construction site. The Contractor shall coordinate their schedule so that all equipment and materials shall be brought to the construction site only when they are to be installed/utilized.

The Contractor shall provide storage of equipment and materials at an offsite, bonded warehouse, to be approved by the Engineer. The Contractor shall pay all costs associated with off-site delivery, storage, and transfer to the construction site.

2.5 ENCLOSURES

The Contractor shall furnish, install, and maintain during the project time all required scaffolds, tarpaulins, barricades, canopies, warning signs, steps, bridges, platforms, and other temporary construction necessary for proper completion of the work in compliance with all pertinent safety and other regulations.

PART 3 EXECUTION

All temporary facilities and controls shall be maintained as long as required for the safe and proper completion of the work. The Contractor shall remove such temporary facilities and controls as rapidly as progress of the work will permit or as directed by the Owner.

***** END OF SECTION *****

SECTION 01530

TEMPORARY BYPASS PUMPING

PART 1 GENERAL

1.1 SCOPE

The work specified in this Section includes the requirements for all temporary bypass pumping of wastewater flows required to construct the project.

The Contractor shall provide all safety control measures required and provide pumps and equipment adequate in capacity and in good condition to prevent any spills or overflows during the transfer of flows.

1.2 RELATED WORK SPECIFIED ELSEWHERE

<u>Section</u>	<u>Item</u>
01500	Temporary Facilities

1.3 SUBMITTALS

The Contractor shall submit a Temporary Bypass Plans including drawings and complete design data in accordance with these specifications as outlined under Section 8.14 of the General Conditions, Submittals, showing methods and equipment the Contractor proposes to utilize for bypass sewage pumping. The submittal shall include the following information:

1. Drawings indicating the location of pumps, temporary sewer plugs, bypass discharge lines, and staging areas.
2. Capacities of pumps, prime movers, and standby equipment.
3. Method and type of temporary pipe plugs.
4. Design hydraulic calculations providing adequacy of the bypassing system and selected equipment.
5. Details of bypass pump monitoring and alarm system.
6. Schedule for installation and maintenance of bypass piping.

7. Temporary pipe/hose material.

1.4 PROTECTION

The Contractor shall ensure that service for connecting laterals and side sewers are not disrupted. All bypassed flow shall be discharged as approved by the Owner. No bypassing to the ground surface, receiving waters, or any area which results in groundwater contamination or potential health hazards shall be permitted.

1.5 SCHEDULING

Temporary systems for sewage pumping shall not be shut down between shifts, on holidays or weekends, or during work stoppages without permission from the Owner.

PART 2 PRODUCTS

2.1 BYPASS PUMPING EQUIPMENT

The estimated peak flow to be pumped is 7 gpm. The existing system piping can support up to 30 gpm bypass pumping capacity. The Contractor shall maintain on site sufficient equipment and materials to ensure continuous and successful operation of the bypass systems. The Contractor shall maintain on site a standby pump capable of maintaining bypass pumping with the largest duty pump out of service. Standby pumps shall be fueled and operational at all times. The Contractor shall maintain on site a sufficient number of valves, tees, elbows, connections, tools, sewer plugs, piping and other parts or system hardware to ensure immediate repair or modification of any part of the system as necessary. If electric pumps are being used, standby generators shall be available to ensure continuity of the pumping operation in the event of a power failure.

The Contractor shall provide temporary pumps, storage containers, plugs, conduits, and other equipment necessary to bypass the sewer flow. The Contractor shall furnish the necessary labor and supervision to set up and operate the pumping and bypass system with redundancy. Pumps and bypass lines shall be of adequate capacity and size to control the flows. Installation of the Contractor's equipment shall not cause sewers to surcharge during maximum flows.

The contractor shall provide a monitoring and alarm system for the bypass pumping system.

PART 3 EXECUTION

3.1 GENERAL

The Contractor shall be responsible for supplying, installing, operating, monitoring, and maintaining all wastewater bypass pumping and piping systems.

The Contractor shall pay all demands, consumption, connection, taxes, and fees associated with electrical service for the temporary bypass pumping system. The Contractor shall pay for fuel costs associated with the temporary bypass pumping system.

The maximum allowable time for shutdowns is 8 hours during any 48 hour period. No shutdowns shall be allowed on weekends or holidays . An effort has been made in the Plans and Specifications to note the instances and locations where temporary piping and pumping may be required; however, this in no way limits the temporary piping and pumping to be provided by the Contractor. The Contractor shall be solely responsible for the adequacy of the methods, systems, and equipment to control, remove, handle, treat, and dispose of wastewater in conformance with all requirements of these Specifications.

The Contractor shall bear full responsibility for taking all reasonable precautions necessary to ensure continuous successful operation of the temporary sewage pumping system. This includes establishing and/or monitoring adequate marking of all sewage pumping elements.

Where a sewage pumping discharge line requires crossing for access into, out of, or around the excavations or access of work, steel ramps shall protect the system from vehicular traffic. All ramps shall have the strength to support the heaviest equipment onsite and shall provide at least 6 inches of clearance between the sewage pumping system element and the under side of the ramp. The Contractor shall clearly identify all vehicular access points across the sewage pumping system with brightly colored or flagged poles a minimum of 8-feet high on each side of the access point. The Contractor shall valve all ramped pipelines on both sides of the ramp.

The Contractor shall carefully coordinate its construction activities with National Weather Forecasts to reduce the probability of high flows and/or surcharging from stormwater during construction.

3.2 DAMAGES

The Contractor shall cleanup and repair, without cost to the Owner any damage that may result from inadequate or improper design, installation, maintenance and operation of bypass pumping systems, including mechanical or electrical failures.

***** END OF SECTION *****

SECTION 01720
RECORD DRAWINGS

PART 1 GENERAL

1.1 SCOPE

The work specified in this Section includes the record drawings, which shall be maintained and annotated by the Contractor during construction.

1.2 INFORMATION PROVIDED BY THE OWNER

The Contractor will be provided with the following items to maintain record drawings for the project:

- A. One full size (22" x 34") paper set of Plans.

PART 2 PRODUCTS

Not Used.

PART 3 EXECUTION

3.1 GENERAL

The Contractor shall maintain the following record drawings for the project:

- A. A neat and legibly marked set of Contract Plans showing the final location of piping, equipment, electrical conduits, outlet boxes and cables;
- B. Additional documents such as schedules, lists, drawings, and electrical and instrumentation diagrams included in the Contract Documents; and
- C. Contractor layout and installation drawings.

Unless otherwise specified, record drawings shall be full size and maintained in a clean, dry, and legible condition. Record documents shall not be used for construction purposes and shall be available for review by the Engineer during normal working hours at the Contractor's field office. At the completion of the work, prior to final payment, all record drawings shall be submitted to the Engineer.

Marking of the drawings shall be kept current and shall be done at the time the material and equipment are installed. Annotations to the record documents shall be made with an erasable colored pencil conforming to the following color code:

- A. Additions - Red
- B. Deletions - Green
- C. Comments - Blue
- D. Dimensions - Graphite

Legibly mark drawings to record actual depths, horizontal and vertical location of underground raceways, cables, and appurtenances referenced to permanent surface improvements.

The Contractor's record drawings (full-size hard-copy) will be reviewed monthly for completeness by the Engineer prior to preparing the progress estimate for payment. If the record drawings do not reflect the work performed, payment for that item of work will not be included in the progress estimate.

***** END OF SECTION *****

SECTION 01740

CLEANUP

PART 1 GENERAL

1.1 SCOPE

The work specified in this Section includes the maintenance of the building, structures, and site(s) in a standard of cleanliness throughout the construction period as described herein.

Throughout the construction period, the Contractor shall maintain the cleanliness of the site and structures as described herein. The Contractor is also to maintain access to all existing, operating equipment such that the equipment may be serviced and operated.

Dust of all kinds, including concrete dust produced by construction activities, shall be controlled to avoid damage to existing, operating equipment. Enclosures, ventilation, and air scrubbing may be required where significant potential for damage is determined by the Engineer.

1.2 RELATED WORK SPECIFIED ELSEWHERE

In addition to standards described in this Section, comply with all requirements for cleaning up when described in other sections of these Contract Documents.

1.3 QUALITY ASSURANCE

A. INSPECTION

The Contractor shall conduct daily site inspections, and more often if necessary, to verify that requirements are being met.

B. CODES AND STANDARDS

In addition to the standards described in this Section, comply with all pertinent requirements of governmental agencies having jurisdiction.

PART 2 PRODUCTS

2.1 CLEANING MATERIALS AND EQUIPMENT

Provide all required personnel, equipment, and materials needed to maintain the specified standard of cleanliness.

2.2 COMPATIBILITY

Use only the cleaning materials and equipment which are compatible with the surface being cleaned, as recommended by the manufacturer of the material or as approved by the Engineer.

PART 3 EXECUTION

3.1 PROGRESS CLEANING

A. GENERAL

Retain all stored materials and equipment in an orderly fashion allowing maximum access, not impeding drainage or traffic, and providing protection.

Do not allow the accumulation of scrap, debris, waste material, and other items not required for this work.

At least twice each month, and more often if necessary, completely remove all scrap, debris, and waste material from the project site.

Provide adequate storage for all materials awaiting removal from the project site, observing all requirements for fire protection and protection of the environment.

B. SITE

Daily, and more often if necessary, inspect the site and pick up all scrap, debris, and waste material. Move these items into a place designated for their storage until disposal becomes available.

Weekly, and more often if necessary, inspect all arrangements of materials stored on the site, restack, arrange, or otherwise service all arrangements to meet the requirements above.

Maintain the site in a neat and orderly condition at all times so as to meet the approval of the Engineer.

3.2 FINAL CLEANING

A. DEFINITION

Except as otherwise specifically provided, "clean" shall be interpreted as meaning the level of cleanliness generally provided by commercial building maintenance equipment and materials.

B. GENERAL

Prior to final inspection, remove from the jobsite all tools, surplus materials, equipment, scrap, debris, and waste. Conduct final project cleaning as described below.

C. TIMING

Schedule final cleaning as approved by the Engineer to enable the Owner to accept a completely clean project, ready for occupancy.

***** END OF SECTION *****

SECTION 01800

TESTING, COMMISSIONING, AND TRAINING

PART 1 GENERAL

1.1 SCOPE

The work specified in this Section includes the installation, testing, commissioning, and training for all mechanical, electrical, and instrumentation systems and completed portions of the work.

See also Section 16050 for additional electrical and instrumentation system testing requirements.

1.2 RELATED WORK SPECIFIED ELSEWHERE

<u>Section</u>	<u>Item</u>
01110	Scope of Work
01500	Temporary Facilities
16050	Basic Electrical Materials and Methods

1.3 QUALITY ASSURANCE

A. INSTALLATION

All mechanical, electrical, and instrumentation equipment provided under this Contract shall be installed in conformity with the Contract Documents, including the manufacturer's requirements. Should a manufacturer's installation recommendation conflict with specific requirements of this Contract Document, the Contractor shall bring the matter to the attention of the Engineer. Any additional costs arising out of changes authorized by the Engineer to accommodate manufacturer's installation recommendations will be considered extra work. Any costs incurred by the Contractor through failure to timely notify the Engineer of a difference between Contract Document and manufacturer's installation requirements shall be borne by the Contractor.

B. TESTING

1. General Requirements

All equipment and partially complete or fully completed portions of the work included in this Contract shall be tested and inspected to prove compliance with the Contract requirements. Unless otherwise specified, all costs of testing, including temporary facilities and connections, shall be borne by the Contractor. For the purpose of this Section, equipment shall mean any mechanical, electrical, instrumentation, or other device with one or more moving parts or devices requiring an electrical, pneumatic, or hydraulic connection. Leak test for piping and wet well repairs shall be visual. Installed tests for electrical and instrumentation devices and systems shall be in accordance with Division 16.

No tests specified herein shall be applied until the item to be tested has been inspected and approval given for the application of such test.

Tests and inspection shall include:

- a. The delivery acceptance test and inspections.
- b. The installed tests and inspections. These tests may be performed with water or the process fluid, as described in the accepted test plan.
- c. The operational testing of completed sections of the facility. These tests may be performed with water or the process fluid, as described in the accepted test plan.
- d. The commissioning of completed sections of the facility by Owner's personnel. The commissioning shall be performed with the process fluid at normal flows.

Tests and inspections, unless otherwise specified or accepted, shall be in accordance with the recognized standards of the industry. The Contractor shall see that scheduling and performance of all tests are coordinated with involved subcontractors and suppliers. The Contractor shall

allow for up to two additional setpoint changes during testing. No extra costs or time allowances shall be provided as long as this setpoint allowance is not exceeded.

The form of evidence of satisfactory fulfillment of delivery acceptance test and inspection requirements shall be, at the discretion of the Engineer, either by tests and inspections carried out in their presence or by certificates or reports of tests and inspections carried out by approved persons or organizations. The Contractor shall provide and use forms that include all test information, including specified operational parameters. The content of the forms used shall be acceptable to the Engineer.

2. Installed Tests and Inspections

a. General

All equipment shall be tested by the Contractor to the satisfaction of the Engineer before any facility is put into operation. Tests shall be as specified herein and shall be made to determine whether the equipment has been properly assembled, aligned, adjusted and connected. Any changes, adjustments, or replacements required to make the equipment operate as specified shall be carried out by the Contractor as part of the work.

b. Procedures

i. General

The procedures shall be divided into two distinct stages; preoperation checkout and water test. Testing procedures shall be designed to duplicate, as nearly as possible, all conditions of operation and shall be carefully selected to ensure that the equipment is not damaged. Once the testing procedures have been reviewed and approved by the Engineer, the Contractor shall produce checkout, alignment, adjustment and calibration sign-off forms for each item of equipment to be used in the field by the Contractor and the Engineer jointly to ensure that each item of electrical,

mechanical and instrumentation equipment has been properly installed and tested. The Contractor is advised that failure to observe these precautions may place the acceptability of the subject equipment in question.

ii. Preoperation Checkout

The installed tests and inspection procedures shall incorporate all requirements of these Specifications and shall proceed in a logical, step-wise sequence to ensure that all equipment has been properly serviced, aligned, connected, calibrated, and adjusted prior to operation. Preoperation checkout procedures shall include, but not necessarily be limited to:

- (1) Piping system pressure testing.
- (2) Electrical system testing as specified in Division 16.
- (3) Alignment of equipment.
- (4) Preoperation lubrication.

iii. Water Test

Once all affected equipment has been subjected to the required preoperational checkout procedures and the Engineer has witnessed and has not found deficiencies in that portion of the work, individual systems may be started and operated under simulated operating conditions to determine as nearly as possible whether the equipment and systems meet the requirements of these Specifications. Test media for these systems shall either be the intended fluid or a compatible substitute. The equipment shall be operated a sufficient period of time to determine machine operating characteristics, including temperatures and vibration, to observe performance characteristics, including performance

throughout the specified range for blowers, and to permit initial adjustment of operating controls, or instrumentation. Disposal methods for test media shall be subject to review by the Engineer.

If under test, any portion of the work should fail to fulfill the Contract requirements and is adjusted, altered, renewed or replaced, tests on that portion when so adjusted, altered, removed or replaced, together with all other portions of the work as are affected thereby, shall, if so required by the Engineer, be repeated within reasonable time and in accordance with the specified conditions. The Contractor shall pay to the Owner all reasonable expenses incurred by the Owner as a result of repeating such tests.

Once simulated operation has been completed, all machines shall be rechecked for proper alignment, realigned, if necessary, and doweled in place. All equipment shall be checked for loose connections, unusual movement, excessive temperature, noise, and/or vibration or other indications of improper operating characteristics. Any deficiencies shall be corrected to the satisfaction of the Engineer. All machines or devices, which exhibit unusual or unacceptable operating characteristics shall be disassembled and inspected. They shall then be repaired or removed from the site and replaced at no cost to the Owner.

Test results shall be within the tolerances set forth in the detailed Specification sections of the Contract Documents. If no tolerances have been specified, test results shall conform to tolerances established by recognized industry practice. Where, in the case of an otherwise satisfactory installed test, any doubt, dispute, or difference should arise between the Engineer, and the Contractor regarding the test results or the methods or equipment used in

the performance of such test, then, the Engineer may order the test to be repeated. If the repeat test, using such modified methods or equipment as the Engineer may require, substantially confirms the previous test, then all costs in connection with the repeat test will be paid by the Owner otherwise the costs shall be borne by the Contractor. Where the results of any installed test fail to comply with the Contract requirements for such test, then such repeat tests as may be necessary to achieve the Contract requirements shall be conducted by the Contractor at their expense.

Unless otherwise specified, the Contractor shall provide at no expense to the Owner, all water, power, labor and all other necessary items and work required to complete all tests and inspection specified herein. Temporary facilities shall be maintained until permanent systems are in service.

3. Operational Testing

After completion of all installed testing and review by the Engineer that all equipment complies with the requirements of the Specifications, the Contractor shall conduct operational testing. All domestic water, oil, fuel, and chemical systems shall be filled with the specified fluid.

The Contractor shall operate the completed facility for a period of not less than that specified in Part 3.4 of this Section during which all systems shall be operated as a complete facility at various loading conditions, as directed by the Engineer. Should the operational testing period be halted for any reason related to the facilities constructed or the equipment furnished under this Contract, or the Contractor's temporary testing systems, the operational testing program shall be repeated until the specified continuous period has been accomplished without interruption. All process units shall be brought to full operating conditions, including temperature, pressure, and flow.

Record drawings of facilities involved must be accepted and ready for turnover to the Owner at the time of operational testing.

All costs for water, fuel, power, and chemicals required during operational testing shall be borne by the Owner.

4. Commissioning

After completion of the operational testing and certifications by the Engineer that the systems meet all performance requirements, commissioning will begin. The commissioning period for all systems shall be 14 days. The Contractor shall remove all temporary piping that may have been in use during the operational testing and shall assist the Owner with the placement of the facility into its fully operational mode handling wastewater. The Owner's operations and maintenance personnel will be responsible for operation of the facility or portion of the facility during this period of time. The facility or portion thereof shall be fully and continuously operational, accepting all normal flow called for in design and performing all functions as designed.

The Contractor shall be available, with all appropriate subcontractors and trades, at all times during commissioning periods to provide immediate assistance in case of failure of any portion of the system being tested. This assistance shall be available, if needed, on a 24-hour basis. The Engineer will not issue a certificate of Substantial Completion until the end of the commissioning period (including training) and then only when all corrections required to assure a reliable and completely operational facility have been complete. The Contractor shall be responsible for all costs in excess of the Owner's normal expected costs of operations during the commissioning period. The Contractor shall bear the costs of all necessary repairs or replacements, including labor and materials, required to keep the portion of the plant being commissioned operational.

The commissioning period will be considered completed when the facility has been continuously operated without major interruption, equipment failure, or system breakdown for the specified commissioning period. A major interruption, failure or breakdown shall be a condition or event that prevents the facility from continuously and adequately

handling normal flow, cannot be repaired or corrected immediately by the Contractor, and is not caused by improper operation and maintenance of the facilities by the Owner. An interruption of the commissioning period under these circumstances will require a re-start of commissioning once required repairs and corrections are made by the Contractor. Should the commissioning period be halted for any reason related to the facilities constructed or the equipment furnished under this Contract, the commissioning shall be repeated until the specified continuous period has been accomplished without interruption.

Final O&M manuals for the facilities must be accepted and ready for turnover to the Owner before the start of commissioning.

C. TRAINING

For all pieces of equipment provided by the Owner, the Owner will obtain and schedule manufacturer representatives to train the Owner's personnel in the operation and maintenance thereof.

1.4 SUBMITTALS

A. STARTUP AND TESTING PLAN

Prior to receipt of any progress payments in excess of 60 percent of the Contractor's total bid for the work, the Contractor shall submit to the Engineer five copies of a startup and testing plan with details of the installed tests and inspection procedures he proposes to adopt for testing and startup of all equipment to be operated singly and together.

B. TRAINING OUTLINE

The Contractor shall submit five copies of a detailed outline of training activities to be performed by each manufacturer's representative 10 days prior to the start time of the training. This outline shall indicate how the manufacturer's representative is going to allocate the required specified number of training hours to fulfill these contractual obligations.

PART 2 PRODUCTS

2.1 INSTALLATION

Materials employed in the installation shall conform to the requirements of the Contract Documents and the recommendations of the equipment manufacturers.

2.2 TESTING

A. RECORDS

The Contractor shall provide sign-off forms for all installed and operational testing to be accomplished under this Contract. Sign-off forms shall be provided for each item of mechanical, electrical and instrumentation equipment provided or installed under this Contract and shall contain provisions for recording relevant performance data for original testing and not less than three retests. Separate sections shall be provided to record values for the preoperation checkout, as well as signatures of representatives of the equipment manufacturers, the Contractor, and the Engineer.

B. TEMPORARY TEST FACILITIES AND MODIFICATIONS

The Contractor shall provide and install all necessary temporary piping, valves, pumps, tanks, controls, and other facilities and modifications to enable the operational testing of the permanent facility components. Operational testing requiring the recirculation of water or process fluids within the facility shall be performed by the Contractor using temporary facilities, if needed, provided and installed by the Contractor. Temporary facilities shall be removed by the Contractor once the required testing is completed.

PART 3 EXECUTION

3.1 INSTALLATION

All equipment and apparatus used in testing shall be installed by specialists properly skilled in the trades and professions required to assure first-class workmanship. Where required by detailed Specifications, the Contractor shall cause the installation of specific equipment testing items to be accomplished under the supervision of factory-trained installation specialists furnished by the equipment manufacturers. The Contractor shall be prepared to document the skills

and training of all workmen engaged in the installation of all testing equipment furnished either by the Contractor or the Owner.

3.2 TESTING

Testing shall proceed on a step-by-step basis in accordance with the Contractor's written testing procedures. The Contractor's testing work shall be accomplished by a skilled team of specialists under the direction of a coordinator whose sole responsibility shall be the orderly, systematic testing of all equipment, systems, structures, and the complete facility as a unit. Each individual step in the procedures shall be witnessed by a representative of the Engineer.

During the facility operational testing period, all equipment and systems in operation shall be operated to the greatest extent practicable, at conditions, which represent the full range of operating parameters as defined by the Contract Documents.

3.3 FACILITY OPERATIONAL TESTING

The systems described below shall be tested to demonstrate the performance of mechanical, electrical, instrumentation and control subsystems together as an integrated system. Where the testing described in this Section conflicts with the testing requirements specified for individual equipment, or the manufacturer's recommended testing procedure, those requirements and procedures shall prevail.

Unless otherwise noted, a time period of 8 hours shall be allowed for each facility operational test. Unless otherwise noted, each portion of the facility being operationally tested must perform through its complete design range for a period of 8 hours. Facility operational testing shall be sequenced in coordination with the work sequence specified in Section 01110. Temporary facilities necessary for operational testing are specified in Paragraph 2.2 of this Section and in Section 01500. Facility operational testing shall be divided as follows:

***** END OF SECTION *****

SECTION 01900

SALVAGE AND DEMOLITION

PART 1 GENERAL

1.1 SCOPE

The work specified in this Section covers the demolition of existing structures, piping, equipment, and sitework, and the salvage of existing materials and equipment as indicated on the Plans and as specified herein.

All areas and facilities of the existing facility, which are not to be removed, must remain in operation during the work with minimal disruption. Demolition and salvage work shall create a minimum of interference with the operation of the facility.

The Plans show the major items to be demolished and removed. In addition to these items, the Contractor shall remove any other incidental above-grade items which are not to be used in the completed project.

1.2 DEMOLITION

The Contractor shall be responsible for compliance with current City, County, State, and Federal codes and regulations related to demolition.

The Contractor shall notify all affected utilities and comply with their respective requirements for abandonment of such utilities including power, telephone, natural gas, water, sanitary sewer, and storm sewer utilities.

The Contractor shall maintain access for the Owner's employees during the demolition period and provide barricades, fences, etc., as required for job site safety.

Demolition of concrete, masonry, roofing, asphalt, and other materials shall be done so as to avoid damage to existing structures intended to remain. Demolition or cutting required to add to or modify existing structures shall be done in such a manner that the appearance and utility of the existing structure is not impaired and so that a neat transition from new to old material may occur.

All piping and appurtenances located less than 4 feet below finished grade shall be removed and hauled to an approved disposal site. All piping and appurtenances located four feet or more below finished grade may be

abandoned in place, unless shown otherwise on the Plans, as long as Contractor fully seals all pipe and appurtenance openings with grout.

All waste materials from demolition or cutting shall become the property of the Contractor and shall be removed from the site and hauled to an approved waste disposal site, if declared surplus by the Owner. All materials and equipment, however, are property of the Owner unless declared surplus. Some equipment and materials scheduled for salvage and delivery to the Owner are noted on the Plans.

***** END OF SECTION *****

DIVISION 2

SITework

SECTION 02230

CLEARING AND GRUBBING

PART 1 GENERAL

1.1 SCOPE

The work specified in this Section includes the clearing, grubbing, and stripping of the proposed project areas in preparation of foundations, embankment construction, and pipeline installation.

1.2 RELATED WORK SPECIFIED ELSEWHERE

<u>Section</u>	<u>Item</u>
02305	Wet Weather Earthwork
02300	Earthwork
02370	Erosion Control

1.3 DEFINITIONS

“Clearing, grubbing, and stripping debris” as hereinafter used shall be considered as all material removed by the clearing, grubbing, and stripping operations.

PART 2 PRODUCTS

Not Used.

PART 3 EXECUTION

3.1 DISPOSAL OF CLEARING AND GRUBBING DEBRIS

Clearing and grubbing debris shall be disposed of by hauling to waste and disposal sites approved by the Owner.

3.2 CLEARING AND GRUBBING

Clearing and grubbing shall be performed as required to complete the work shown on the Plans to a minimum depth of 8 inches in order to remove the root zone of existing vegetation.

This work shall include removal and disposal of all trees, logs, brush, stumps, roots, and minor manmade structures to include but not limited to concrete, asphalt abandoned metal and equipment, rubbish and debris to

the limits indicated on the plans or as required and approved by the owner. This work shall be to a depth necessary to remove stumps, large roots and all other objectionable material. This work shall also include the protection from injury or defacement of trees, bushes, shrubs, and other objects designated to remain.

***** END OF SECTION *****

SECTION 02240

DEWATERING

PART 1 GENERAL

1.1 SCOPE

The work specified in this Section includes dewatering excavations of any kind and location, including but not limited to groundwater, surface water, and precipitation, until backfilling has been completed to finished grade.

1.2 RELATED WORK SPECIFIED ELSEWHERE

<u>Section</u>	<u>Item</u>
02300	Earthwork
02370	Erosion Control

1.3 SUBMITTALS

Prior to the start of construction, the Contractor shall submit a dewatering plan in accordance with Section 8.14 of the General Conditions containing both a graphical and narrative presentation identifying proposed methods, equipment sizes and contingency plans should dewatering cause settlement of any adjacent facilities. The dewatering plan shall show specific locations, in plan and section, where dewatering is expected as well as a general discussion of methods to be employed should water be encountered in other locations. The plan shall detail the depth, diameter and anticipated flow for dewatering wells, well points or sumps.

Acceptance by the Owner of the method, installation, and operation and maintenance details submitted by the Contractor shall not in any way be considered to relieve the Contractor from full responsibility for errors therein or from the entire responsibility for complete and adequate design and performance of the system in controlling the water level in the excavated areas, and for control of the hydrostatic pressures to the depths specified herein. The Contractor shall be solely responsible for the proper design, installation, proper operation, maintenance, and any failure of any component of the dewatering system.

1.4 REFERENCES

“Rossum J.R., 1954, *Control of Sand in Water Systems*, Journal American Water Works Association, Volume 46, pp. 123-132”

Geotechnical Report, Washington,

Construction Stormwater General Permit

1.5 QUALITY CONTROL

It shall be the sole responsibility of the Contractor to control the rate and effect of the dewatering efforts to avoid all objectionable settlement and subsidence. The Contractor shall comply with local codes and ordinances of governing authorities with regard to disposal of water pumped from dewatering operations.

Proposed discharge points shall be approved by the Owner prior to implementation of dewatering. The Contractor shall be responsible for taking all reasonable precautions necessary to ensure continuous, successful operation of the system.

PART 2 PRODUCTS

The Contractor shall have sufficient pumping equipment and/or other machinery available onsite before operations begin to assure that the operation of the dewatering system can be maintained. This shall include providing backup pumps of similar capacity and a standby generator of the capacity required to continuously operate the Contractor's dewatering system.

PART 3 EXECUTION

3.1 INSTALLATION AND APPLICATION

During excavation, the installation of piping, conduits and structures and during the placing of backfill, excavations shall be kept free of water, subsurface or otherwise. The Contractor shall furnish all equipment necessary to dewater the excavations and shall dispose of the water so as not to cause a nuisance or menace to the public. The dewatering system shall be installed and operated by the Contractor so that the groundwater level outside the excavation is not reduced to the extent that would damage or endanger adjacent structures or property. The release of groundwater to its static levels shall be performed so as to maintain the undisturbed state of the foundation soils, prevent disturbance of backfill and prevent movement of all structures and pipelines.

Design implementation and maintenance of any dewatering system shall be the responsibility of the Contractor.

The Contractor shall design filters and screen slot sizes for all sumps, wells and well points which prevents the movement of fines during pumping. The Contractor shall develop the wells such that they produce no more than 10-ppm silica as measured with a Rossum Sand Tester (Rossum, 1954) or equivalent. Clean water may be discharged to the District's sewer system, provided it meets these requirements.

3.2 FIELD QUALITY CONTROL

A continual check by the Contractor shall be maintained to ensure that the subsurface soil is not being removed by the dewatering operation. The Contractor shall test all dewatering discharge using a Rossum Sand Tester or equivalent to determine the silica content of the discharge. The Contractor shall notify the Owner at least 24 hours prior to testing. Where critical structures or facilities exist immediately adjacent to areas of proposed dewatering, reference points shall be established and observed at frequent intervals to detect any settlement that could develop.

Should settlement be observed, the Contractor shall cease dewatering operations and implement contingency plans as outlined in the Contractor's approved dewatering plan. The responsibility for conducting the dewatering operation in a manner that protects adjacent structures and facilities rests solely on the Contractor. The cost of repairing any damage to adjacent structures and restoration of facilities shall be the responsibility of the Contractor. Permanent piping systems, existing or new, shall not be incorporated into the Contractor's dewatering system.

***** END OF SECTION *****

SECTION 02250

TEMPORARY SHORING AND BRACING

PART 1 GENERAL

1.1 SCOPE

The work specified in this Section includes the temporary shoring and bracing for excavations including the trench excavation safety systems as shown on the Plans and as specified herein.

1.2 RELATED WORK SPECIFIED ELSEWHERE

<u>Section</u>	<u>Item</u>
02300	Earthwork
02536	Sewer Force Mains

1.3 WORK INCLUDED

The extent of temporary shoring and bracing work includes, but is not limited to:

- A. Temporary shoring and bracing necessary to protect the following against loss of ground or caving embankments: existing structures, buildings, roads, walkways, utilities, electrical transmission towers and support wiring, other facilities and improvements where required to comply with codes and authorities having jurisdiction.
- B. Trench excavation safety systems, pursuant to RCW Chapter 49.17 and WAC 296-155-655.
- C. Maintenance of shoring and bracing.

1.4 SUBMITTALS

The Contractor shall submit shoring and bracing layout and design drawings, calculations and other backup data to the Owner for review in accordance with Section 8.14 of the General Conditions prior to the start of construction.

1.5 EXISTING UTILITIES

The Contractor shall protect existing active sewer, water, gas, electrical, and other utility services and structures that may be present. This shall also include all pipelines, services, and structures that are the property of the Owner.

PART 2 PRODUCTS

The Contractor shall provide suitable shoring and bracing materials, which shall support loads imposed. Materials for shoring systems need not be new, but shall be in serviceable conditions.

PART 3 EXECUTION

3.1 VERIFICATION OF CONDITIONS

The Contractor shall notify the Owner immediately if, during construction, subsurface conditions are different from those encountered in the exploratory holes.

3.2 INSTALLATION AND APPLICATION

The Contractor shall provide shoring systems adequately anchored and braced to resist earth and hydrostatic pressures at locations as needed to support excavations during construction. The Contractor shall locate required bracing to clear all permanent work. Bracing which must be relocated shall be installed prior to the removal of original bracing. The Contractor shall not place bracing where it will be cast into or included in permanent concrete work, except as otherwise acceptable to the Owner. The Contractor shall maintain bracing until structural elements are rebraced by other bracing or until permanent construction is able to withstand lateral earth and hydrostatic pressures.

3.3 REMOVAL

The Contractor shall remove shoring and bracing in stages to avoid disturbances to adjacent and underlying soils and damage to structures, pavements, facilities and utilities. The Contractor shall repair or replace, as acceptable to the Owner, adjacent work damaged or displaced through the installation or removal of shoring and bracing work.

3.4 EXCAVATION SAFETY SYSTEMS

All work shall be carried out with due regard for public safety. Open trenches shall have proper barricades and at night they shall be distinctly indicated by adequately placed lights, as provided for elsewhere in the Specifications.

The Contractor is reminded that the Owner has not so delegated, and the Owner's Representative does not purport to be a trench or excavation system safety expert, is not so engaged in that capacity under this Contract, and has neither the authority nor the responsibility to enforce construction, safety laws, rules, regulations, or procedures or to order the stoppage of work for claimed violations of trench or excavation safety.

The furnishing by the Owner of resident representation and inspection personnel shall not make the Owner responsible for the enforcement of such laws, rules, regulations, or procedures, nor shall such make the Owner responsible for construction means, methods, techniques, sequences, procedures, or for the Contractor's failure to properly perform the work necessary for proper trench and excavation safety.

***** END OF SECTION *****

SECTION 02300

EARTHWORK

PART 1 GENERAL

1.1 SCOPE

The work specified in this Section includes the earthwork, including trench excavation and backfill for piping, excavation and backfill for structures, and finish grading.

1.2 RELATED WORK SPECIFIED ELSEWHERE

<u>Section</u>	<u>Item</u>
01500	Temporary Facilities
02240	Dewatering
02250	Temporary Shoring and Bracing
02305	Wet Weather Earthwork
02370	Erosion Control
02700	Gravel Materials
02900	Landscaping

PART 2 PRODUCTS

2.1 GRAVEL MATERIALS

All gravel materials shall conform to Section 02700.

PART 3 EXECUTION

3.1 PREPARATION

Excavation may commence once all erosion control measures are in place in accordance with the Plans and Section 02370 and to the satisfaction of the Owner.

3.2 GENERAL REQUIREMENTS

Excavation, compaction and backfill for structures, pipelines and the final site contours shall be formed by either excavating or compacting fill, as required, to provide the cross-sections as shown on the Plans.

All excavation performed on this Project shall be considered unclassified. Excavation shall consist of the removal of any and all material

encountered, including debris, rubble, concrete, metal, topsoil, cutting and removal of existing surfacing, tree stumps, trees, logs, abandoned rail ties, abandoned piping, piling, riprap, etc.

Excavations shall be kept free of water, both surface water and groundwater, during the excavation, installation of pipelines and structures, and the placement of backfill. For additional requirements see Section 02240.

The Contractor's attention is also called to the depth of the structures and piping; for this reason, special shoring and bracing may be required. All shoring and bracing or sheeting required to perform and protect the excavation and to safeguard the employees, shall be furnished by the Contractor. For additional requirements see Section 02250.

All stockpiles shall be covered with plastic.

3.3 EXCAVATION AND BACKFILL FOR TRENCHES

Excavation and backfill for trenches shall be in conformance with Sections 7-08 and 7-09 of the WSDOT Standard Specifications, and as further described herein. The following pipe materials shall be considered flexible:

- PVC
- HDPE

All other pipe materials shall be considered rigid.

Upon completion of work each day, all pipeline open trenches shall be completely backfilled, leveled, and temporarily patched or graveled, as herein specified. Under certain conditions, the trench may be left open at the last length of pipe laid during the day to avoid re-excavation the following morning, provided that the opening is adequately plated or covered for vehicle traffic. Special attention shall be given to barricading to keep vehicular traffic away from newly-backfilled trench areas until restored for traffic.

The Engineer reserves the right to restrict the Contractor in the amount of trench for pipeline that can be opened during the working day. Should the Contractor, in the Engineer's opinion, fail to diligently pursue backfilling, an allowable limit of open trench shall be 100 lineal feet and shall be strictly enforced.

The width of the trench at or below a point 12 inches above the top of the outside diameter of the pipe shall be carefully controlled and maintained to ensure the strength of the pipe and prevent pipe failures. Backfilling shall proceed as follows:

A. SUBGRADE PREPARATION

The subgrade for piping is defined as the elevation of the bottom of the pipe bedding material as shown on the Plans.

In the event unsuitable material is encountered below the subgrade shown on the Plans and described herein, the Contractor, as required by the Engineer, shall over-excavate until a suitable foundation is reached. If over-excavation of unsuitable material is required by the Engineer then the Contractor shall then replace the material with compacted foundation gravel, as specified in Section 02700. If imported foundation gravel is required, it will be paid under the unit price bid item titled "Crushed Rock."

Quantities, if any, shall be calculated by neat line measurement to the depth agreed to in the field by the Engineer.

B. BEDDING FOR FLEXIBLE PIPE

Above the foundation material, if any, Gravel Backfill for pipe bedding, as specified in Section 02700, shall be placed in lifts of approximately 8 inches up to a point 12 inches above the pipe. This material shall be hand shoveled in place and carefully worked under and around the pipe.

C. BACKFILL FOR TRENCHES

Partial backfill to protect the pipe will be permitted immediately after the pipe has been properly laid in accordance with the Plans and these Specifications. Complete backfilling of trenches will not be permitted until the section of pipe installed has been inspected by the Engineer.

From the point 12 inches above the top of the pipe barrel, the backfill material to be used in the trench section shall be suitable native material or Bank Run Gravel, as specified in Section 02700, except where required or shown on the Plans to use other material. The Contractor shall place backfill in horizontal lifts not to exceed 8 inches in thickness. All backfill shall be free of large rocks, organic

matter, stumps, trees, pieces of pavement, broken concrete and other deleterious substances.

The Contractor shall remedy, at their expense, any defects that appear in the backfill prior to final acceptance of the work. Cleanup operations shall progress immediately behind backfilling to accommodate the return to normal use of the trench area.

3.4 REUSE AND DISPOSAL OF EXCAVATED MATERIAL

Excavated materials shall be properly protected and reused where possible. Excavated materials not used for fill shall be hauled to an approved waste site(s), as selected by the Contractor. The Contractor shall submit a list of approved waste haul site(s) to the Owner prior to the commencement of hauling of waste materials. Any permits required for waste haul and disposal shall be the responsibility of the Contractor.

3.5 FINAL SITE GRADING

The site shall be graded consistent with the elevations shown on the Plans. Excavations and backfill shall be to the elevations required for the placement of all surface restorations, such as asphalt, concrete, gravel surfacing, or landscaping. All areas shall be graded to provide proper drainage. The final ground surface shall be smooth, raked free of debris and stones, and prepared for restoration as specified in Section 02900.

3.6 TRENCH COMPACTION

Trench backfill materials shall be moisture conditions to within three percent of optimum moisture content. Water settlement is not allowed for compaction.

Compaction of the backfill above the bedding material in all trenches in non-structural and non-paved areas shall be performed by using mechanical equipment to at least 90 percent of the maximum dry density, using the Modified Proctor, per ASTM D1557.

***** END OF SECTION *****

SECTION 02305

WET WEATHER EARTHWORK

PART 1 GENERAL

1.1 SCOPE

The work specified in this Section includes the procedures to be followed if earthwork is to be accomplished in wet weather or in wet conditions where control of soil moisture is difficult.

1.2 RELATED WORK SPECIFIED ELSEWHERE

<u>Section</u>	<u>Item</u>
02300	Earthwork
02370	Erosion Control
02700	Gravel Materials

PART 2 PRODUCTS

The size or type of construction equipment shall be selected as required to prevent soil disturbance. In some instances, it may be necessary to limit equipment size or to excavate soils with a backhoe, Gradall, or equivalent type of equipment to minimize subgrade disturbance caused by construction traffic.

Material used as structural fill during wet weather earthwork shall generally consist of clean granular material containing less than 5 percent fines (material passing the U.S. Standard No. 200 sieve), based on wet sieving the fraction passing the 3/4-inch sieve. The fines shall be non-plastic.

PART 3 EXECUTION

3.1 WET WEATHER EXCAVATION AND FILL PLACEMENT QUALITY CONTROL

Excavation and placement of fill or backfill material will be observed on a full-time basis by the Owner, to determine that all work is being accomplished in accordance with these Specifications.

3.2 WET WEATHER EARTHWORK PROTECTION

The ground surface shall be sloped away from construction areas to promote the rapid runoff of precipitation and prevent ponding of water.

Earthwork shall be accomplished in small sections to minimize exposure to wet weather. Excavation or the removal of unsuitable soil shall be followed immediately by the placement and compaction of a suitable thickness (generally 8 inches or more if approved by the Owner) of clean foundation gravel.

No soil shall be left uncompacted and exposed to moisture. A smooth drum vibratory roller, or equivalent, shall be used to seal the ground surface after placement of fill or backfill materials.

All wet weather work shall meet local, state and federal codes as specified herein and as indicated on the Plans.

***** END OF SECTION *****

SECTION 02370

EROSION CONTROL

PART 1 GENERAL

1.1 SCOPE

The work specified in this Section includes the temporary erosion and sedimentation control (TESC) in and around the site caused by the actions of the Contractor as shown on the Plans and as specified herein.

Work under this Section shall be directed towards site areas disturbed during construction as well as all off-site storage and parking areas maintained by the Contractor.

1.2 RELATED WORK SPECIFIED ELSEWHERE

<u>Section</u>	<u>Item</u>
02240	Dewatering
02300	Earthwork

1.3 SUBMITTALS

- A. Stormwater Pollution Prevention Plan (SWPPP)

A SWPPP shall be prepared by the CESCL for the project and submittal in accordance with Section 8.14 of the General Conditions and paragraph 1.5 of this specification section. The SWPPP shall be submitted to the Owner for approval at the preconstruction conference.

1.4 CERTIFIED EROSION AND SEDIMENT CONTROL LEAD (CESCL)

The Contractor shall designate a Certified Erosion and Sediment Control Lead (CESCL) for this project. The CESCL shall have, for the life of this Contract, a current Certificate of Training in Construction Site Erosion and Spill Control signed by the WSDOT Water Quality Program Manager.

Duties of the CESCL shall include, but are not limited to:

- A. Inspecting temporary erosion and spill control Best Management Practice (BMPs) for proper location, installation, maintenance, and repair. Inspections shall be made as noted on the Plans and after each significant precipitation event, including those that occur

during weekends and after working hours. A Temporary Erosion and Spill Control Inspection Report shall be prepared for each inspection and shall be included in the Temporary Erosion and Spill Control file. The inspection report shall include, but not be limited to:

1. When BMPs are installed, removed or changed;
2. Repairs needed or made;
3. Turbidity monitoring results;
4. Observations of BMP effectiveness and proper placement;
5. Recommendations for improving performance of BMPs.

B. Prepare and maintain a Temporary Erosion and Spill Control file on site that includes but is not limited to:

1. Temporary Erosion and Spill Control Inspection Reports;
2. Contractor's Stormwater Pollution Prevention Plan (SWPPP);
3. Spill Prevention, Control, and Countermeasures (SPCC) Plan;
4. All project permits, including but not limited to grading permits and Hydraulics Project Approval;
5. Manufacturer instructions for all products used for TESC BMPs;
6. Washington State Department of Ecology's Stormwater Management Manual for Western Washington, Chapter 4, Volume II, current edition.

1.5 STORMWATER POLLUTION PREVENTION PLAN

The CESCL Contractor shall be responsible for preparing a Stormwater Pollution Prevention Plan (SWPPP). The intent of the SWPPP is to reflect the Contractor's operations by supplementing the TESC Drawings, details, and notes shown on the Plans to provide comprehensive pollution control at the construction site, staging areas, stockpiles, and borrow sites. The SWPPP shall be prepared by the CESCL for the project and submittal in

accordance with Section 8.14 of the General Conditions. The SWPPP shall be submitted to the Owner for approval at the preconstruction conference. No work shall begin until the Contractor's SWPPP, as approved by the Owner, is implemented. The SWPPP shall address, at least, the following items:

- Identification of construction haul routes and location of BMPs (e.g., stabilized construction entrance, silt fences, storm drain inlet protection).
- Waste disposal methods and locations.
- Detailed construction sequence and schedule, including identifying dates scheduled for BMP installation, removal, clearing, grading, seeding, and landscaping.
- Details for any temporary flow diversions, dewatering systems, and BMPs (in accordance with the current edition of the Washington State Department of Ecology's Stormwater Management Manual for Western Washington) proposed by the Contractor.
- Calculations for temporary sedimentation ponds, if used
- A list of products to be used, including Material Safety Data Sheets.
- Identification of stockpile and staging areas, and BMPs to be implemented at these locations.

The SWPPP shall be prepared in accordance with details shown on the Plans, these Specifications, and Chapter 4, Volume II Chapter 7 – BMPs from the current edition of the Washington State Department of Ecology's Stormwater Management Manual for Western Washington, which are hereby referenced and made a part of the Contract Documents. Only those sections of the Stormwater Management Manual for Western Washington that address preparation, implementation, and maintenance of permanent and temporary erosion and sedimentation control BMPs are applicable.

The SWPPP shall include best management practices to control windblown dust.

PART 2 PRODUCTS

2.1 SILT FENCES

Silt fences shall conform to the details shown on the Plans and the fabric shall conform meet the requirements of Geotextile for Temporary Silt Fence of Section 9-33 of the WSDOT Standard Specifications.

2.2 STORM DRAIN INLET (CATCH BASIN) PROTECTION

Storm drain inlet protection shall be with a "silt sack," as manufactured by ACF Environmental or equal.

2.3 EROSION CONTROL BLANKET

On all disturbed slopes steeper than 2H:1V, an erosion control blanket shall be placed and secured per manufacturer's recommendation with a biodegradable means.

The erosion control blanket shall be temporary, biodegradable and is to remain in place.

The erosion control blanket shall be "Biomac C" as manufactured by MacCaferri, Inc. or "Curlex II," as manufactured by American Excelsior Co., or Equal.

PART 3 EXECUTION

3.1 PREPARATION

Site preparation work shall be performed only during periods when beneficial results can be obtained. When drought, excessive moisture or other unsatisfactory conditions prevail, the work shall be stopped.

3.2 BEST MANAGEMENT PRACTICES (BMPS)

Silt fences shall be constructed to control erosion and migration of soils disturbed during construction. The fences and dams shall provide temporary protection and shall be removed only upon approval of the Owner.

All areas or drainage ways downstream of the construction site shall have Best Management Practices (BMPs) installed prior to the beginning of any clearing activities. Runoff from cleared or disturbed area shall be directed through the BMPs. Disturbed ground shall be stabilized at the end of each

work day. Permanent soil stabilization and erosion and sedimentation control shall be implemented upon reaching finish grade. Slope protection shall be immediately implemented upon any soils showing signs of erosion. This shall be done in a manner approved by the Owner.

All BMPs shall be inspected, maintained and kept in a condition sufficient to provide effective erosion and sedimentation control at all times. The site shall be inspected to ensure the BMPs are properly located, constructed and operating as designed during the first storm. Any necessary adjustments or repairs shall be made immediately and be approved by the Owner. The BMPs shall be inspected thereafter as noted on the Plans and after all significant storm events. Turbidity monitoring will be held on a weekly basis at a minimum, or more frequently if necessary as determined by the CESCL.

All BMPs shall be removed no later than 30 consecutive calendar days after final site stabilization has been achieved as determined by the Owner. BMPs such as storm drain inlet protection, straw bales, silt fences and supports and plastic coverings shall be removed and properly disposed of offsite by the Contractor. Areas disturbed by removal of these BMPs shall be immediately stabilized in a manner approved by the Owner.

***** END OF SECTION *****

SECTION 02536

SEWER FORCE MAINS

PART 1 GENERAL

1.1 SCOPE

The work specified in this Section includes pipe, fittings, and accessories described herein and as required to completely install the sewer force mains as shown on the Plans.

1.2 RELATED WORK SPECIFIED ELSEWHERE

<u>Section</u>	<u>Item</u>
02240	Dewatering
02250	Temporary Shoring and Bracing
02300	Earthwork
02700	Gravel Materials

PART 2 PRODUCTS

2.1 GENERAL

Pipe sizes are nominal inside diameter unless otherwise noted.

All materials delivered to the job site shall be new, free from defects, and marked to identify the material, class, and other appropriate data such as thickness for piping.

Acceptance of materials shall be subject to strength and quality testing in addition to inspection of the complete product. Acceptance of installed piping systems shall be based on inspection and leakage tests as specified in Part 3 of this Section.

2.2 PVC PIPE

All PVC pipe 3-inch and smaller shall be Schedule 80. Pipe shall be constructed of material that meets or exceeds ASTM D2241 and ASTM D1784 and Commercial Standard CS 256. Joints shall be solvent weld with press fit. Fittings shall conform to ASTM D2466 and ASTM D2467 for socket type and ASTM D2464 for threaded pipe.

2.3 STAINLESS STEEL PIPE AND FITTINGS

Stainless Steel pipe shall be general service made of 316 Stainless Steel. Pipe shall be Schedule 40 with threaded and coupled fittings.

2.4 CHECK VALVES

Check valves for liquid service 3 inches and smaller shall be swing check, bronze body, composition disc, 125-pound service.

2.5 BALL VALVES

All ball valves shall be lead free bronze, full-port type, with a rating of 400 psi W.O.G. The balls shall be chrome-plated lead free brass with Teflon ball seals. Valves shall be connected to the system by means of threaded joints. Valves shall be Watts Regulator, Series FBV, or approved equal.

2.6 COMBINATION AIR AND VACUUM VALVES

The combination air and vacuum release valve shall allow unrestricted venting or re-entry of air, through it, during filling or draining of the pipeline, to prevent water column separation or pipeline collapse during vacuum. The air-vacuum release valve shall incorporate one upper and one lower stainless steel float connected by a common stainless steel float guide, thereby maintaining an air gap between the bottom float and top shut-off float. The internal baffle shall be fitted with a guide bushing and act to protect the shut-off float from direct air flow. The baffle shall retain the 45 Durometer Buna-N seat in place, without distortion, for thigh shut-off. All internals shall be easily removed through the top cover without removing the main valve from the lines. Both floats shall withstand 1,000 psi or more. Valve shall be fitted with blow off valves, quick disconnect couplings and a minimum of 6 feet of hose, to permit back flushing after installation without dismantling the valve. The combination air-vacuum release valves shall be Val-Matic VMC - 301A or approved equal, with a shut-off and outlet valve, unless otherwise noted on the Plans.

2.7 VALVE BOXES

Valve boxes shall be of cast iron, two-piece with tabs, adjustable with O-ring, minimum 5-inch inside diameter with base corresponding to the size of the valve. Valve box shall be painted with coal-tar epoxy by the manufacturer. Cover shall have the word "Sewer" cast into it. Valve boxes shall be Olympic Foundry No. 940 or equal.

2.8 DETECTABLE MARKING TAPE

The Contractor shall furnish and install detectable marking tape over all force mains and service pipes as shown on the Plans. The tape shall extend its full length. Detectable marking tape shall be as manufactured by Pro-Line Safety Products, or equal, and shall be a minimum of six inches in width, a minimum of five mil (0.0050") overall thickness, and shall have no less than 0.35 mil solid aluminum foil core.

The foil shall be visible from both sides of the tape and shall be green in color to identify buried sewer systems and shall be printed to identify same. Printing shall be encased in the plastic jacket to avoid ink rub-off. Adhesives used to bond the plastic jacket to the foil shall not contain any dilutants, pigments, or contaminants and shall be specifically formulated to resist degradation by elements normally encountered in the soil.

PART 3 EXECUTION

3.1 PIPE HANDLING

All types of pipe shall be handled in a manner that will prevent damage to the pipe, pipe lining, or coating. Pipe and fittings shall be loaded and unloaded using hoists and slings in a manner to avoid shock or damage, and under no circumstances shall they be dropped, skidded, or rolled against other pipe. If any part of the coating or lining is damaged, repair thereof shall be made by the Contractor at no additional expense to the Owner and in a manner satisfactory to the Owner. Damaged pipe shall be rejected, and the Contractor shall immediately place damaged pipe apart from the undamaged and shall remove the damaged pipe from the site within 24 hours. Methods of pipe handling and storage shall be corrected by the Contractor should the Owner determine that these methods are damaging to the pipe.

Pipe shall be stacked in such a manner as to prevent damage to the pipe, to prevent dirt and debris from entering the pipe, and to prevent any movement of the pipe. The bottom tiers of the stack shall be kept off the ground on timbers, rails, or other similar supports.

Pipe shall not be strung across driveways, in ditches, or in the construction zone without specific on-site Owner approval.

Valves and fittings shall be stored on pallets or similar materials to keep them off the ground and prevent dirt and debris from entering them.

3.2 EXCAVATION

All earthwork, excavation, bedding, backfill and compaction shall meet the requirements of Section 02300.

3.3 DEWATERING

Dewatering of excavations, if necessary, shall meet the requirements of Section 02240.

3.4 TEMPORARY SHORING AND BRACING

Temporary shoring and bracing, including trench excavation safety systems, shall meet the requirements of Section 02250.

3.5 CUTTING PIPE

Whenever it becomes necessary to cut a length of pipe, the cut shall be made by abrasive saw or by a special pipe cutter. Pipe ends shall be square with the longitudinal axis of the pipe and shall be reamed and otherwise smoothed so that good connections can be made. Oxyacetylene torch cutting of ductile iron pipe shall not be allowed.

3.6 THREADED PIPING

Threads for threaded joint piping shall be neatly cut with sharp tools and jointing procedure shall conform to best practice. Before jointing, all scale shall be removed from pipe by some suitable means such as pounding. After cutting, all pipe shall be reamed. All pipe shall be screwed together with an application of approved pipe compound applied to all male threads. Once a joint has been tightened, it shall not be backed off unless threads are recleaned and new compound applied. This application neatly made; all compound, dirt thoroughly wiped off outside of every joint.

Unions shall be installed in all threaded joint piping to facilitate removal of sections for maintenance, repair in accordance with best trade practice. All such unions shall be included in bid price whether shown on Plans or not.

3.7 PIPE SUPPORTS

Provide all necessary supports, tie rods, bracing, brackets or other types of supports which may be required in order to adequately support and secure piping inside the wet well or valve vault as shown on the Plans.

3.8 VALVES

All valves shall be inspected in the field to ensure proper working order before installation. Valves shall be set and jointed to the pipe in the manner as set forth in the AWWA Standards for the type of connecting ends furnished.

Valves shall have the interiors cleaned of all foreign matter and shall be inspected both in open and closed position prior to installation. Valves and valve boxes shall be set plumb.

All valves with operating nuts located more than 5'-0" below finished grade shall be equipped with extension stems to bring the operating nut to within 18 inches of the finished grade. The extension stem of the length required to meet field conditions shall be a manufactured unit with a 1-inch diameter mild steel rod. At the top of the extension stem there shall be a 2-inch standard operating nut complete with a centering flange.

3.9 VALVE BOXES

The lower casting of the unit is installed first, in a manner as to be supported by a minimum backfill or by a Styrofoam collar not less than 2 inches in thickness. The casting shall not rest directly upon the body of the valve or upon the force main. Backfill shall be carefully tamped around the valve box to a distance of 3 feet on all sides or to the undisturbed face of the trench if it is closer. The cast iron valve box cover shall be set flush with the roadbed or finished paved surface.

The flared end of the valve box shall be set at the bottom elevation of the 2-inch operating nut to allow space for rocks to be moved laterally from the operation nut.

The valve box shall be placed over the valve or valve operator in such a manner that the valve box does not transmit shock or stress loads to the valve. The casting shall not rest directly upon the body of the valve or upon the force main.

The axis of the valve box shall be common with the projected axis of the valve stem. The tops of the adjustable valve boxes shall be set to the existing or established grade, whichever is applicable.

Valve boxes shall be set such that the slots in the boxes and/or ears in the valve box lid are in-line with the run of the pipe being installed.

In areas where the valve box is not in concrete or asphalt, a 24-inch diameter by 4-inch cement concrete block shall be installed around the valve box at finished grade. The valve box shall be flush with the top, and centered.

***** END OF SECTION *****

SECTION 02700

GRAVEL MATERIALS

PART 1 GENERAL

1.1 SCOPE

The work specified in this Section includes the various types of granular materials that are to be used in trenches and other excavations as shown on the Plans and as specified herein.

1.2 RELATED WORK SPECIFIED ELSEWHERE

<u>Section</u>	<u>Item</u>
02300	Earthwork
02305	Wet Weather Earthwork

1.3 SUBMITTALS

The Contractor shall provide certificates of laboratory tests in accordance with Section 8.14 of the General Conditions, indicating particle size distribution for review for each type of granular material furnished and proctor test reports for all material to be placed as pipe bedding material, trench backfill, backfill under and around structures and underneath crushed surfacing and asphalt concrete pavements.

The certificates and proctor test reports shall be provided to the Owner at least 5 calendar days prior to placement.

PART 2 PRODUCTS

2.1 FOUNDATION GRAVEL

Foundation gravel shall be Class A Gravel Backfill for Foundations in conformance with Section 9-03.12(1)A of the WSDOT Standard Specifications.

2.2 GRAVEL BACKFILL FOR PIPE BEDDING

Gravel backfill for pipe bedding shall meet the requirements of Section 9-03.12(3) of the WSDOT Standard Specifications.

Native granular material shall not be utilized for gravel backfill for pipe bedding.

2.3 BANK RUN GRAVEL FOR TRENCH BACKFILL

Bank run gravel for trench backfill shall be free from organic matter or other deleterious materials and in conformance with Section 9-03.19 of the WSDOT Standard Specifications.

2.4 CRUSHED SURFACING

Crushed surfacing base course and top course shall conform to Section 9-03.9(3) of the WSDOT Standard Specifications.

2.5 MISCELLANEOUS GRAVEL

If the Plans call for a gravel that is not herein specified than the gravel shall conform to the type of gravel called for as per the WSDOT Specifications.

PART 3 EXECUTION

3.1 FOUNDATION GRAVEL

Foundation gravel shall be placed and compacted underneath all structures to a minimum depth of 12 inches unless indicated otherwise on the Plans, and to a greater depth where foundations are unstable and excess suitable excavated material is unavailable to stabilize such foundations.

In the event the Contractor unnecessarily overexcavates the pipe trench or structure foundation, or if the width of the pipe trench becomes wider than the pay limit shown on the Plans, all material so placed shall be at the Contractor's sole expense.

3.2 GRAVEL BACKFILL FOR PIPE BEDDING

Bedding material shall be placed simultaneously on both sides of the pipe for the full width of the trench in lifts not exceeding 6 inches. To assure uniform support, the material shall be carefully worked underneath the pipe haunches with a tool capable of preventing the formation of void spaces around the pipe. In the event the Contractor overexcavates the pipe trench, or if the width of the pipe trench becomes wider than the pay limit shown on the Plans, all material so placed shall be at the Contractor's sole expense.

3.3 BANK RUN GRAVEL FOR TRENCH BACKFILL

Bank run gravel for trench backfill shall be used where excavated material is unsuitable or unavailable for the backfill of trenches as approved by the Owner.

In the event the Contractor overexcavates the pipe trench, or if the width of the pipe trench becomes wider than the pay limit shown on the Plans, all material so placed shall be at the Contractor's sole expense.

3.4 GRAVEL BORROW

Gravel borrow shall be used where excavated material is unsuitable or unavailable for the bedding of trenches for rigid pipe as approved by the Owner.

3.5 CRUSHED SURFACING

Crushed surfacing base course and/or top course shall be placed underneath asphalt paving, to the lines and grades shown on the Plans or as required by the Plans and shall be compacted to a dense, unyielding state of at least 95 percent of the maximum dry density, using the modified Proctor, per ASTM D1557.

3.6 GRAVEL BACKFILL FOR DRYWELLS

Gravel backfill for drywells shall be used for backfilling around the drywells, as shown on the Plans and specified in these specifications and shall be compacted to a dense, unyielding state of at least 90 percent of the maximum dry density, using the modified Proctor, per ASTM D1557.

3.7 MISCELLANEOUS GRAVEL

Miscellaneous gravel shall be installed per the Plans.

***** END OF SECTION *****

SECTION 02900

LANDSCAPING

PART 1 GENERAL

1.1 SCOPE

The work specified in this Section includes the installation of all landscaping work as shown on the Plans and as specified herein. Landscaping activities shall include work both at the project location as well as any residential properties that are affected by construction activities.

1.2 RELATED WORK SPECIFIED ELSEWHERE

<u>Section</u>	<u>Item</u>
02300	Earthwork

1.3 SUBMITTALS

A. WATERING SCHEDULE

Prior to Final Acceptance of the Landscaping, the Contractor shall submit a written "watering schedule" to the Owner to ensure adequate watering (summer, fall, winter, and spring) of all plant materials during the 2-Year Guarantee Period of this Contract. Watering shall be by hand and watering truck, unless otherwise directed by the Owner.

B. PLANT PROCUREMENT

The Contractor shall provide all plants of the size, species, variety and quality noted and specified. Submit written documentation to the Owner that all specified plant materials have been ordered. If unavailable, the Contractor shall notify the Owner in writing immediately and provide the names, addresses, and telephone numbers of five nursery suppliers that have been contacted. If substitution should be permitted, it can be made only with the prior written acceptance of the Owner.

C. SOIL ANALYSIS REPORTS

See Section 2.1 and 2.2 of this Specification.

D. SUBGRADE PERCOLATION TEST RESULTS

See Section 3.1 of this Specification.

E. SEED MIX

See Section 2.4 of this Specification.

F. WEED AND PEST CONTROL PLAN

See Section 1.5 of this Specification.

1.4 QUALITY ASSURANCE

A. CONTRACTOR QUALIFICATIONS

All landscaping work shall be performed by a licensed Landscape Contractor registered in the State of Washington and shall be qualified for landscaping work through certification by the Washington Association of Landscape Professionals (WALP).

B. PLANT MATERIAL

Quality, size, and conditions as determined by standards set forth in the American Association of Nurserymen Standard ANSI Z60.1.

C. FERTILIZER

Conform to Washington State Department of Agriculture Laws and Federal Specification O-F-241D pertaining to commercial fertilizers.

1.5 WEED AND PEST CONTROL PLAN

The Weed and Pest Control Plan (WPCP) shall be submitted and approved by the Owner prior to starting any landscape work.

The WPCP shall include scheduling and methods of all control measures described in this Section, including soil preparation methods to meet the required soil surface conditions in the planting areas. The weed control plan shall show general weed control including:

- Hand, mechanical, and chemical methods;
- Timing and frequency;
- Application of herbicides including type, rate, use, and timing; and
- Noxious weed control.

Target weeds and unwanted vegetation to be removed shall be identified and listed in the weed control plan.

The plan shall be prepared and signed by a licensed commercial operator with a Washington State Department of Agriculture (WSDA) Commercial Applicator pesticide license. The plan shall include methods of weed control, dates of weed control operations, and the name, application rate, and Material Safety Data Sheets (MSDS) of all proposed herbicides. In addition, the Contractor shall furnish the Owner with a copy of the current product label for each herbicide/pesticide and spray adjuvant to be used. These product labels shall be submitted with the weed control plan for approval.

All herbicides and/or pesticides must be carefully selected and applied in accordance with U.S. Environmental Protection Agency (EPA), Washington State Department of Ecology (Ecology), WSDA, and local sensitive area ordinances and regulations.

1.6 GUARANTEE

A. GUARANTEE PERIOD

Guarantee work within this Specification for 2 years against all defects of materials and workmanship. The guarantee period begins after the date of Final Acceptance. Replace plants and seed areas not in normal healthy growing condition at the end of guarantee period. Replace with plants with identical species, size, and seed mix. Final Acceptance will be certified in writing by the Owner.

B. DEAD AND DISFIGURED PLANT MATERIAL

Any plant material that is 25 percent or more dead or disfigured shall be considered dead and must be replaced at no charge. A tree shall be considered dead when the main leader has died back or there is 25 percent of the crown dead. Plants shall be considered disfigured when excessive dead wood has been removed or when the symmetry, typical habit of growth, or sculptured form has been impaired by the removal of dead wood.

During the 2-year guarantee period, should any seed areas showing signs of failure such as dead or dying areas of grass or bare spots larger than 6" square, the Contractor shall repair or replace all deficient areas to the satisfaction of the Owner.

C. SEED PLANT REPLACEMENT

All plants are subject to one replacement only per item, and the Contractor shall submit, after each replacement period, a marked planting plan showing the exact location of each item replaced at that time. The owner may require the contractor to replace dead plants prior to the end of the guarantee period at no additional cost. This applies only after Final Acceptance.

Replacements made by the Contractor shall be made in the same manner as specified for the original planting, and shall be done at no extra cost to the Owner.

Replace all trees, shrubs, and groundcovers and seed areas when plants are no longer in a satisfactory growing condition as determined by the Owner for the duration of the guarantee period. Make replacements within 10 working days of notification from the Owner.

D. ACCESS TO PROJECT SITE

Contractor has the right to enter upon the property for inspection and curative treatment of any materials needing such which are still under warranty during the entire guarantee period. The Owner must be notified at least 48 hours in advance of any corrective or curative treatment measures so as to arrange for convenient access to the area.

E. APPLICABLE CONDITIONS

The guarantee shall be applicable to any growing conditions through which plants of like kind could be expected to survive, and any deformity or cause of death which could be attributed to, or affected by, the physiological condition of the plant shall be deemed replaceable cause; however, this would not apply to plant losses due to abnormal weather conditions such as floods, excessive wind damage, drought, severe freezing or abnormal rains, as determined by the National Weather Service.

F. MAINTENANCE DURING GUARANTEE

It is expressly understood that the Contractor will be responsible, during the Guarantee Period, for normal landscape maintenance of the project. Maintenance of the landscape shall include, but not be limited to hand watering, mowing, weeding, monitoring and treating any disease and/or pest-problems, cultivating and any other maintenance requirements, per standard trade practices, to keep the plant materials in a normal healthy growing condition.

PART 2 MATERIALS

2.1 TOPSOIL

The topsoil shall consist of 67 percent sandy loam and 33 percent composted organic material by volume.

The soil shall meet the following requirements:

Soil shall be sandy loam or loamy sand consisting largely of sand, but with enough silt and clay present to give it a small amount of stability. Individual sand grains can be seen and felt readily. On squeezing in the hand when dry, it shall fall apart when the pressure is released; on squeezing when moist, it shall form a cast that does not only hold its shape when the pressure is released, but shall withstand careful handling without breaking.

The mixed soil shall meet the following gradation:

<u>Screen Size</u>	<u>Percent Passing</u>
1/2 inch	100
1/4 inch	95 – 100
#10	85 – 95
#30	60 – 75
#60	50 – 60
#100	20 – 30
#200	5 – 15

Shall have a pH range of 5.5 to 7.5. Soils indicated having a pH below 5.5 shall be treated with dolomitic limestone as necessary to attain this pH range. Soils having a pH greater than 7.5 shall be treated with sulfur as necessary to attain this pH range. The pH shall be determined by soil test.

Organic material shall consist of composted yard debris or organic waste material composted for a minimum of 3 months. Compost shall consist of 100 percent recycled content. In addition, the organic material shall have the following physical characteristics:

1. Shall pass a standard cress test for seed germination (90 percent germination compared to standard).
2. Shall have a pH from 5.5 to 7.5.
3. Shall have a maximum electrical conductivity of 3.0 ohms/cm.
4. Shall have a maximum carbon to nitrogen ratio of 40:1.
5. Shall be certified by the "Process to Further Reduce Pathogens" (PFRP) guideline for hot composting as established by the United States Environmental Protection Agency.

Submit a certified laboratory analysis from an accredited soils testing laboratory indicating the Material source and compliance with all planting soil Specifications to the Engineer for approval before delivery to the Project Site. The analysis shall be with a sample size of no less than 1 pound.

2.2 COMPOST

Composted material shall be derived from a Type 1 feedstock and produced by a facility in compliance with WAC 173-350-220. The compost shall meet Grade AA Compost as defined by Ecology's Interim Guidelines for Compost Quality (Publication #94-38, Revised November 1994). Compost material shall have 100 percent passing a 1/2-inch screen. The carbon to nitrogen ratio (C:N) of the compost shall be in the range of 20:1 to 35:1. Organic matter of the composted material shall be between 4 percent and 10 percent, and the moisture content shall be between 35 percent to 50 percent as determined by ASTM D 2974. The pH of the compost shall be within the range of 5.5 to 7.0 as determined by ASTM D 2976. The maximum electrical conductivity of composted material shall be 6 ohms/cm. Decomposed Organic Compost shall be mature as determined by US Composting Council stability test ratings referred to in the Ch 173-350 WAC. The product shall be tested within 6 months of proposed use.

2.3 ARBORIST WOOD CHIP MULCH

Clean recycled wood chip from tree-trimming, composting operations or wood reclamation operations and shall not contain elements in quantities that would be detrimental to plant life. The product shall be certified free of all plant parasitic organisms, viable weed seeds, heavy metals or parasitic residues.

2.4 SOD

Should sod not be available on the project site the sod shall be of grass sod that is a premium quality, which closely matches existing grass sod in the immediate area. The sod shall be purchased locally and, as such, accustomed to the existing climate and soil conditions of the local area.

2.5 PLANT MATERIALS

A. QUALITY

Genera, species, and variety; quantity, size, and conditions as shown on the Plans.

B. TREES, SHRUBS, AND GROUNDCOVER

All plants shall be nursery grown, or normal habit of growth, healthy, vigorous and free of disease, insect eggs and larvae. Plants shall not be pruned prior to delivery. Plants shall have all leaders and buds intact. Grading of plant material and root ball/container sizes shall be in accordance with the code of standards of the American Landscape and Nursery Association. Names shall conform to accepted nomenclature in the nursery trade.

Trees with multiple leaders, unless specified, will be rejected. Trees with a damaged or crooked leader, bark abrasions, sunscald, disfiguring knots, insect damage, or cuts of limbs over 3/4 inch in diameter that are not completely closed will be rejected.

No less than 10 percent of each variety and/or species of plant delivered to the project shall be accurately labeled. Whether or not labeled, any plants, which do not conform to the Plant Schedule and/or the Plans shall be replaced immediately with appropriate plant type. Plant material labels shall be durable, legible labels stating the correct plant name.

Provide the number of plants shown on the Plans. Collected plant material is not acceptable. Plant material with weeds in the top of the rootballs or containers will be rejected.

Trees grown in fabric bags shall have a well-established root system reaching the sides of the fabric bag to maintain a firm ball when the fabric is removed, but shall not have excessive root growth encircling the fabric bag. Fabric bags shall be entirely removed prior to planting.

PART 3 EXECUTION

3.1 PRODUCT DELIVERY, STORAGE, AND HANDLING

A. DELIVERY

Deliver fertilizer and soil additives to the site in original unopened containers bearing manufacturer's guaranteed chemical analysis, weight, manufacturer's name, trademark, and conformance with state law.

Protect plant material during delivery to prevent damage to root ball, trunks, stems, or desiccation of leaves.

Transport plants in enclosed trucks. Large trees shall be totally wrapped to prevent damage and windburn. Provide adequate protection so that trunks are not scarred in transport and branches are not broken. Tree trunks shall be wrapped with protective covering prior to handling and loading. Covering shall be removed at the time of plant materials inspection at the job site.

B. HANDLING

Exercise care in handling, loading, unloading, and storing of plant materials. Plant materials damaged in any way shall be discarded and replaced with undamaged materials.

C. STORAGE

Protect plant materials from mechanical damage, wind, excessive sun, and drying out. If planting is delayed more than 4 hours after delivery, set plants in shade and keep roots moist by covering with mulch, soil or other acceptable means of retaining moisture.

Protect packaged materials from deterioration during storage.

3.2 SOD

Areas of sod to be removed shall be laid out in square strips of such size as to provide easy handling and matching. The sod shall then be carefully cut along these lines to a depth of 4 inches, taking care to keep all cuts straight and cut all strips to the same width. After the sod has been cut vertically, it shall be removed to a uniform depth of approximately 3 inches with an approved type of sod cutter. This operation shall be performed in such a manner as to ensure uniform thickness of sod throughout the operation.

As the sod stripping proceeds, the sod strips shall be placed in neat piles at convenient locations, and from then on, they shall be maintained in a damp condition until the sod strips are replaced on the lawn. In no case shall the sod remain in piles longer than 10 days before replacement on the lawn.

Prior to replacing the strips of sod, the striped area shall be carefully shaped to proper grade and be thoroughly compacted. Wherever construction operations have resulted in the placement of unsuitable or poorer soils in the areas to be resodded, the surface shall be left low and covered with a minimum of 6 inches of topsoil.

All tools used shall be of the type specially designed for the work and be satisfactory to the Owner. There shall be no separate monies due the Contractor for removing and replacing existing grass sod.

3.3 LANDSCAPE AREA SOIL PREPARATION

Verify that planting bed grades are in accordance with those indicated on the Plans before proceeding with work. Verify that soil conditions are satisfactory for soil preparation work.

Prepare soil no closer than 3 feet from existing tree trunks up to 6 inches in diameter; no closer than 4 feet from existing tree trunks up to 12 inches in diameter; no closer than 6 feet from existing tree trunks larger than 12 inches in diameter.

Loosen compacted soils to a depth of 12 inches. Rake and remove all material larger than 1-1/2 inches in diameter.

Place 2 inches of compost over existing soil, mix and till to a depth of 6 inches. Place additional 6 inches of topsoil on top of this throughout all buffer planting areas.

3.4 INSTALLATION OF PLANTS

Planting should occur in spring or fall of the year and when weather conditions are consistent with good horticultural practice. If container stock looks to be rootbound, slash roots vertically with a sharp knife along outside of ball in three places minimum before planting. Finish grade at plants, after planting and settling, shall afford positive drainage away from crown.

Set all trees, shrubs and groundcovers according to the Plans. Plant trees upright and face to give best appearance or relationship to adjacent public right-of-way or properties.

Excavate all planting holes twice the spread of the tree, shrub, or groundcover root ball or root system. Place 3 inches minimum lightly compacted layer of prepared topsoil under root system of each tree and shrub. Loosen planting hole subsurface to a depth of 4 to 6 inches prior to placement.

Loosen and remove from container as shown on the Plans. Pulling burlap from under balls will not be permitted on large and loose root balls. Cut off cleanly all broken or frayed roots.

Place and compact backfill soil consisting of topsoil carefully to avoid injury to roots, then fill all voids. When hole is nearly filled, completely fill with water and allow water to soak away. Fill holes to finish grade and prepare for other work indicated.

Provide all planting areas with uniform 2-inch layer of mulch over a properly cleaned and graded surface unless otherwise noted on the Plans.

All groundcover plant materials shall be installed continuous under all trees and shrubs as indicated on the Plans.

Fertilize all trees, shrubs and groundcover with Triple 14 slow-release fertilizer. Place fertilizer on surface of mulch around plant. Apply in quantities per manufacturer's specifications.

3.5 PROTECTION

All planting materials shall be properly protected against harm from normal weather conditions and the public by the Contractor until Final Acceptance. Maintenance of all the planted areas until Final Acceptance, shall include, but not be limited to, watering, mowing, weeding, and

pruning as well as replacement of any plants that appear to be in distress. Tree stakes shall be kept secure at all times. Although planting should occur in spring or fall and when weather conditions are favorable, special planting techniques, defoliating, wilt proofing or spray misting may be required should unseasonable planting conditions occur. No work shall be performed in, over or adjacent to planting areas without approved protection and safeguards.

Plant losses due to abnormal weather conditions such as, floods, excessive wind, drought, severe freezing or abnormal rains; as determined by the National Weather Service shall not be the responsibility of the Contractor.

3.6 WEED CONTROL

The Contractor shall use extreme care to ensure chemicals remain within the designated areas. The use of chemical herbicides shall require the use of anti-drift and activating agents and a spray pattern indicator, unless otherwise allowed by the Owner.

All applications of post-emergent herbicides shall be made while green and growing tissue is present. Should unwanted vegetation reach the seed stage in violation of these Specifications, the Contractor shall physically remove and bag the seed heads. All physically removed vegetation and seed heads shall be disposed of offsite at no cost to the Owner.

The Contractor shall assume all responsibility for rendering any area unsatisfactory for planting by reason of chemical application. The Contractor shall replace, repair and pay for all damages caused by their negligence to the satisfaction of the Owner prior to final payment.

3.7 PEST CONTROL

The Contractor shall use extreme care to ensure chemicals remain within the designated areas. The use of spray chemical pesticides shall require the use of anti-drift and activating agents and a spray pattern indicator, unless otherwise allowed by the Owner.

The Contractor shall assume all responsibility for rendering any area unsatisfactory for planting by reason of chemical application. The Contractor shall replace, repair and pay for all damages caused by their negligence to the satisfaction of the Owner prior to final payment.

3.8 CONSTRUCTION ACCEPTANCE

Construction acceptance shall be subject to well-established trees, shrubs, groundcover, and seeded areas that fulfill the requirement of the approved Plans. The Contractor shall protect and care for all plantings until fully established and healthy. Care shall include equipment and labor necessary to provide sufficient and continuous watering of all seeded areas until final acceptance.

Final Acceptance of all landscaping work described in this Specification, with the exclusion of possible replacements of plant materials under the Guarantee, shall be made by the Owner to determine 100 percent completion of the Contract work. This review shall be made upon written request to the Owner no less than 48 hours prior to the anticipated date of inspection.

***** END OF SECTION *****

SECTION 02950

SITE RESTORATION AND REHABILITATION

PART 1 GENERAL

1.1 SCOPE

The work specified in this Section includes areas requiring restoration or rehabilitation as shown on the Plans or specified herein, including those areas that shall be graded, restored with hydroseeding or sod, and areas containing certain improvements and landscaping on the private properties associated with this project. The work also includes repair and replacement of fencing and other property features impacted construction.

Particular care shall be taken to minimize damage to landscaped areas within and adjacent to construction areas. In the event that construction is to be carried out in landscaped areas, appropriate measures shall be taken to restore such areas to conditions existing prior to construction.

Surface restoration type and location are shown on the Plans.

1.2 RELATED WORK SPECIFIED ELSEWHERE

<u>Section</u>	<u>Item</u>
02300	Earthwork
02900	Landscaping

PART 2 PRODUCTS

2.1 FENCING REPAIR

Certain individual site locations will require temporary removal of fencing for site access and construction. The Contractor shall be required to remove and replace existing barbwire, wood, and chain link fences. The Contractor is urged to inspect the construction site so as to ascertain the condition of existing fences. The fences shall be replaced as soon as practicable with matching materials. If existing fence posts are cast in concrete the contractor shall install new fence posts and cast them in place to match the original installation methodology.

2.2 LANDSCAPE ROCK

Landscape rock and landscape fabric shall be installed in areas as shown on the Plans. The landscape fabric shall be of a commercial grade designed to block weed growth. The landscape rock shall be 3- to 6-inch-diameter river rock of uniform color and shall be 4 inches minimum in depth.

2.3 LANDSCAPE BARK

Bark shall be derived from Douglas fir, pine or hemlock species. The bark shall not contain resin, tannin or compounds in quantities that would be hazardous to plant life. Bark shall be large size with greater than 50 percent larger than 4 inches in size.

2.4 LANDSCAPE FABRIC

Landscape fabric shall be heavy duty fabric 4 to 6 ounce per square yard. This material shall be warranted to withstand full sun for 5 years and be able to pass water at 3×10^{-2} cm/sec.

PART 3 EXECUTION

3.1 LANDSCAPE FABRIC AND BARK

Landscape fabric shall be spread smoothly across the final grade and the fabric shall be overlapped by 1 foot. The fabric shall be pinned by jute net pins on an approximate 10-foot grid and along the edge of the fabric.

The bark shall be placed to a depth of 4 inches.

3.2 LANDSCAPED AND IMPROVED AREAS

Certain improvements and landscaping have been placed on the adjacent private properties. Wherever such property is damaged, destroyed, or the use thereof is interfered with due to the operation of the Contractor, it shall be immediately restored to its former condition by the Contractor. Notice should be given to the property owner along the route of construction by the Contractor advising them of the methods he will use to preserve and restore the improvements.

3.3 HYDROSEEDING, GRASS SOD, LANDSCAPING, WATERING MAINTENANCE AND PROTECTION

The Contractor shall water, protect and care for all seeded areas until fully established and healthy. Care shall include equipment and labor necessary to provide sufficient watering of all planted areas until final acceptance.

Watering of hydroseeded, grass sod, and landscaped areas shall be at the Contractor's expense until new plantings are fully established.

The Contractor shall guarantee landscaping materials and workmanship for a period of 2 years following the date of project acceptance. During the 2-year guarantee period, should any planted areas show signs of failure, such as dead or dying areas of grass or bare spots, or any shrubs or trees planted as part of the site restoration fail, the Contractor shall repair or replace all deficient seeded areas and replace all dead shrubs and trees to the satisfaction of the Owner. If any seeded areas or plants require replacement, the Contractor's maintenance and guarantee period applicable to the replaced plants shall extend for an additional 1-year period after the time of the replacement.

The Contractor shall mow all newly established lawn areas a minimum of two mowings. The first mowing shall be performed only after an established and healthy stand of grass is judged to have grown. The second mowing shall occur upon establishment of second healthy stand of grass (4 inches in height).

3.4 FINISHING AND CLEANUP

Before acceptance of the Project, all pipes, manholes, catch basins, and other appurtenances shall be cleaned of all debris and foreign material. After all other work on the Project is completed and before final acceptance, all of the construction areas shall be neatly finished to the lines, grades and cross-sections shown on the Drawings and as hereinafter specified.

In undeveloped areas, the entire area which has been disturbed by the construction shall be shaped so that, upon completion, the area will present a uniform appearance, blending into the contour of the adjacent properties. All other requirements outlined previously shall be met. Slopes, sidewalk areas, planting areas and roadway shall be smoothed and finished to the required cross-section and grade.

Upon completion of the cleaning and dressing, the Project shall appear uniform in all respects. All graded areas shall be true to line and grade as shown on the typical sections and as required by the Owner.

All rocks in excess of 1-inch diameter shall be removed from the entire construction area and shall be disposed of the same as required for other waste material. In no instance, shall the rock be thrown onto private property. Overhang on slopes shall be removed and slopes dressed neatly so as to present a uniform, well sloped surface.

All excess excavated material within the limits of the Project shall be removed entirely. All debris resulting from clearing and grubbing or grading operations shall be removed and disposed.

Drainage facilities, such as inlets, catch basins, culverts, and open ditches, shall be cleaned of all debris resulting from the Contractor's operations.

All pavements and oil mat surfaces, whether new or old, shall be thoroughly cleaned. Existing improvements, such as Portland cement concrete curbs, curb and gutters, walls, sidewalks, and other facilities which have been sprayed by the asphalt cement shall be cleaned to the satisfaction of the Owner.

Castings for manholes, monuments, water valves, lamp poles, vaults, and other similar installations which have been covered with the asphalt material shall be cleaned to the satisfaction of the Owner.

3.5 CONSTRUCTION ACCEPTANCE

The Contractor shall protect and care for all seeded and sodded areas until fully established and healthy. Care shall include equipment and labor necessary to provide sufficient and continuous watering of all seeded areas until final acceptance.

The Contractor shall guarantee landscaping materials and workmanship for a period of 2 years following the date of project acceptance. During the 2-year guarantee period, should any seed areas show signs of failure such as dead or dying areas of grass or bare spots, the Contractor shall repair or replace all deficient areas to the satisfaction of the Owner.

***** END OF SECTION *****

DIVISION 11

EQUIPMENT

SECTION 11000

EQUIPMENT GENERAL PROVISIONS

PART 1 GENERAL

1.1 SCOPE

The provisions of this Section apply to all Sections of Divisions 11, 13, 14, 15, and 16, unless specifically revised therein.

The Contractor shall direct the attention of all subcontractors and suppliers of equipment and related appurtenances for the work to the applicable provisions in the Contract Provisions wherever they may occur. Contractor shall make note of materials and equipment that is provided by the Owner as noted on the Plans and specified herein.

1.2 RELATED WORK SPECIFIED ELSEWHERE

<u>Section</u>	<u>Item</u>
01800	Testing, Commissioning and Training
Division 11	Equipment
Division 13	Special Construction
Division 16	Electrical

1.3 STANDARDS FOR THE WORK

Pipe, fittings, wiring and supports shall be provided to produce complete, operable systems with all elements properly interconnected as shown in schematic diagrams or to provide specified operations. If a specific dimensioned location is not shown for interconnections or smaller system elements, the Contractor shall select appropriate locations and show them on Shop Drawing submittals for review.

Equipment and material shall be new and without imperfections and shall be erected in a neat and workmanlike manner; aligned, leveled, cleaned and adjusted for satisfactory operation; installed in accordance with the recommendations of the manufacturers and the best standard practices for this type of work so that connecting and disconnecting of piping and accessories can be readily made and so that all parts are easily accessible for inspection, operation, maintenance and repair. Oil and lubrication fittings shall be located clear of and away from guards, base, and equipment and within reach from the operating floor. In order to meet these requirements with equipment as furnished, minor deviation from the Plans may be made as authorized by the Engineer. All such minor deviations from

the Plans that may include extending oil and lubrication fittings for accessibility and safety shall be executed at no additional cost to the Owner.

1.4 MANUFACTURER'S INSTRUCTIONS

The recommendations and instructions of the manufacturers of products used in the work are hereby made part of these Specifications, except as they may be superseded by other requirements of these Specifications.

1.5 SUBMITTALS

Product Submittals shall be provided to the Engineer for all equipment that is provided by the Contractor and specified in Divisions 11, 13, 14, 15, and 16, in accordance with Specification 8.14 of the General Conditions, this Section and the respective equipment specification section. Submittals shall be dated and signed as certified for use in construction of this project.

PART 2 PRODUCTS

2.1 DESIGN

All equipment shall be designed for the service intended, of rugged construction, of ample strength for all stresses which may occur during fabrication, transportation, erection and during continuous or intermittent operation, shall be adequately stayed, braced and anchored, and shall be installed in a neat and workmanlike manner. Appearance, safety, and utility shall be given consideration in the design of equipment. Materials of construction shall be cathodically compatible.

2.2 STANDARD REQUIREMENTS

A. MATERIALS

Design, fabricate and assemble equipment and systems with new materials and in accordance with acceptable engineering and shop practices. Manufacture individual parts to standard sizes and gauges so repair parts can be installed in the field. Make like parts of duplicate units interchangeable. Do not place equipment in service at any time prior to delivery except as required for factory or shop tests.

B. UNIFORMITY

Unless otherwise specified, equipment or material of the same type or classification used for the same purpose shall be the product of the same manufacturer and shall be the same model.

C. STANDARDS

Provide equipment and materials suitable for service conditions and meeting standard requirements of ANSI, ASME, AWWA, ASTM, NEMA, IBC, NPC, UL and OSHA.

2.3 LUBRICATION

Provide lubricants of types recommended by equipment manufacturers, in quantities sufficient for a minimum of 1-year's consumption prior to completion, testing and final acceptance.

2.4 EQUIPMENT BASES AND BEDPLATES

Mount equipment assemblies on a single heavy cast iron or welded steel bedplate on a grout or concrete base unless otherwise shown or specified. Provide bases and bedplates with machined support pads, vibration pads, tapered dowels for alignment or mating of adjacent items, adequate openings to facilitate grouting, and openings for electrical conduits. Corners shall be rounded or chamfered and ground smooth. Continuously weld seams and contact edges between steel plates and shapes, and grind welds smooth. Do not support machinery or piping on bedplates other than that which is factory installed. Provide leveling screws in equipment bases and bedplates to aid in leveling prior to grouting.

2.5 ANCHORS AND FASTENERS

Each equipment manufacturer shall furnish the required anchor bolts, nuts and washers of adequate design for securing bases and bedplates to concrete bases. Provide anchor bolts of length to allow for 1-1/2 inch of grout under baseplates and adequate anchorage into structural concrete unless otherwise shown or specified. The manufacturer shall submit to the Engineer design calculations regarding recommended sizing and type of anchor bolts, nuts, and washers for securing the equipment, in accordance with the project seismic requirements.

Anchor and assembly bolts and nuts shall be of ample size and strength for the purpose intended. All nuts, bolts and washers shall be Type 316 stainless steel. All leveling nuts shall be Type 316 stainless steel.

All motor-driven equipment shall be furnished with cast-in-place anchor bolts or drilled-in anchors set with epoxy adhesive. Do not provide expansion type anchors for motor-driven equipment, or equipment or piping subject to vibration.

Expansion type anchors are not to be used for any submerged applications unless specifically noted on the Plans.

Anchor all non-motor-driven equipment with cast-in-place anchor bolts or drilled-in anchors set with epoxy adhesive except that, where specifically allowed by note on the Plans, expansion type anchors may be used.

2.6 LIFTING EYES

All equipment weighing over 100 pounds shall be supplied with lifting eyes. Parts of equipment assemblies, which are normally serviced separately, such as motors, shall have individual lifting eyes.

2.7 ELECTRICAL COMPONENTS

Equipment shall be manufactured, fabricated and installed in a manner which permits conduit connection to electrical power and control equipment from below the connection point, terminal box, or connection box without offsets or bends such that the conduit will drain away from the equipment.

Electric motors, control panels, accessories, etc., shall conform to the requirements of Divisions 11, 12, 13, 14, 15 (Equipment items) and Division 16, Electrical.

If any motor fails during the warranty period, the Contractor shall replace the motor with a new motor. Rewinding a failed motor shall not be acceptable.

All electrical components shall be recognized or labeled and listed by a recognized electrical testing laboratory for the application, or approved by the Washington State Department of Labor and Industries for installation on the Project.

2.8 NAMEPLATES/DATA PLATES/IDENTIFICATION

Each piece of equipment and its driver shall be furnished with a stainless steel metal nameplate fastened to the item in an accessible position. This nameplate shall contain the manufacturer's name, equipment rating, capacity, size, model, serial number and speed. Data for motors shall be

NEMA standard. All information written or printed shall be in English. Each item of equipment shall bear a different serial number. Measurement units shall be given for ratings and capacity.

Nameplates for tanks and pressure vessels shall give working pressure, test pressure, vessel plate thickness and ASME Code data.

Each piece of rotating equipment shall have a direction of rotation arrow.

Each piece of equipment shall be labeled using a plastic laminate label with the functional name and number of the equipment shown on the Plans or provided by the Engineer. Name and number shall correspond to those used on Motor Control Centers and Panels.

Labels shall be fastened to the equipment base or other acceptable location. The letters shall be at least ½-inch high with a border trim on all sides not less than ¼-inch. Color shall be green background with white letters. Fasteners shall be brass or stainless steel screwed into inserts, anchor shields or tapped holes in equipment or base.

Units of measure shall be shown on the indicating and totalizing dials of all meters, gauges and other measuring devices.

2.9 PROTECTION AGAINST ELECTROLYSIS

Where dissimilar metals are used in conjunction with each other, suitable insulation shall be provided between adjacent surfaces so as to eliminate direct contact and any resultant electrolysis. The insulation shall be bituminous impregnated felt, heavy bituminous coatings, non-metallic separators or washers. Connections of dissimilar piping materials shall utilize dielectric unions, flanges, couplings or bushings.

2.10 NOISE

Mechanical and electrical equipment shall not create sound levels that are in excess of that permitted by WISHA for 8 hours per day worker exposure unless otherwise noted for the specific piece of equipment involved.

PART 3 EXECUTION

3.1 INSPECTION

Inspect each item of equipment for damage, defects, completeness, and correct operation before installing. Inspect previously installed related work and verify that it is ready for new equipment installation.

3.2 PREPARATION

Prior to installing equipment, ensure that the areas are clean and that concrete or masonry operations are completed. Maintain the areas in a broom-clean condition during installation operations. Clean, condition, and service the equipment in accordance with the Operation and Maintenance Instruction Manuals and specific requirements included in applicable Sections of these Specifications.

3.3 SPARE AND LOOSE PARTS

Prior to equipment startup provide an inventory of spare and loose parts supplied under the project. Turn over inventory and parts to the Owner. The Owner's written acknowledgment of receipt is required for project completion. Loose parts are defined as items such as special tools, keys, safety equipment, and portable equipment.

3.4 INSTALLATION

A. EQUIPMENT

Equipment shall conform to the approved submittals and Operation and Maintenance Instruction Manuals. Employ skilled craftsmen experienced in installation of the types of equipment specified. Use specialized tools and equipment, such as precision machinist levels, dial indicators, gauges, and micrometers, as applicable. Produce acceptable installations free of vibration or other defects.

B. ANCHOR BOLTS

Deliver bolts with templates or setting drawings and verify that bolts are correctly located before structural concrete is placed. Prior to assembly, the Contractor shall coat all stainless steel bolts and nut threads with anti-seizing compound.

C. BASE AND BEDPLATE GROUTING

Do not place grout until initial fitting and alignment of connected piping is completed. Level and align equipment on the concrete foundations, then entirely fill the space under base or bedplates with grout. Bevel exposed grout at 45-degree angle, except around exposed grout at horizontal surfaces for drainage. Trowel or point exposed grout to a smooth, dense finish and damp cure with burlap for 3 consecutive days. When grout is fully hardened, remove jacking screws and

tighten nuts on anchor bolts. Check the installation for alignment and level, and perform corrective work as required to conform to the tolerances given in the applicable Operation and Maintenance Instruction Manual.

The Contractor shall make an allowance of at least 1-1/2 inches for grout under the equipment bases, whether or not shown on the Plans. Shims used to level and adjust the bases shall be steel. Shims may be left embedded in the grout, in which case they shall be installed neatly and so as to be as inconspicuous as possible in the complete work. Unless otherwise authorized, all grout shall be a non-shrink, non-metallic grout as stated in Section 03300.

Where practicable, the grout shall be placed through the grout holes in the equipment base and worked outward and under the edges of the base and across the rough top of the concrete foundation to a peripheral form so constructed as to provide a suitable chamfer around the top edge of the finished foundation.

3.5 EQUIPMENT STARTUP AND ADJUSTMENT

The Owner has arranged for an authorized factory-trained representative of the company or companies supplying the various items of pre-procured equipment as detailed in Appendix B and Appendix C. The Contractor shall schedule startup of the equipment with the factory trained representatives once the equipment has been installed. The manufacturer's representative shall:

- Supervise the equipment installation in accordance with the Operation and Maintenance Instruction Manual.
- Be present when the equipment is first put into operation.
- Inspect, check, adjust as necessary, and approve the installation.
- Repeat the inspection, check and adjust until all trouble or defects are corrected and the equipment installation and operation are acceptable.
- Witness and supervise operational demonstrations and system validation tests to the extent specified.
- Prepare and submit the specified Manufacturer's Affidavit.

The Contractor shall give initial lubrication to all equipment in accordance with the manufacturer's recommendations.

The manufacturer shall provide a formal test procedure and report forms for recording data. The Contractor shall submit the report forms to the Engineer prior to operational testing.

All equipment shall be field tested and demonstrated to the Engineer that proper operation and capacity have been fully complied with. For pumps, this shall include measurement of suction and discharge pressure at the pump and measurement of pumping rate by volumetric means, or through a suitably calibrated meter for two points on the performance curve. Current draw and voltage on the motor for each phase shall be measured for each pumping rate measurement. For two-speed pumps, such tests shall be conducted at both speeds. For variable speed pumps, blowers or fans, these tests shall be conducted at minimum and maximum speeds and at the specified duty point.

The Contractor shall furnish and test equipment or measuring devices (including portable flow meters) required that are not part of the permanent installation. Tests for variable speed pumps, blowers, and other equipment shall be performed at 60 Hz and at the initial anticipated flow or capacity levels.

The field test shall demonstrate under all conditions of operation that the equipment:

- Has not been damaged by transportation or installation.
- Has been properly installed.
- Has no mechanical defects.
- Is in proper alignment.
- Has been properly connected.
- Is free of overheating of any parts.
- Is free of vibration in excess of the limits in Section 11010.
- Is free of excessive noise.
- Is free of overloading of any parts.
- Shall operate as specified with the specified control system.

- Is free of critical speeds as specified in Section 11010.

In addition, the entire facilities shall be demonstrated to be in full operating order prior to the acceptance of the work. Should any equipment or part thereof fail to operate as intended, it shall be immediately removed and replaced, all at the Contractor's expense.

Equipment start-up and adjustment shall take place before instruction of the Owner's personnel is performed.

3.6 SOUND LEVEL TESTING

Measure the sound level developed by all mechanical and electrical equipment provided under the Contract Provisions. Perform testing in all rooms and spaces containing such equipment during the final operation test program with all equipment operating. Use OSHA approved instruments and record the highest sound levels developed when measured according to OSHA standards in each room and space. Deliver a certified copy of records to the Engineer.

***** END OF SECTION *****

SECTION 11313

SUBMERSIBLE CENTRIFUGAL PUMPS

PART 1 GENERAL

1.1 SCOPE

The work specified in this Section includes installation of new submersible non-clog centrifugal pumps with guide rails, supports, discharge connection elbow and frame, lifting cable, and any other appurtenances required for a complete and workable system, as shown on the Plans and as specified herein.

1.2 RELATED WORK SPECIFIED ELSEWHERE

<u>Section</u>	<u>Item</u>
01800	Testing, Commissioning, and Training
11000	Equipment General Provisions
Division 16	Electrical

1.3 EQUIPMENT LIST

Equipment numbers are as follows:

<u>Item</u>	<u>Equipment Number</u>
Grinder Pump No. 1A	01 GP 01
Grinder Pump No. 1B	01 GP 02
Grinder Pump No. 2A	02 GP 01
Grinder Pump No. 2B	02 GP 02
Grinder Pump No. 3A	03 GP 01
Grinder Pump No. 3B	03 GP 02
Grinder Pump No. 4A	04 GP 01
Grinder Pump No. 4B	04 GP 02

PART 2 PRODUCTS

Pumps will be provided by the Owner as detailed in Appendix B and installed by the Contractor. Contractor shall be responsible for transportation of the pumps to the site from the District's Operations Headquarters at 6830 185th Street NE, Kenmore, WA 98028.

PART 3 EXECUTION

3.1 INSTALLATION

Submersible pumps shall be installed as shown on the Plans and in strict accordance with pump manufacturer's instructions and recommendations. Pump base shall be installed using Type 316 stainless steel fasteners.

3.2 FIELD TESTING

The Contractor shall perform the field testing described in Sections 01800 and 11000.

Each pump shall be field tested when the installation is complete. The field test shall be made by the Contractor in the presence of and as directed by the Engineer. Voltage, amperage draw on each phase of power, flow capacity, discharge pressure and other significant parameters shall be recorded. The manufacturer shall provide a formal test procedure and report forms for recording data. The Contractor shall submit the report forms to the Engineer prior to operational testing.

Any defects in the equipment or failure to meet requirements of the Specification shall be promptly corrected by the Contractor.

***** END OF SECTION *****

DIVISION 13
SPECIAL CONSTRUCTION

SECTION 13422
FLOAT SWITCHES

PART 1 GENERAL

1.1 SCOPE

The work specified in this Section includes installing float switches and associated equipment as shown on the Plans and as specified herein.

1.2 RELATED WORK SPECIFIED ELSEWHERE

<u>Section</u>	<u>Item</u>
01800	Testing, Commissioning and Training
11000	Equipment General Provisions
Division 16	Electrical

1.3 EQUIPMENT LIST

Equipment numbers are as follows:

<u>Item</u>	<u>Equipment Number</u>
Grinder Pump Station 1 Pumps Off Float Switch	01 SLS 01
Grinder Pump Station 1 Pump On Float Switch	01 SLS 02
Grinder Pump Station 1 High Level Float Switch	01 SLS 03
Grinder Pump Station 1 Pumps Off Float Switch	02 SLS 01
Grinder Pump Station 1 Pump On Float Switch	02 SLS 02
Grinder Pump Station 1 High Level Float Switch	02 SLS 03
Grinder Pump Station 1 Pumps Off Float Switch	03 SLS 01
Grinder Pump Station 1 Pump On Float Switch	03 SLS 02
Grinder Pump Station 1 High Level Float Switch	03 SLS 03
Grinder Pump Station 1 Pumps Off Float Switch	04 SLS 01
Grinder Pump Station 1 Pump On Float Switch	04 SLS 02
Grinder Pump Station 1 High Level Float Switch	04 SLS 03

1.4 DELIVERY, STORAGE AND HANDLING

All equipment delivered to the site shall be stored as specified in accordance with the manufacturer's instructions.

PART 2 PRODUCTS

Float switches will be provided by the owner as detailed in Appendix C.

PART 3 EXECUTION

3.1 FLOAT SWITCH INSTALLATION

The vertical float switch(es) shall be installed as shown on the Plans and in strict accordance with the manufacturer's recommendations. The switch(es) shall be mounted and positioned according to the manufacturer's recommendations and at heights as directed by the Engineer unless noted otherwise on the Plans. It shall be suspended at the proper position to hang or float depending on the liquid level.

Mounting components shall be anchored securely and shall be Type 316 SS Unistrut or equal. Unistrut shall be compatible with the desired wall mounting location.

3.2 FIELD TESTING

The Contractor shall perform the field testing described in Sections 01800 and 11000. The field test shall ensure that the equipment will operate as desired under field conditions. The manufacturer shall provide a formal test procedure and report forms for recording data. The Contractor shall submit the report forms to the Engineer prior to operational testing. Any defects in the equipment or failure to meet requirements of the Specification shall be promptly corrected by the Contractor.

***** END OF SECTION *****

DIVISION 16
ELECTRICAL

SECTION 16050

BASIC ELECTRICAL MATERIALS AND METHODS

PART 1 GENERAL

1.1 SCOPE

The work specified in this Section includes the requirements and methods for furnishing and installing the basic electrical materials, and other associated items as shown on the Plans, and as further specified herein.

1.2 RELATED WORKS SPECIFIED ELSEWHERE

<u>Section</u>	<u>Item</u>
01800	Testing, Commissioning, and Training
02300	Site Earthwork
11000	Equipment General Provisions
Division 16	Electrical

1.3 DEFINITIONS

A. CONCEALED AREAS

Locations that are underground, within walls, or within other areas that do not allow full entry of personnel are considered concealed. Concealed areas are not exposed (see EXPOSED AREAS) or accessible.

B. CONTROL PANELS

Control Panels shall be defined as enclosures that contain electrical devices capable of controlling, altering, indicating or displaying the function or conditions of electrical circuits. Unlike junction boxes, Control Panels are not just used for the redirection or reconnection of electrical circuits.

C. CONVENIENCE RECEPTACLES

120 Vac general-purpose receptacles that are not dedicated to a specific function or piece of equipment. Receptacles dedicated to computers, heat tracing, fans, louvers, and etc., are not considered convenience receptacles.

D. DAMP AREAS

Damp areas are considered wet (see WET AREAS).

E. DEDICATED RECEPTACLES

Dedicated receptacles are provided for a specific receptacle load such as computers, heat tracing, fans, louvers, metering pumps, sump pumps, and etc. Dedicated receptacles are not intended for general use.

F. DRY AREAS

Locations not normally subject to dampness or wetness. A location classified as dry may be temporarily subjected to dampness or wetness, as in the case of a building under construction (see FINISHED AREAS).

Rooms containing process water, chemical piping, or related equipment are not considered DRY. Areas that are not considered DRY are considered WET.

G. EXPOSED AREAS

Locations that are visible, outdoors, or exposed to a process or room environment. Exposed areas are not concealed (see CONCEALED AREAS).

H. HAZARDOUS AREAS

Class I, Divisions 1, and 2; Class II, Divisions 1 and 2; Class III, Divisions 1 and 2 locations where fire or explosion hazards may exist due to flammable gases or vapors, flammable liquids, combustible dust, or ignitable fibers or flyings (reference National Electrical Code, Article 500).

I. INDOOR AREAS

Confined locations where the equipment is normally protected from wind, dust, rain, snow, and other natural elements. INDOOR areas are not the same as DRY areas.

J. LEGALLY REQUIRED STANDBY SYSTEMS

Those systems required and so classed as legally required to have standby power by Government requirements. All projects have a generator or receptacle for a generator are considered to be a legally required standby system unless stated otherwise.

K. OUTDOOR AREAS

Locations where the equipment is normally exposed, or partially exposed, to weather in the form of wind, dust, rain, snow, and other natural elements.

L. PROCESS AREAS

Process areas are those areas that are directly exposed to process moisture, or that may be subjected to moisture in the event of a process leak or failure. They typically include pump rooms, chemical rooms, and direct process-exposure areas such as clearwells, open filters, and reservoirs. Process areas are considered WET.

M. SHOP FABRICATED

Manufactured or assembled equipment for which a UL test procedure has not been established.

N. SOFT START MOTOR CONTROLLERS

See SOLID STATE MOTOR CONTROLLERS in this Section.

O. SOLID STATE MOTOR CONTROLLERS

Solid State motor controllers provide an electronically controlled acceleration and deceleration of AC squirrel-cage induction motors. Once the motor has reached full speed, the electronics are switched off and replaced with a motor drive contactor that connects the motor directly to line power, thus assuring continuous full voltage to the motor. Solid State motor controllers are also referred to Soft Start motor controllers.

Solid State motor controllers do not alter the sine wave *frequency* to the motor; instead they alter the portion of the sine wave that reaches the motor. This controls the amount of power sent to the motor and affects the motor's ability to create torque. The

electronic Solid State control is only used during acceleration and deceleration. During acceleration the controller switches the waveform from 0 up to 100 percent (full voltage) and during deceleration switches the waveform from 100 down to 0 percent (no voltage).

P. VIBRATING EQUIPMENT

Equipment that is subject to vibration under normal operating conditions, such as motors, transformers, electrically operated valves, etc.

Q. WET AREAS

Locations outdoors, underground, directly or indirectly exposed to the process, in concrete slabs or masonry in direct contact with the earth, or in any other way subject to saturation with water or other liquids.

1.4 REFERENCES

Unless otherwise noted, the requirements of the following code-making authorities and standard organizations apply:

<u>References</u>	<u>Title</u>
AISI	American Iron and Steel Institute
ANSI	American National Standards Institute
ASTM	American Society for Testing and Materials
ASTM A36	Specification for Structural Steel
ETL	Electrical Testing Laboratories, Inc.
FM	Factory Mutual System
ICEAO	Insulated Cable Engineers Association
IEEE	Institute of Electrical and Electronics Engineers
IES	Illuminating Engineering Society of North America
ISA	Instrument Society of America
JIC	Joint Industrial Council
JIC EMP-1	Mass production Equipment
LPI	Light Protection Institute
NEC	National Electric Code
NEMA	National Electrical Manufacturers Association
NEMA ICS-1	General Standards for Industrial Control and Systems
NEMA ICS-2	Industrial Control Devices, Controllers and Assemblies
NEMA ICS-6	Enclosures for Industrial Controls and Systems
NFPA	National Fire Protection Association

NRTL	National Recognized Testing Laboratory
OSHA	Occupational, Health, and Safety Administration
UL	Underwriters Laboratories, Inc.
UL 508	Safety Industrial Control Equipment
UL 698	Industrial Control Equipment for Use in Hazardous Locations
WAC 296-46B	Washington Administrative Code, Electrical Safety Standards, Administration, and Installation

In case of conflict or disagreement between codes, standards, laws, ordinances, rules, regulations, plans, and specifications, the more stringent condition shall govern.

1.5 SUBMITTALS

- A. Submit under provisions of Section 8.14 of the General Conditions.
- B. Prior to submittal of shop plans, coordinate all electrical equipment, particularly motor control equipment, process and control panels, and instrumentation, with related manufacturers and with other applicable equipment and systems specified in other divisions of the Specifications.
- C. Provide submittals in the following manner:
 1. Organize the submittals by CSI code type.
 2. Clearly show the Tag Number associated with each submittal within each CSI grouping.
 3. Include non-tagged devices such as grounding systems, conduits, wireway, ductbank details, wire, cable, boxes, fittings, switches and receptacles.
 4. Clearly show the specific part, part number, order code, etc. associated with the device. Use pointers, highlights, circles, etc. to clearly identify the specific part.
 5. Submit on distribution equipment, including but not limited to: Unit substations, Medium voltage switching equipment, motor control centers and control equipment, low voltage switchboards, safety switches, dry-type (specialty) transformers, panelboards, and grounding.
 6. Submit on generators and automatic transfer switches.

7. Submit on lamps, lighting, site lighting, and wiring devices.
- D. Provide manufacturer's product technical data including, but not limited to:
1. Manufacturer's name, address, and contact number.
 2. Manufacturer's product descriptive bulletin.
 3. Nameplate data, current, voltage, load, impedance, and other electrical data pertinent to the Project and necessary to assure compliance with the Specifications and Plans.
- E. Provide elementary wiring diagrams for the electrical control systems showing the wiring of electrical control items, such as starters, control systems, interlocks, switches, and relays as they apply to this Contract.
- F. Provide schematic interconnection diagrams.
- G. Use diagrams and symbols in shop plans, which conform to JIC Electrical Standards for Industrial Equipment and/or NEMA, ICS, ANSI, and IEEE standards, latest revisions. Prepare plans on 22" x 34", or ANSI size A, B, or D in a format similar to the Contract Documents or other nationally recognized drawing standard.
- H. Clearly, indicate on submittals that the equipment or material is NRTL listed or is constructed of listed or recognized components. Where a NRTL standard has not been established, clearly identify that no NRTL standard exists for that equipment.
- I. OPERATION AND MAINTENANCE MANUALS
- Manuals for the electrical system shall consist of 3-ringed, expandable metal hinge binders labeled with the job name and the Contractor's name.
1. Provide tab dividers for each major type of equipment. Each divider shall contain detailed information, plans, diagrams, description of operation, and instructions for installing, operating, and maintaining the equipment installed in Division 16.

2. Provide a table of contents listing each tab divided section and its contents.
 3. In each section, compile a spare parts list and supplier index.
 4. Assemble records of all tests, measurements, and calibration settings made for each device.
- J. Upon completion of the work, provide Record (“As Built”) Plans. Fold, punch, and insert these records into the manual after they are reviewed by the Engineer by folding and punching 11" x 17" or smaller plans and folding larger sheets, and placing in plastic sleeves in manual.

1.6 SYSTEM DESCRIPTION

- A. Provide the labor, materials, and equipment necessary to furnish, install, and place into operation complete power, lighting, control, alarm, communications, and instrumentation electrical system of this Contract as shown on the Plans or Specifications herein.
- B. Provide a functioning system(s) in compliance with manufacturer's instructions, performance requirements as specified or indicated, and modifications resulting from reviewed shop plans and field coordinated plans.
- C. Provide complete wiring and controls for all equipment specified under other divisions and that comply with Division 16.
 1. Connect motors, controls, meters, and any other electrical device installed or provided as part of the project.
- D. Pay and make arrangements for necessary permits, licenses, and inspections.

1.7 QUALITY ASSURANCE

A. TESTING AGENCY QUALIFICATIONS

A “Nationally Recognized Testing Laboratory” (NRTL) as defined in OSHA Regulation 1910.7, or a full member company of the InterNational Electrical Testing Association (NETA).

1. Testing Agency Field Supervision: Use persons currently certified by NETA or the National Institute for Certification in Engineering Technologies, or equal, to supervise onsite testing specified in Part 3.
- B. Comply with NFPA 70 (NEC) for components and installation.
- C. LISTING AND LABELING

Provide products specified in this Section that are listed and labeled.

1. The Terms "Listed and Labeled:" As defined in the National Electrical Code, Article 100.
2. Listing and Labeling Agency Qualifications: A NRTL as defined in OSHA Regulation 1910.7.

1.8 DELIVERY, STORAGE AND HANDLING

See Section 01600. Ensure that equipment is not used as steps, ladders, scaffolds, platforms, or for storage – either inside or on top of enclosures. Protect nameplates on electrical equipment from being defaced. Repair or replace damaged, corroded, and rejected items at no additional cost to the Owner.

PART 2 PRODUCTS

2.1 ACCEPTABLE MANUFACTURERS

- A. Refer to individual Division 16 sections.
 1. Similar equipment shall be provided by only one manufacturer throughout the project unless otherwise noted in the Specifications.
- B. Submit requests for substitution in accordance with Section 8.14 of the General Conditions.
- C. Trade names and catalog numbers may be used in the Plans or Specifications to establish quality standards and basis of design:
 1. Other listed manufacturers in the applicable specification sections with equal equipment may be acceptable.

2.2 GENERAL PRODUCT REQUIREMENTS

- A. Except as otherwise indicated, provide new materials and equipment, which are standard products of manufacturers, regularly engaged in production of such equipment. Provide material or equipment approved and labeled for the purpose for which it is to be used by NRTL or other organizations acceptable to the State of Washington Department of Labor and Industries.
- B. Where voltage, current, power, temperature or other ratings are specified that do not correspond to standard ratings of the manufacturer selected by the Contractor, furnish the next rating level which is more conservative or increases the capacity of the device or material in question.
- C. Furnish materials, devices, and equipment that are non-corrosive or coat them in a manner that renders them non-corrosive and acceptable to the Engineer. Do not provide materials, which contain polychlorinated biphenyls, asbestos, or other hazardous or detrimental materials. Do not install materials in a location or construction manner that produces galvanic action or do not install material combinations with corroding or eroding action.
- D. Where changes in the work, or substitutions in material are proposed, ensure that sizes, weights, openings, etc., are provided that do not require changes in the work outside this Division.
- E. All terminals shall be rated 75 degrees C (minimum).

2.3 FABRICATION

- A. When equipment is shop fabricated specifically for this Project, use electrical devices and enclosures, which are NRTL, listed and labeled or recognized.
- B. SHOP OR FACTORY FINISHES
 - 1. See Division 11 and Section 09900.
 - 2. Interiors of other painted electrical equipment shall be either white or light gray.
- C. Fabricate equipment or devices in the field equivalent in every respect to manufactured items used for the same purpose. Where

cutting, drilling, grinding, etc., is done to galvanize or painted metal, regalvanize, or paint to match original finish.

2.4 SUPPORTING DEVICES

A. Channel and angle support systems, hangers, anchors, sleeves, brackets, fabricated items, and fasteners are designed to provide secure support from the building structure for electrical components.

1. **Material**

Steel, except as otherwise indicated, protected from corrosion with zinc coating, cadmium plating, or with treatment of equivalent corrosion resistance using approved alternative finish or inherent material characteristics.

2. **Metal Items for Use Outdoors or in Damp Locations**

Hot-dip galvanized steel, or stainless steel, except as otherwise indicated.

B. **ANCHORS**

Cadmium plated or galvanized steel in dry areas; stainless steel or hot dipped galvanized steel in wet areas.

1. Lag screws or Type A tapping screws for wood.
2. Rockwell "well-nut" for light loads in masonry.
3. Thru-bolt with fender washers for heavy loads in masonry.
4. Toggle bolts with springhead for hollow partitions.
5. Self-drilling anchors with threaded studs for concrete.
6. Clamps or U-bolts for structural steel.
7. Self-drilling anchors with extension rods for hollow tile over concrete.

C. SHEET-METAL SLEEVES

0.0276 of an inch or heavier galvanized sheet steel, round tube, closed with welded longitudinal joint.

D. PIPE SLEEVES

ASTM A53, Type E, Grade A, Schedule 40, galvanized steel, plain ends.

2.5 ELECTRICAL IDENTIFICATION

A. MANUFACTURER'S STANDARD PRODUCTS

Where more than one type is listed for a specified application, selection is Installer's option but provide single type for each application category. Use colors prescribed by ANSI A13.1, NFPA 70, and Specifications.

B. COLORED ADHESIVE MARKING TAPE FOR RACEWAYS, WIRES, AND CABLES

Self-adhesive vinyl tape, not less than 3 mils thick by 1 inch wide.

C. UNDERGROUND LINE WARNING TAPE

Provide bright-colored, vinyl tape not less than 3 mils thick by 6 inches wide compounded for direct-burial service with permanent and continuous print.

D. TAPE MARKERS

Vinyl or vinyl-cloth, self-adhesive, wraparound type with preprinted numbers and letters.

E. COLOR-CODING CABLE TIES

Type 6/6 nylon, self-locking type. Colors to suit coding scheme.

F. FASTENERS FOR PLASTIC-LAMINATED AND METAL SIGNS

Self-tapping stainless-steel screws or No. 10/32 stainless-steel machine screws with nuts and flat and lock washers.

G. FLASH PROTECTION WARNING

Provide Arc Flash Warning Label on all equipment as required by 110.16 NEC (2014). The label is to contain the following text:

WARNING or DANGER
Arc Flash Hazard!
Follow requirements in NFPA
70E for safe work practices and
appropriate PPE. Failure to
comply can result in death or
injury.

2.6 TOUCHUP PAINT

Use touchup paint on equipment provided by equipment manufacturer and select color to match existing equipment finish.

A. FOR NON-EQUIPMENT SURFACES

Matching type and color of undamaged, existing adjacent finish.

B. FOR GALVANIZED SURFACES

Zinc-rich paint recommended by equipment manufacturer.

PART 3 EXECUTION

3.1 ELECTRICAL SUPPORTING METHODS

A. WET AREAS

1. For pullboxes and equipment vaults, reference Specification Section 16130.
2. For wet areas which are not pullboxes or equipment vaults, hot-dip galvanized materials, stainless steel materials, or nonmetallic, U-channel system components unless otherwise noted on the Plans.

B. DRY AREAS

Hot-dip galvanized materials unless otherwise noted on the Plans.

C. METHODS

Support raceway, equipment, and devices from framing members or building structure with sufficient clearance for maintaining and servicing. Provide backing plates, and/or framing material to support equipment, devices, and materials, which are located between the building or facility structure-framing members.

3.2 RECORDS

- A. Maintain and annotate on the job at all times a separate set of Record Drawings in accordance with the General Conditions. Show changes from the Contract Documents, routing of hidden raceways, actual fixture and equipment locations, equipment sizes and dimensions and building outline changes. At the end of the Project, provide the Engineer a complete set of Plans marked in red pencil in a manner consistent with the Contract Plans, indicating the changes made on the job.
- B. Record voltage, current, and megohmmeter and ground ohmic resistance test measurements made on the electrical work, the trip units, fuses, and overload relay elements installed in the equipment and the setting of all pressure, flow, level, etc., control devices. When the Project is completed and operating, turn over these records to the Owner.
- C. Equipment and raceways installed under this contract for future work shall be dimensioned on the Record Drawings.

3.3 COORDINATION

- A. Arrange for chases, slots, and openings in building structure during progress of construction to allow for electrical installations. Obtain approval from structural Engineer for penetration of structural components prior to penetrating the component.
- B. Coordinate installation of supporting devices and set sleeves in poured-in-place concrete and other structural components as they are constructed.
- C. Sequence, coordinate, and integrate installing electrical materials and equipment for efficient flow of the work. Coordinate installation of large equipment requiring positioning prior to closing in the building.

- D. Coordinate the location of motors, switches, panel connections, and other points of connection with the equipment manufacturers or vendors prior to conduit installation. Route circuits to the actual connection point. Even if removal and reinstallation of building materials is necessary, remove and reinstall conduit, outlet boxes, and other electrical connections, if initial electrical connections are not made to the appropriate equipment location.
- E. Coordinate and schedule connecting electrical systems with exterior underground and overhead utilities and services. Comply with requirements of governing regulations, franchised service companies, and controlling agencies.
- F. Coordinate and verify work under Division 16 with work under other Divisions, cooperate in locating equipment to avoid interference with work of others, and plan work to harmonize with the work of other trades so that all work may proceed as expeditiously as possible. Coordinate the installing of built-in work, attaching items to buildings, and cutting and patching. Coordinate connecting electrical circuits to components furnished under other Divisions. (Portions of the electrical design are based upon the equipment specified in other Divisions.) No extras are allowed because of moving work required to avoid interference with work of other Contractors.
- G. Coordinate the interruption of electrical systems to any part of the facility in use by the Owner at least 2 working days before interruption of the system.
- H. Coordinate installing electrical identification after completion of finishing work where identification is applied to field-finished surfaces.
- I. Where changes in the work, or substitutions in material are proposed, ensure that sizes, weights, openings, etc., are provided that do not require changes in the work outside this Division.
- J. Legally required standby system(s) overcurrent devices shall be selectively coordinated with all supply side overcurrent devices per NEC 701.18. Do an engineering coordination study of all overcurrent devices and provide copies for review by the Engineer and retention by Owner.

3.4 INSTALLATION

A. ENCLOSURES FOR USE WITH ELECTRICAL EQUIPMENT

Unless specifically called out otherwise on the Plans, electrical enclosures shall meet the following specification:

1. Dry Areas

NEMA 1.

2. Wet Areas

a. Indoors

NEMA 3R with HVAC equipment.

NEMA 4 where the enclosure will be subjected to splashing water or hose-directed water.

NEMA 12 where the enclosure will not be subjected to splashing water or hose-directed water.

b. Outdoors

NEMA 3R where the enclosure will not be subjected to splashing water, hose-directed water, or windblown dust.

NEMA 4 where the equipment is not HVAC and where the enclosure will be subjected to splashing water, hose-directed water, or windblown dust.

3. Corrosive Locations

NEMA 4X.

4. Exceptions

a. As otherwise indicated on the Plans.

b. As modified in other Division 16 sections.

5. Standards

- a. NEMA ICS-6, Enclosures for Industrial Controls and Systems.
- b. UL 508, Rainproof Enclosures.
- c. UL 698, Industrial Control Equipment for use in Hazardous Locations.

B. WORKMANSHIP

Install the equipment and materials in a neat and workmanlike manner employing workers skilled in the particular trade and in accordance with the manufacturer's instructions, the National Electric Code, National Electric Safety Code, applicable local regulations, ordinances, and industry standards. A person in charge at the site shall maintain adequate supervision of the work under this division when necessary for coordination with other work.

C. SELF-SUPPORTED EQUIPMENT

Install self-supporting equipment in a level and plumb manner, shimming with full width stainless steel shims, as necessary. Bolt units to the floor with stainless steel expansion anchors and bolts, or weld units to embedded steel channels. Floor or pad shall be level within plus or minus 1/8 of an inch in a square yard before installing equipment. Grout or caulk enclosure to floor or pad. Provide bushings on conduits entering from above or at the side. For conduits entering from below, install grounded insulating bushings bonded to the ground bus or pad.

Install concrete pads and bases according to requirements of Section 03300.

Provide concrete foundations or pads required for electrical equipment as indicated or specified.

D. MOUNTING HEIGHT

Install components and equipment to provide the maximum possible headroom where mounting heights or other location criteria are not indicated.

E. ACCESSIBILITY

Install equipment to facilitate service, maintenance, and repair or replacement of components. Connect for ease of disconnecting, while minimizing interference with other installations.

F. EQUIPMENT ORIENTATION

Install items parallel and/or perpendicular to other building systems and components, except where otherwise indicated.

G. EQUIPMENT MOUNTED ENCLOSURES

Attach enclosures mounted on equipment with machine screws or clamps as required. Do not drill equipment frames or sheets without permission of supplier/manufacturer or the Engineer.

Do not mount safety switches and external equipment to other equipment enclosures, unless enclosure mounting surface is properly braced to accept mounting of external equipment.

H. COORDINATION

Give right of way to raceways and piping systems installed at a required slope.

I. WALL MOUNTED ENCLOSURES

Stand equipment off wall surfaces a minimum of 1/4 of an inch where enclosures are mounted on walls in WET AREAS with neoprene or plastic shim washers.

J. MISCELLANEOUS SUPPORTS

Install metal channel racks for mounting cabinets, panelboards, disconnects, control enclosures, pull boxes, junction boxes, transformers, and other devices, except where components are mounted directly to a structural member of adequate strength.

K. SLEEVES

Install for cable and raceway penetrations of concrete slabs and walls, except where core-drilled holes are used. Install for cable and raceway penetrations of masonry and fire-rated gypsum walls

and of all other fire-rated floor and wall assemblies. Install sleeves during erection of concrete and masonry walls.

L. FASTENING

Unless otherwise indicated, securely fasten electrical items and their supporting hardware to the building structure.

1. Welding to steel structure may be used only for threaded studs, not for conduits, pipe straps, or any other items.
2. Select fasteners so the load applied to any fastener does not exceed 25 percent of the proof-test load.

M. PENETRATIONS

Make all penetrations of electrical work through walls and roofs water and weather-tight.

N. MISCELLANEOUS REQUIREMENTS

1. Screen or seal all openings into outdoor equipment to prevent the entrance of rodents and insects.
2. Equipment fabricated from aluminum shall not be placed in direct contact with earth or concrete.
3. Do not exceed the dimensions indicated for equipment except as approved in writing by the Engineer.
4. Do not use equipment or arrangements for equipment that reduce the required clearance or exceed the space allocations.

O. DIMENSIONS

Dimensions indicated for electrical equipment and dimensions indicated for the installation of electrical equipment are restrictive dimensions.

1. Field measurements take precedence over dimensioned plans.

3.5 IDENTIFICATION

A. LABELS

Install labels where indicated and at locations for best convenience of viewing without interference with operation and maintenance of equipment. Conduit labeling is further described in section 16130. The labeling of conductors is further described in section 16120.

B. NOMENCLATURE

Coordinate names, abbreviations, colors, and other designations used for electrical identification with corresponding designations indicated on the Contract Documents or required by codes and standards. Use consistent designations throughout the Project.

C. SELF-ADHESIVE IDENTIFICATION PRODUCTS

Clean surfaces of dust, loose material, and oily films before applying.

D. IDENTIFY PATHS OF UNDERGROUND ELECTRICAL LINES

During trench backfilling, for exterior underground power, control, signal, and communication lines, install continuous underground plastic line marker located directly above power and communication lines. Where multiple lines installed in a common trench or concrete envelope, do not exceed an overall width of 16 inches, use a single line marker.

E. ENGRAVED, PLASTIC-LAMINATED LABELS, SIGNS, AND INSTRUCTION PLATES

Engraving stock shall be melamine plastic laminate punched for mechanical fasteners with a minimum thickness of 1/16 of an inch for signs up to 20 square inches, and 1/8 of an inch thick for larger sizes. Engraved legend in black letters on white face. Provide nameplates on equipment enclosures giving the name and circuit identification of the enclosed device/equipment in 1/4 of an inch lettering.

F. PANELBOARD SCHEDULES

For panelboards, provide framed, typed circuit schedules with explicit description and identification of items controlled by each individual breaker.

G. ARC FLASH HAZARD

Provide and install warning labels for arc flash hazard on all switchboards, panelboards, control panels, motor control centers, and other equipment per the requirements of the NEC and Washington State Administrative Code (WAC).

3.6 DEMOLITION

A. EQUIPMENT TO BE DEMOLISHED

Demolish all existing electrical devices and circuits, which are noted for demolition. Demolition includes, but is not limited to:

1. Removing all conduit, conductors, fittings, device boxes, hangers, panels, devices, etc., which are not concealed in the building structure or below grade/slab.

B. TEMPORARY POWER

Provide temporary power to existing branch circuit panels, branch circuits, and/or directly to electrical devices as required to keep all portions of the existing facility, which are occupied by the Owner, or required for operation, in operation at all times. Obtain approval by all appropriate code authorities, including the Department of Labor & Industries Electrical Inspection Department, or the local jurisdiction having authority, for any temporary connections required.

C. DAMAGED ELECTRICAL EQUIPMENT

Where remaining electrical work is damaged or disturbed in the course of the work, remove damaged portions, and install new products of equal capacity, quality, and functionality.

D. ABANDONED WORK

Remove existing conductors from conduits, unless otherwise indicated. Cut and cap buried raceway indicated to be abandoned

in place 2 inches below the surface. Cap and patch surface to match existing surface finish.

E. REMOVAL

See section 01900.

F. TEMPORARY DISCONNECTION

Remove, disconnect, store, clean, reinstall, reconnect, and make operational those components that are indicated for relocation and/or reconnection. Coordinate the process, mechanical, HVAC, and other equipment scheduled to be relocated and/or reused with other Divisions.

3.7 CUTTING AND PATCHING

Cut, channel, chase, and drill floors, walls, partitions, ceilings, and other surfaces necessary for electrical installations. Perform cutting by skilled mechanics of the trades involved.

Repair disturbed surfaces to match adjacent undisturbed surfaces.

3.8 TOUCHUP PAINTING

Thoroughly clean damaged areas and provide primer, intermediate, and finish coats to suit the degree of damage at each location.

Follow paint manufacturer's written instructions for surface preparation and for timing and application of successive coats.

3.9 TESTING

A. Test electrical equipment before energization and placing into service. Report all test results in writing. Where tests disclose a defect in the work, rework, or repair the work at no additional expense to the Owner and retest to confirm the rework or repair until testing confirms that the defect has been corrected. Test in accordance with the manufacturer's installation and testing instructions and the applicable electrical standards (i.e., NEMA, NFPA, IEEE, ISA, ANSI) for the class of equipment.

1. Test the equipment and electrical circuits for proper connection, tightness, continuity, and absence of undesirable shorts and grounds. When complete and 72

hours prior to energizing of the system, test the wire and cable installation. Check for continuity, visual damage, marking, and proper phase sequence before performing insulation testing.

2. Megger power equipment, bus work, switches, breakers, and associated devices phase-to-phase and phase-to-ground. Megger at or near the rated voltage, but not above. Disconnect and reconnect equipment which cannot be meggered when connected. The minimum acceptable steady-state value is 50 megohms. Record ambient temperature and humidity during testing. Call any reading less than 100 megohms to the attention of the Engineer. Take appropriate steps to improve such values to permanent levels greater than 100 megohms.
 3. Reference Section 16120, FIELD QUALITY CONTROL for impedance testing of power, control, and instrumentation conductors.
 4. Test operation, calibration, and settings of the meters, relays, and indicating devices.
 5. Test all operating controls for proper operation.
 6. Test all auxiliary equipment, i.e., heaters, thermostats, lights, all illuminated indicating devices and lamps, and all audible alarm devices which are an integral part of transformers and panels to verify that they function properly.
 7. Take load readings on each panelboard after all loads are connected. Record these measurements to give the maximum reading for each phase and neutral obtained with lighting, appliances, motors, and other loads connect to, and operating from, the panels in service.
 8. Check fuses with an ohmmeter. Ring out wiring and busing. Check operation of control and safety interlocks. Check grounding of potential transformers, current transformers, lightning, and surge arresters. Check control connections and tightness at terminal blocks, relays, meters, switches, etc.
- B. Rework or repair equipment, which performs unsatisfactorily during, or as a result of, testing at no additional expense to the Owner.

- C. Additional testing requirements specific to other sections are specified in those sections.

3.10 TEST DOCUMENTS

The following test documents shall be signed and submitted for review prior to energizing associated electrical circuits:

- A. Provide a Power Conductor Megger Testing Report. A blank copy of this report, specifically associated with this contract, is available from Engineering on request. Execute megger testing as per the procedures described in Section 16120 – Conductors and Cables. A copy of these signed test results shall be submitted to the Engineer for approval prior to startup and shall be included in the O&M Manual.

3.11 DEMONSTRATION

Demonstrate to the Owner that the electrical installation is working by operating all electrical systems and equipment. Simulate control and emergency conditions, artificially where necessary, for complete system tests. Demonstrate equipment in accordance with each section in Division 16.

3.12 CLEANING

Clean dirt and debris from all surfaces. Apply touchup paint as required to repair scratches, etc. Replace nameplates damaged during installation. Thoroughly vacuum the interior of all enclosures to remove dirt and debris.

***** END OF SECTION *****

SECTION 16060

GROUNDING AND BONDING

PART 1 GENERAL

1.1 SCOPE

The work specified in this Section includes grounding of electrical systems, equipment, and basic requirements for grounding, and protection of life, equipment, circuits, and systems. Grounding requirements specified in this Section may be supplemented in other Sections of these Specifications.

1.2 RELATED WORKS SPECIFIED ELSEWHERE

<u>Sections</u>	<u>Items</u>
16050	Basic Electrical Materials and Methods
16120	Conductors
16130	Raceway and Boxes

1.3 DEFINITIONS

- A. BONDING JUMPER (from NEC 2008, Article 100 - Definitions, Bonding Jumper, Main)

The connection between the GROUNDED CIRCUIT CONDUCTOR and the EQUIPMENT GROUNDING CONDUCTOR at the service.

- B. EQUIPMENT GROUNDING CONDUCTOR (from NEC 2008, Article 100 - Definitions)

The conductive path installed to connect normally non-current-carrying metal parts of equipment together and to the SYSTEM GROUNDED CONDUCTOR or to the GROUNDING ELECTRODE CONDUCTOR, or both. Code requirements associated with equipment grounding is referenced to NEC 250, Section VI – Equipment Grounding and Equipment Grounding Conductors.

- C. GROUNDED CIRCUIT CONDUCTOR

See GROUNDING ELECTRODE CONDUCTOR.

D. GROUNDING ELECTRODE (from NEC 2008, Article 100 - Definitions)

A conducting object through which a direct connection to earth is established.

E. GROUNDING ELECTRODE CONDUCTOR (from NEC 2008, Article 100 - Definitions)

A conductor used to connect the SYSTEM GROUNDED CONDUCTOR or the equipment to a GROUNDING ELECTRODE or to a point on the grounding electrode system.

F. GROUNDING ELECTRODE SYSTEM

See SYSTEM GROUNDING.

G. SUSE

The term SUSE is an acronym for "SUITABLE FOR SERVICE ENTRANCE." It is the point in the electrical grounding system where the SYSTEM GROUNDING CONDUCTORS connect to the EQUIPMENT GROUNDING CONDUCTORS. For each separately-derived source, this shall occur at the SUSE point. These two points are connected by a BONDING JUMPER.

H. SYSTEM GROUND GRID

The SYSTEM GROUND GRID refers to all portions of SYSTEM GROUNDING. It may be as simple as a pair of ground rods and their associated GROUNDING ELECTRODE CONDUCTORS or a complex ground system with multiple types of GROUNDING ELECTRODES.

I. SYSTEM GROUNDED CONDUCTOR

See GROUNDING ELECTRODE CONDUCTOR.

J. SYSTEM GROUNDING

System Grounding (also referred to as a GROUNDING ELECTRODE SYSTEM) consists of all GROUNDING ELECTRODES, GROUNDING ELECTRODE CONDUCTORS, and associated connecting devices. The utility grounded service conductor, typically referred to as the "utility neutral", is also

associated with the system ground. Code requirements associated with system grounding is referenced to NEC 250.50 – Grounding Electrode System.

1.4 SUBMITTALS

Submit under provisions of Section 8.14 of the General Conditions, and Section 16050.

1.5 QUALITY ASSURANCE

See Section 16050.

PART 2 PRODUCTS

2.1 GROUNDING AND BONDING PRODUCTS

Where types, sizes, ratings, and quantities indicated are in excess of National Electrical Code (NEC) requirements, the more stringent requirements and the greater size, rating, and quantity indications govern.

2.2 WIRE AND CABLE GROUNDING CONDUCTORS

Comply with Section 16120.

A. EQUIPMENT GROUNDING CONDUCTORS

1. Insulated Conductors

Color coded green, per section 16120.

2. Sized in compliance with NEC Table 250.122 or as shown on the Plans, whichever is larger.

B. GROUNDING-ELECTRODE CONDUCTORS

1. Bare Conductors

Soft drawn stranded copper meeting ASTM B8.

2. Sized in compliance with NEC Table 250.66 or as shown on the Plans, whichever is larger.

C. GROUNDING BRAIDS

1. Copper, manufactured, sized at 26,240 circular mils minimum (#6 AWG equivalent).
2. Certified C22.2, No. 41, Grounding and Bonding Equipment.
3. UL Listings: UL-467 and UL486A.

2.3 GROUND RODS

A. SIZE AND TYPE

1. Ground rods shall be 3/4-inch diameter by 10-feet long unless otherwise stated on the Plans.
2. Ground rods shall be copperclad steel rods as follows:
 - a. Heavy uniform coating of electrolytic copper molecularly bonded to a rigid steel core.
 - b. Corrosion resistant bonding between the copper and steel.
 - c. Hard drawn for a scar-resistant surface.

2.4 GROUND ROD BOX

A. GROUND ROD BOXES

1. Ground rod boxes shall be "Fogtite Ground Rod Box" or equal.

B. GROUND ROD BOX LIDS

1. Ground rods associated with vaults, pullboxes, or handholes that may be subjected to road traffic or heavy loads shall have their ground box lids match the road rating load value of the associated vaults, pullboxes, or handholes.
2. The minimum ground rod box lid shall be rated H20.

2.5 CONNECTOR PRODUCTS

A. COMPRESSION CONNECTORS

1. Compression type for interior locations:
 - a. Standards: UL 467.
 - b. High copper alloy content.
 - c. Non-reversible.
 - d. Terminals for connections to bus bars shall have two bolt holes.
2. Compression type suitable for direct burial in earth or concrete:
 - a. Standards: UL 467, IEEE 837.
 - b. High copper alloy content.
 - c. Non-reversible.

B. BOLTED CLAMPS

1. Standards: UL 467.
2. High copper alloy content.
3. Heavy-duty type.

PART 3 APPLICATION

There are two types of grounding systems covered in this specification; 1) Grounding Electrode Systems and 2) Equipment Grounding Circuits.

1. Grounding Electrode Systems shall comply, as a minimum, to the requirements of NEC Sections 250.50 through 250.104, including Table 250.66, "Grounding Electrode Conductor for Alternating-Current Systems."
2. Equipment Grounding Circuits shall comply, as a minimum, to the requirements of NEC Sections 250.110 through 250.148, including

Table 250.122, "Minimum Size Equipment Grounding Conductors for Grounding Raceway and Equipment."

3.1 GROUND ROD BOX

The connection of Grounding Electrode Conductors to each ground rod shall be accessible through a ground rod box as described herein.

- A. Each ground rod shall be provided with a separate ground rod box which shall provide access to the ground rod, its Grounding Electrode Conductor, and its associated ground clamp.

Exceptions:

- *Unless specifically stated or detailed otherwise on the Plans.*
- *Ground rod boxes shall not be required if the ground rod is exposed in a manhole, handhole, or seal-off vault as described in this specification.*

- B. Each ground rod box shall be mounted flush to grade.

Exceptions:

- *Unless specifically stated or detailed otherwise on the Plans.*

3.2 GROUNDING ELECTRODE SYSTEMS

Comply with NEC Article 250, Section III for types, sizes, and quantities of Grounding Electrode Conductors, except where specific types, larger sizes, or more conductors than required by NEC are shown on the Plans.

Provide grounding system as shown on the Grounding One Line Diagram of the Plans if provided.

A. GROUNDING ELECTRODE SYSTEM

A GROUNDING ELECTRODE SYSTEM shall have a minimum of two ground rods spaced a minimum of 6 feet apart and connected with Grounding Electrode Conductors as described in this Section.

B. VAULT AND PULLBOX GROUNDING

1. Provide a SYSTEM GROUND GRID around Pullboxes and Equipment Vaults in compliance with ground conductors

sized per NEC Table 250.66 unless shown larger on the Plans. The minimum grounding electrode conductor size shall be #6 AWG.

C. MANHOLE, HANDHOLE, AND SEAL-OFF VAULT GROUNDING

1. Provide a ground rod inside each manhole that contains metal parts.

3.3 EQUIPMENT GROUNDING

Comply with NEC Article 250, Section VI for sizes of Equipment Grounding Conductors, except where specific larger sizes are shown on the Cable and Conduit Schedule in the Plans.

A. EQUIPMENT GROUNDING CIRCUITS

Install insulated Equipment Grounding Conductors with circuit conductors in the manner listed below and in compliance with Code.

1. Service and Feeders.

Bond the Equipment Grounding Conductor to the equipment to which the circuit connects and to the raceway if it is metallic.

2. Single-phase motor or appliance branch circuits.
3. Three-phase motor or appliance branch circuits.
4. Flexible raceway runs.

B. EQUIPMENT GROUNDING CONDUCTORS

Equipment Grounding Conductors shall be insulated and color-coded green.

C. NONMETALLIC RACEWAYS

Install an Equipment Grounding Conductor in nonmetallic raceways unless they are designated for telephone or data cables. Bond the conductor at each end to grounded metallic raceway or equipment.

D. METALLIC RACEWAYS

Install grounding bushings at the end of each conduit and connect to the equipment ground or GROUNDING ELECTRODE SYSTEM.

3.4 FREE-STANDING ELECTRICAL SUPPORT STRUCTURES

Metal support structures used to support electrical equipment, devices, cabinets, panels, or enclosures shall be connected to the GROUNDING ELECTRODE SYSTEM or a separate ground rod by Grounding Electrode Conductors sized as shown on the Plans. Provide a ground conductor to each vertical support member within 6 inches after rising out of the concrete pad.

PART 4 EXECUTION

4.1 INSTALLATION

A. GROUNDING ELECTRODE CONDUCTORS IN RACEWAYS

1. GROUNDING ELECTRODE CONDUCTORS shall not be installed in metallic raceway. Where required to be in raceway, use PVC-Schedule 80 unless shown otherwise on the Plans. Reference Specification Section 16130.

Ground electrical systems and equipment according to NEC requirements, except where Plans or Specifications exceed NEC requirements.

Coordinate grounding connections made to the water system with the mechanical work and install bonding jumpers wherever deemed necessary.

B. VAULT AND PULLBOX SYSTEM GROUNDING

1. Grounding Outside the Structure
 - a. Provide a minimum of two ground rods, one at each opposite corner, spaced at least 6 feet apart, on the outside of the structure.
 - b. Provide a ground rod box over each ground rod with the same rod rating of the pullbox/vault lid.

- c. Space the SYSTEM GROUND GRID a minimum of 12 inches from the edge of the vault.
 - d. Connect the vault/pullbox SYSTEM GROUND GRID to the main SYSTEM GROUND GRID with Grounding Electrode Conductor sized per NEC Table 250.66 unless shown larger on the Plans. The minimum conductor size shall be #6 AWG.
2. Grounding Inside the Structure
- a. Provide a Grounding Electrode Conductor into the vault at one of the four corners. Seal the penetration with non-shrink grout.
 - b. Continue the Grounding Electrode Conductor up one corner to 3 - 6 inches below the vault ceiling. Loop the Grounding Electrode Conductor around the vault at this height, on all walls containing a junction box, cable tray, ladder, or other metallic equipment, securing to the vault walls each 24 inches with 316L stainless steel clamps, lag bolts, and fasteners.
 - c. Extend a Grounding Electrode Conductor to one of the top mounting bolts of each junction box, cable tray, permanent ladder, or other metallic equipment.
 - d. For vaults with metallic hatch lids, provide a grounding braid from the Grounding Electrode Conductor to the hatch lid, sized per NEC Table 250.122 minimum. Provide the braid on the hinged side, sufficiently long to allow a complete 180 degree opening of the hatch lid without tension on the braid. For vaults with dual lids, connect grounding braids to both hinged sides.
 - e. Ground hydraulic piping near its points of entry into, and exit out of, the vault.
 - f. Ground manufacturer's instrumentation devices inside the vault per the manufacturer's recommendations.

C. MANHOLE, HANDHOLE, AND SEAL-OFF VAULT SYSTEM GROUNDING

1. Provide a ground rod inside each handhole that contains metal parts.
2. Expose a minimum of 4 inches of the ground rod above the floor for field inspection and connections to the rod.
3. Connect the manhole/handhole/seal-off vault SYSTEM GROUND GRID to the main SYSTEM GROUND GRID with Grounding Electrode Conductors sized per NEC Table 250.66 unless shown larger on the Plans. The minimum conductor size shall be #6 AWG.
4. Connect the Grounding Electrode Conductor to each metal lid with braided ground conductors of equivalent size and ampacity of the ground ring. Connect braid to metal lids as per manufacturer's recommendations.
5. Connect the Grounding Electrode Conductor to each metal device (conduits, cable tray, j-boxes, support structures, etc.).

4.2 CONNECTIONS

A. GENERAL

Make connections so possibility of galvanic action or electrolysis is minimized. Select connectors, connection hardware, conductors, and connection methods so metals in direct contact will be galvanically compatible.

1. Use electroplated or hot-tin-coated materials to assure high conductivity and to make contact points closer in order of galvanic series.
2. Make connections with clean, bare metal at points of contact.
3. Coat and seal connections having dissimilar metals with inert material to prevent future penetration of moisture to the contact surfaces.

B. EQUIPMENT GROUNDING-WIRE TERMINATIONS

Make the grounding conductor connections to motors or equipment 10 hp and above or 20 amperes and above, with conductor termination and a 5/16 of an inch minimum bolt tapped to the motor frame or equipment housing. Ground connection to smaller motors and equipment may be made by fastening the conductor termination to a connection box.

C. METAL RACEWAY TERMINATIONS

Where metallic raceways terminate at metallic or non-metallic enclosures, panels, or housings, terminate each conduit with a grounding bushing. Connect grounding bushings with a bare grounding conductor to grounding bus or terminal in housing. Bond electrically noncontinuous conduits at both entrances and exits with grounding bushings and bare grounding conductors, except as otherwise indicated.

D. CONNECTION TORQUE

Tighten screws and bolts for grounding and bonding connectors and terminals according to manufacturer's published torque-tightening values. Where these requirements are not available, use those specified in UL 486A and UL 486B.

E. COMPRESSION-TYPE CONNECTIONS

Use hydraulic compression tools to provide correct circumferential pressure for compression connectors. Use tools and dies recommended by manufacturer of connectors. Provide embossing die code or other standard method to make a visible indication that a connector has been adequately compressed on grounding conductor.

4.3 QUALITY CONTROL

A. MAXIMUM GROUNDING RESISTANCE VALUES

Maximum grounding resistance values shall be as listed below:

1. Equipment grounding connections: 25 ohms.

B. EXCESSIVE GROUND RESISTANCE

Where resistance to ground exceeds specified values, notify the Engineer. Check connections of affected equipment and conductors. Replace or repair defective connections or conductors. Provide additional ground rods where the grounding electrode resistance is greater than specified. Revise and retest until resistance is within specifications.

***** END OF SECTION *****

SECTION 16120

CONDUCTORS AND CABLES

PART 1 GENERAL

1.1 SCOPE

The work specified in this Section includes building wires, cables, and associated connectors, splices, and terminations for wiring systems rated 600 V and less.

1.2 RELATED WORKS SPECIFIED ELSEWHERE

<u>Section</u>	<u>Item</u>
13430	Control Panels
16050	Basic Electrical Materials and Methods
RCW 19.28.261	Revised Code of Washington, Exemptions from RCW 19.28.161 through RCW 19.28.271

1.3 SUBMITTALS

See Section 8.14 of the General Conditions.

Indicate Field Test Reports and interpret their results for compliance with performance requirements.

1.4 QUALITY ASSURANCE

See Section 16050.

PART 2 PRODUCTS

2.1 BUILDING WIRES AND CABLES

A. STRANDING

1. All power, control, and instrumentation conductors shall be stranded.
2. All equipment ground conductors shall be stranded.
3. All grounding electrode conductors shall be stranded.

B. POWER AND CONTROL WIRE

All power and control wire and conductors in raceways shall be rated 600 VAC.

1. XHHW, XHHW-2

a. Conductor

Class B, stranded, annealed, uncoated copper. Conductors shall comply with:

- i. UL Standard 44.
- ii. ASTM-B3, ASTM-B8, and ASTM-B7B8.

b. Insulation

Cross-Linked Polyethylene (XLP) High Heat Water Resistant. Insulation shall comply with:

- i. UL-83 Thermoplastic-Insulated Wires and Cables.
- ii. UL-1063 Machine-Tool Wires and Cables.

c. The cable shall meet the following Standards and Agency approvals:

- i. NEMA WC70/ICEA S-95-658.
- ii. ASTM Stranding Class B3, B8, B7B8
- iii. Federal Specification A-A-59544

2. THHN, THWN, THHN/THWN-2

a. Conductor

Copper, annealed, uncoated. Conductors shall comply with:

- i. ASTM-B3, ASTM-B8, and ASTM-B7B8.

b. Insulation

Polyvinyl Chloride (PVC), Nylon jacket. Insulation shall comply with:

- i. UL-83 Thermoplastic-Insulated Wires and Cables.
- ii. UL-1063 Machine-Tool Wires and Cables.

c. The cable shall meet the following Standards and Agency approvals:

- i. NEMA WC70/ICEA S-95-658.

3. MTW (Machine Tool Wiring)

a. Conductor

Copper, annealed, uncoated. Conductors shall comply with:

- i. ASTM-B3, ASTM-B8, and ASTM-B7B8.

b. Insulation

Polyvinyl Chloride (PVC). Insulation shall comply with:

- i. UL-83 Thermoplastic-Insulated Wires and Cables.
- ii. UL-1063 Machine-Tool Wires and Cables.

c. The cable shall meet the following Standards and Agency approvals:

- i. NEMA WC70/ICEA S-95-658.
- ii. UL Standard UL 83, UL 1063, UL 758 cUL file: E156879 and E123744
- iii. AWM Specification 1316, 1317, 1318, 1319, 1320, 1321

- iv. ASTM Stranding Class B3, B8, B7B8
- v. Federal Specification A-A-59544
- vi. CSA 22.2 No. 75, UL E156879 and E123744

C. INSTRUMENTATION, COMMUNICATION, AND NETWORKING CABLES

All instrumentation, communication, and networking cables and conductors in raceway shall be rated 600 VAC.

1. Analog Instrument Cables

Paired and triad analog instrument cables shall be #18 AWG stranded tinned copper 600 V tray cable, rated for wet applications at 75 degrees C in a sunlight resistant PVC jacket. Cables shall be plenum and direct burial rated, and shall be provided with individual pair/triad isolated 100 percent foil shields with independent drain wires and an overall isolated shield with drain wire.

These cables shall also be used for totalizing pulse signals from flow meters.

The following cables shall be used for multiple conductor applications:

- a. 2-Conductor, 1 twisted pair, 100 percent overall shield. Belden #9341.

D. CONTROL AND POWER CABLE/CORDS

1. Power Cords

- a. Type SO, 600 Vac, size #14 or larger.

2. Specialty Wire

As shown specifically on the Plans.

2.2 SPLICES, TAPS AND TERMINAL BLOCKS

Splices are only allowed under the conditions of Section 4.2.E.

A. SPLICES IN OUTDOOR AREAS, HANDHOLES, VAULTS, OR DIRECT BURIED

For inline butt splices, use inline resin splice kits for non-shielded cables, 600 V; 3M Scotchcast 82-A series or equal. UL listed 486D.

For odd-shaped and odd sized splices, use multi-mold resin splice kits for non-shielded cables, 600 V; 3M Scotchcast 85-14CP or equal. UL listed 486D.

B. INDOOR SPLICES AND TAPS FOR RECEPTACLES AND LIGHTING

Use quick spin, wing torque Electrical Spring and Grounding Connectors; 3M 312, 412, 512, and 512G or equal.

C. TERMINAL BLOCKS

1. Power Terminal Blocks

All power terminals shall be 600 Vac, suitable for 75 °C rated copper conductor.

Power terminal blocks may be copper or aluminum and shall have a short circuit current withstand rating following the guidelines described in UL 1059 and shall meet or exceed the available bolted fault current at the point of application

2. Control and Instrumentation Terminal Blocks

Reference Specification 13430 for terminations in Control Panels.

D. MOTOR LEAD CONNECTORS

Motor terminal connectors shall be insulated multiple tap connectors rated for 600 Vac; N.I.S. Polaris or equal.

2.3 INSULATING MATERIALS

A. ELECTRICAL INSULATION PUTTY

Scotchfill, or equal.

B. INSULATING ELECTRICAL TAPE

7 Mil/0.18 mm Plasticized PVC, rubber-based adhesive, 200 percent elongation, 26 N/cm tensile strength, 8 kV breakdown voltage, meeting CE, CSA, UL certifications.

C. CONDUCTOR COLOR-MARKING TAPE

7 Mil/0.18 mm Plasticized PVC, rubber-based adhesive, 200 percent elongation, 26 N/cm tensile strength, 8 kV breakdown voltage, meeting CE, CSA, UL certifications, in required color.

D. ELECTRICAL HEAT SHRINK TUBING

Heat shrink tubing shall be dual-wall polyolefin, 3-1 shrink ratio, 600 Vac, -55 to 110 degrees C operating range meeting UL 224 600V, 125 degrees C.

PART 3 APPLICATIONS

3.1 WIRE APPLICATIONS

A. CABLE AND CONDUIT SCHEDULE

The Cable and Conduit Schedule shall be considered absolute. No changes to wire sizes, wire count, insulation type, or circuit type shall be allowed without approval from the Engineer.

B. WIRES IN RACEWAYS

Wires installed in raceways shall be considered "FIELD" wiring and shall be installed and terminated by qualified and licensed electrical contractors.

Exceptions:

- *Installation and termination may be by the owner under the provisions of "RCW 19.28.261, Exemptions from RCW 19.28.161 through RCW 19.28.271."*

- *If the raceway is installed inside a control panel fabricated by a certified UL 508 shop, then these wires may be installed and terminated per the provisions of WIRES IN CONTROL PANELS as listed below.*

1. Power Wire

a. Insulation

All service, feeder, and branch circuit conductors shall be XHHW-2. All termination shall include dielectric grease.

Exception:

- *Unless called out otherwise in the Cable and Conduit Schedule.*
- *Unless approved in writing by the Electrical Engineer.*
- *Unless both ends of wire are installed in the same control panel.*

2. Class 1 And 2 Control Wire

a. Insulation

All control circuits in raceways shall be XHHW-2.

Exception:

- *Unless called out otherwise in the Cable and Conduit Schedule.*
- *Unless approved in writing by the Electrical Engineer.*

C. WIRES IN CONTROL PANELS

Wires in control panels are those wires that are not routed through raceways external to control panels.

1. Control Panel Power And Control Wire

a. Insulation

Power and control conductors in control panels shall be MTW or THHN/THWN-2.

Wire minimum size and color:

Circuit Type	Wire Size	Wire Color
120 Vac Circuits		
120 Vac, Line	#12 AWG	Black
120 Vac, Neutral	#12 AWG	White
120 Vac Control Circuits	#14 AWG	Red
Ground Circuits		
Chassis Ground	#12 AWG	Green
24 Vdc Circuits		
+24 Vdc Power	#14 AWG	Dark Blue
24 Vdc Common	#14 AWG	Blue with White stripe
24 Vdc Control Circuits	#14 AWG	Dark Blue

D. CONDUCTORS DIRECT BURIED

Refer to the Plans for specifications regarding directly buried conductors and cables.

E. SPECIALTY WIRE

Refer to the Plans for specifications regarding "Specialty Wire".

PART 4 EXECUTION

4.1 EXAMINATION

Examine raceways and surfaces receiving wires and cables for compliance with requirements for installation tolerances and other conditions affecting performance of wires and cables. Do not proceed with installation until unsatisfactory conditions have been corrected.

4.2 INSTALLATION

A. GENERAL INSTALLATION METHODS

1. Install wires and cables in raceway system, according to manufacturer's written instructions and NECA's "Standard of Installation," after raceway system is complete.
2. Tighten electrical connectors and terminals according to manufacturer's published torque-tightening values. If manufacturer's torque values are not indicated, use those specified in UL 486A and UL 486B.
3. Install cables and conductors 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 function in the enclosure. Install cable ties and straps to support and bundle wires in enclosures. Arrange wires to allow wire tags and numbers to be easily read without bending or flexing wiring.
4. Install wiring to equipment neutral and grounding blocks on the bottom or furthest back row first. Leave unconnected blocks accessible for future neutral or grounding connections.
5. Provide individual neutral conductors for each associated circuit. Common neutral conductors for multi branch circuits are not permitted.
6. All power distribution raceways shall contain at least one continuous copper grounding conductor with a minimum size as per NEC 250.122. Larger sizes shall be used if identified in the Cable and Conduit Schedule on the Plans.

B. CONDUCTORS SHARING RACEWAYS

1. 120 VAC power conductors shall not be run in the same raceway with control conductors.

Exception:

- *Unless specifically shown otherwise in the Cable and Conduit Schedule.*

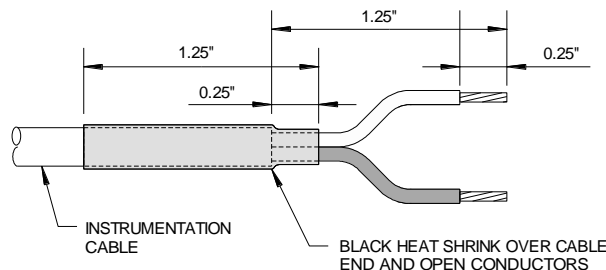
2. 120 VAC power conductors shall not be run in the same conduit or raceway with instrumentation cables/conductors.
3. 120 VAC control conductors shall not be run in the same conduit or raceway with instrumentation cables/conductors.

Exception:

- *Unless specifically shown otherwise in the Cable and Conduit Schedule.*

C. INSTRUMENTATION (SIGNAL) CABLES

1. Preparing the End



- a. Neatly trim the end of the cable.
- b. Strip back 1.25" of the outer jacket taking care not to cut into the signal conductor insulation.
- c. Neatly trim the foil back to the edge of the outer jacket.
- d. Cut the drain wire at the edge of the outer jacket taking care not to damage the signal conductor insulation.
- e. For signal cables with a braided shield over a foil shield, carefully cut the braid back to the edge of the outer jacket.
- f. Provide a 1.25" black heat shrink over the jacket, covering 0.25" of the exposed conductors. This properly insulates and protects the ends of the shields and the outer jacket.

- g. Strip the signal conductors exposing 0.25" of conductor.

D. SPLICING CONDUCTORS

1. Install service, feeder, and motor circuits continuous without splices from equipment terminal to equipment terminal or motor lead.

Exceptions:

- *Service entry feeders at weatherheads.*
- *Branch circuits at taps for convenience receptacles and lighting.*
- *As specifically called out.*
- *With written permission from the Engineer.*

2. Install instrumentation and control circuits continuous without splices or terminations from source equipment terminal to destination equipment terminal.

Exceptions:

- *On terminal strips in control panels.*
- *On terminal strips in termination panels.*
- *As specifically called out.*
- *With written permission from the Engineer.*

3. Where splicing is allowed, or specifically called out, install in the following manner:

- a. Splicing Inside Vaults, Handholes, Outdoor J-Boxes, or J-Boxes in Wet Areas

Power and control conductors shall be spliced per Section 2.2.A. Provide a minimum of 24 inches of length on both wires for future re-splicing.

b. Splicing Inside Motor J-Boxes

Power connections inside motor j-boxes shall be made using insulated multiple tap connectors rated for 600 Vac; N.I.S. Polaris or equal. Cover the splice with a minimum of three layers of black insulating electrical tape. Provide a single band with a minimum of two wraps of the appropriate phase color tape to the entry T-lead. Bend the connections away from the sides of the j-box and motor frame to prevent abrasion from motor vibration.

Control connections inside motor j-boxes shall be made with crimped butt-splices with heat shrink covers. The heat shrink shall overlap the butt barrel ends by a minimum of 1/2 inch on each side. Cover the splice with a minimum of three layers of black insulating electrical tape.

c. Splicing in J-Boxes and Control Panels Mounted Indoors in Dry Rooms

i. Conductors size #12 AWG through #6 AWG:

For conductors less than #6 AWG, provide crimped butt-splice with heat shrink cover. The heat shrink shall overlap the butt barrel ends by a minimum of 1/2 inch. Cover the splice with a minimum of three layers of black electrical tape. Provide a 2-wrap (minimum) single band of the appropriate phase color tape.

Exception:

- *For receptacles and lighting, reference Section 2.2.B.*

ii. Conductors size #4 AWG and larger:

(1) Terminal Connectors

For conductors larger than #6 AWG, connections shall be made using

insulated multiple tap connectors rated for 600 Vac; N.I.S. Polaris or equal.

Cover the splice with a minimum of three (3) layers of black electrical tape. Provide a 2-wrap (minimum) single band of the appropriate conductor color tape.

(2) Terminal Blocks

All power terminals shall be 600 Vac, suitable for 75 degrees C rated copper conductor.

Connect using properly sized terminal blocks.

Exception:

- *If splices are allowed by the Engineer, then use plated copper alloy compression splicing sleeves installed by high-pressure compression tools and insulated with heat shrink Raychem sleeves.*

E. REPLACING FAULTY CONDUCTORS

When replacing a faulty conductor or cable that shares a raceway with other conductors or cables, all conductors and cables must be removed and replaced with new.

Exceptions:

- *If the raceway is straight and without bends or offsets and its length is less than 30 feet, and the conductors are not bound together in the raceway, then only the faulty cable must be pulled and replaced with new. A manufacturer-approved pulling compound or lubricant must be used to minimize degradation to the remaining conductors. The contractor is responsible for the integrity of the remaining conductors.*
- *With specific approval by the Engineer.*

F. CONDUCTOR LABELLING

All conductors shall be labeled in the following manner.

Exceptions:

- *Conductors supplying power to lighting and convenience receptacles.*
- *Non-insulated ground conductors.*
- *At each motor tag for winding lead numbers. Make all phase rotation changes for motor direction changes at the motor to maintain correct color phase sequence in equipment.*
- *In each enclosure or box where more than one ungrounded power conductor is spliced or connected, tag for panelboard identification and pole number (reference Section 3.3C.).*

1. Conductors shall be labeled the same at each end in a place where the label can be clearly read without moving other wires or rotating the label.
2. Conductor labels shall reference the device (destination) tag as provided on the "TAG LIST" in the Plans. For example, conductors from panelboard [01 PB 01] to dedicated receptacle [01 DREC 05] shall be labeled as follows:

Line: 01DREC05.L
Neutral: 01DREC05.N
Ground: 01DREC05.G

3. Conductor labels shall each be unique for each circuit. For example, 10 control conductors from Main Control Panel [02 CP 01] (source) to Automatic Transfer Switch [02 ATS 01] (destination) shall be labeled as follows:

Wire #1: 02ATS01.01
Wire #2: 02ATS01.02
 | |
Wire #9: 02ATS01.09
Wire #10: 02ATS01.10

4. The labels shall be white heat shrink sized appropriately for the associated conductor with typed lettering in black indelible ink.
5. Label each conductor. When terminating cables, if there is insufficient room to provide a label on each conductor, then label the cable sheath.
6. Tag for phase rotation at each power connection.

Exception:

- *At motor connections.*

G. CONDUCTOR COLORS

1. For conductor colors inside control panels, reference Section 3.1.C.1.
2. Do not use white, gray, green, or green with yellow stripes color for any power, lighting, or control conductor not intended for neutral or equipment grounding purposes.

Exception:

- *Instrumentation and control multi-conductor cables may use white, gray, or green singly or as part of a trace color in addition to the base color.*

3. Equipment grounding conductors: Green or green with yellow stripes.
4. 208/120 or 240/120 volt, 3-phase systems:

Phase A	Phase B	Phase C	Neutral
Black	Red	Blue	White

5. 240/120 volt, single phase systems:

Phase A	Phase B	Neutral
Black	Red	White

6. Use wire with insulation of required color for conductors of #8 AWG and smaller. For wire larger than No.8 AWG, where not available in specified colors, use conductor color

marking tape per Section 2.3.C. When conductors are marked in this manner, mark each conductor at all accessible locations such as panelboards, junction boxes, pullboxes, auxiliary gutters, outlets, switches, and control centers.

7. Use control wiring of colors different than power wiring or supplied with a trace of color in addition to the basic color of the insulation. Use the same color scheme throughout a given system for any control wires performing the same function.
8. Connect power conductors of the same color to the same phase throughout the installation. Viewing all equipment from the front, make connections so phase color sequence is in the same order as that for panelboards, switchboards, motor control centers, etc.

H. PULLING CONDUCTORS

1. Instrumentation, Communication, Networking, and Fiber Cables

Make all cable pulls by hand using a manufacturer-approved pulling compound or lubricant where necessary.

2. Power and Control Conductors
 - a. Make all cable pulls by hand where possible. Use pulling means, including fish tape, cable, rope, and basket-weave wire/cable grips, or wrapping extra conductor into an eye, that will not damage cables or raceway.
 - b. On mechanically-assisted pulls use a manufacturer-approved pulling compound or lubricant where necessary. The compound used must not deteriorate the conductors or insulation. Do not exceed manufacturer's recommended maximum pulling tensions and sidewall pressure values. Install pullboxes where necessary to prevent exceeding manufacturer's recommendations.

3. Cut cable or conductor ends off after pulling and clean all pulling compound from exposed conductors before terminating.

I. CABLE SUPPORTS

Support cables according to Section 16050.

Provide vertical conductor support per NEC Table 300.19(A).

J. WIRING AT OUTLETS

1. Install conductor at each outlet, with at least 6 inches of slack. Connect only to receptacle screw terminals using insulated spade-type lugs.
2. Connect outlets and components to wiring and to ground as indicated and instructed by manufacturer, and in compliance with other Sections of Division 16.

4.3 FIELD QUALITY CONTROL

A. TESTING

On installation of wires and cables and before electrical circuitry has been energized, demonstrate product capability and compliance with requirements.

1. Procedures

Perform each visual and mechanical inspection and electrical test stated in NETA ATS, Section 7.3.2. Certify compliance with test parameters.

2. Remove and replace conductors with visible insulation damage on conductor ends due to installation in an incomplete or damaged conduit system such as, but not limited to, missing bushings or burrs on conduit ends.
3. On THWN, THHN, THHW conductors, a tear, rip, or blister in the outer insulation sheath shall be considered damaged insulation and shall be replaced as described in Section 4.3.A.2.

B. POWER CONDUCTOR TESTING

After pulling and prior to connection, perform a Megger test between all conductors (including the equipment ground) and between each conductor and earth ground in the following manner:

1. Perform megger tests at 600 V.
2. Record ambient temperature and humidity during testing.
3. Cables or conductors with a steady-state value less than 100 megohms shall be considered "failed".
4. Complete a Power Conductor Megger Testing Report and submit as per Section 16050.

C. CONTROL AND INSTRUMENTATION CONDUCTOR TESTING

Control and instrumentation circuits shall not be meggered.

1. Perform insulation tests with a Digital Voltmeter.
2. Record ambient temperature and humidity during testing.
3. Cables or conductors with a steady-state value less than 100 megohms shall be considered "failed".

D. CORRECTIVE ACTION FOR FAILED CABLES AND CONDUCTORS

Failed cables and conductors shall be removed and replaced with new and retested per Section 4.2.D.

***** END OF SECTION *****

SECTION 16130

RACEWAY AND BOXES

PART 1 GENERAL

1.1 SCOPE

The work specified in this Section includes raceways, fittings, boxes, enclosures, and cabinets for electrical wiring.

1.2 RELATED SECTIONS INCLUDE THE FOLLOWING:

<u>Sections</u>	<u>Items</u>
16050	Basic Electrical Materials and Methods
16060	Grounding and Bonding
16120	Conductors and Cables
16140	Wiring Devices

1.3 DEFINITIONS

A. 100 PERCENT CONTINUOUS

100 percent continuous means that electrical continuity shall be maintained over a conduit's entire length and that such conduits shall consist of only RGS (whether PVC-coated or not), LFMC, or combinations of these types. There can be no break in the electrical continuity by non-metallic components.

IMC conduits are considered 100 percent continuous.

B. CONDUIT BODIES

A separate portion of a conduit system that provides access through a removable cover to the interior of the system at a junction of two or more sections of the system.

C. CONTROL CONDUITS

Control conduits typically contain cables or conductors in the range of 12 Vdc to 120 Vac. These cables/conductors are used to provide discreet field inputs and outputs to motor drives, PLC controllers, operator stations, etc. They typically connect to discreet I/O field devices like local panel pushbuttons, indicating lights, selector switches, field limit switches, relay circuits, etc.

D. CONTROL PANELS

Control panels are enclosures in which one or more circuits are changed, unlike junction boxes where circuits are simply routed through the panel. Control panels may be as simple as an enclosure with a pilot light or they may be very complicated with hundreds of I/O terminations.

E. CONVENIENCE RECEPTACLES

Reference Section 16140, Definitions.

F. DEVICE BOXES

Device boxes are electrical boxes used for receptacles, light switches, dimmers, and other similar devices. Selector switches, indicating lights, displays, etc., are mounted in control panels and equipment enclosures, not in device boxes.

G. DRIP FITTINGS

Drip fittings are used to drain water from conduit entry points, junction boxes, or other enclosures where accumulation of moisture must be removed. They are also intended to disable the entry of foreign materials, including tools and fingers, through the drain.

H. DRY LOCATIONS

Reference Section 16050, Definitions.

I. EQUIPMENT VAULT

An Equipment Vault is a VAULT that contains one or more electrical devices that are terminated within the vault; such as flow meters, control valves, control or power panels, lighting, and etc.

SEE VAULTS

J. FINISHED AREAS

Reference Section 16050, Definitions.

K. FMC

Flexible Metal Conduit (a type of RMC).

L. FRP

Fiberglass Reinforced Plastic (a type of RNC).

M. HANDHOLES

A handhole is a pullbox that is not sufficiently sized for entrance of personnel (reference PULLBOXES).

N. IMC

Intermediate Metal Conduit (a type of RMC).

O. INSTRUMENTATION CONDUITS

Instrumentation conduits contain cables and conductors that carry low-power modulated or communication signals. They may include 4-20 mA current loops, 0–10 volt analog signals, 5 to 12 Vdc digital (TTL) data, analog or digital communications signals, etc. They may also include low-voltage compliance power to instruments such as 5 Vdc, ± 15 Vdc, or 24 Vdc.

P. INTRINSICALLY SAFE CIRCUIT

A circuit in which any spark or thermal effect, produced either normally or in specified fault conditions, is incapable of releasing sufficient electrical or thermal energy to cause ignition of a specific hazardous atmospheric mixture in its most easily ignitable concentration.

Q. JUNCTION BOXES

Junction boxes are electrical enclosures used for combining, splitting, pulling, or redirecting electrical circuits. Junction boxes may terminate one conduit or join multiple conduits. Circuits are not *altered* inside a junction box. Enclosures where circuits are altered are called CONTROL PANELS. With the exception of terminal strips, junction boxes do not contain electrical devices.

1. Junction Boxes, Type J1

Junction boxes identified as TYPE J1 can contain only non-linear power circuits.

2. Junction Boxes, Type J2

Junction boxes identified as TYPE J2 can contain only intrinsically safe circuits.

3. Junction Boxes, Type J3

Junction boxes identified as TYPE J3 can contain only instrumentation circuits that are not intrinsically safe.

Junction boxes not containing circuits of the types identified for TYPE J1, TYPE J2, or TYPE J3 are simply called “junction boxes” (without a TYPE identifier).

R. LFMC

Liquidtight Flexible Metal Conduit (a type of RMC).

S. LINEAR POWER LOADS

Linear power loads are those that are not VFD circuits (both line or load), and are not UV ballast circuits. Although actually non-linear, fluorescent lighting circuits shall be considered linear power loads.

T. POWER CONDUITS

Power conduits contain branch and feeder conductors with voltages 120 Vac and above. These conductors provide operating power to MCCs, panels, motors, lighting, receptacles, HVAC, etc. Conductors can be of #12 AWG wire gauge and larger, either separate or in power cables.

U. PROCESS AREAS

Reference Section 16050, Definitions.

V. PULLBOXES

Pullboxes are underground electrical enclosures, sufficiently sized to allow the entrance of personnel, used for combining, splitting,

pulling, or redirecting electrical circuits. Pullboxes may terminate one conduit or join multiple conduits. A pullbox can be considered an underground junction box.

Circuits are not altered or terminated inside a pullbox. Pullboxes do not contain electrical equipment or devices.

Exception:

- *Pull boxes may include a sump pump.*

Handholes are types of pull boxes but are not sufficiently sized to allow the entrance of personnel (reference HANDHOLES).

W. PVC

Polyvinyl Chloride Conduit (a type of RNC).

X. PVC-RGS

Polyvinyl chloride, externally coated RGS (a type of RMC).

Alias: May be called or shown on Plans and elsewhere in specifications as PVC-Coated RGS or PVC-RMC.

Y. PVC-RMC

Reference PVC-RGS.

Z. RGS

Rigid Galvanized Steel (a type of RMC).

AA. RMC

Rigid Metal Conduit (General NEC Category).

BB. RNC

Rigid Nonmetallic Conduit (General NEC Category).

CC. SURFACE RACEWAYS

A metallic raceway that is intended to be mounted to the surface of a structure, with associated couplings, connectors, boxes, and fittings for the installation of electrical conductors.

DD. VAULTS

A vault is an underground structure, serviceable or accessible only from the top. Handholes, Equipment Vaults, and Pullboxes are considered vaults.

EE. WET LOCATIONS

Reference Section 16050, Definitions.

FF. WIREWAYS

Sheet metal troughs with hinged or removable covers for housing and protecting electric wires and cable in which conductors are laid in place after the wireway has been installed as a complete system.

1.4 SUBMITTALS

- A. Submit under provisions of Section 8.14 of the General Conditions.
- B. Provide data for surface raceways, wireways and fittings, hinged-cover enclosures, and cabinets.

1.5 QUALITY ASSURANCE

See Section 16050.

1.6 COORDINATION

Coordinate layout and installation of raceways and boxes with other construction elements to ensure adequate headroom, working clearance, and access.

Coordinate electrical work with outside utilities associated with the project.

Non electrical piping and structural has priority over underground conduit routing.

Exception:

- *Unless specifically coordinated otherwise with the General Contractor.*

PART 2 PRODUCTS

2.1 METALLIC CONDUIT TYPES

A. FMC

1. Conduit

Flexible, galvanized steel convolutions forming a continuous raceway.

2. Connectors

Galvanized steel, screw in, approved for grounding.

B. IMC

1. Conduit

Hot dipped galvanized with threaded ends meeting ANSI C80.6.

2. Couplings

Steel, cast iron, or malleable iron compression type employing a split, corrugated ring and tightening nut, with integral bushings and locknuts. No indent or set screw type.

a. Couplings

Unsplit, NPT threaded steel cylinders with galvanizing equal to the conduit.

C. LFMC

1. Conduit

Flexible, galvanized steel convolutions forming a continuous raceway, covered by a liquid tight PVC layer. Electri-Flex Type LA or American Sealtite, Type UA

2. Connectors

Galvanized steel, screw in, grounding type with a ferrule, which covers the end of the inside and outside of the conduit.

D. RGS

1. Conduit

Hot dipped galvanized with threaded ends meeting ANSI C80.1.

2. Couplings

Steel, cast iron, or malleable iron compression type employing a split, corrugated ring and tightening nut, with integral bushings and locknuts. No indent or set screw type.

a. Couplings

Unsplit, NPT threaded steel cylinders with galvanizing equal to the conduit.

b. Nipples

Factory made through 8 inches, no running threads.

c. Conduit bodies shall be galvanized, or epoxy coated cast iron or aluminum one piece with galvanized, or epoxy coated cast cover, gasket, and threaded hubs. Use stainless steel screws or other approved non-corroding screws to hold cover in place.

3. Conduit Clamps

Conduit clamps for RGS shall be cast iron.

E. PVC-COATED RGS, PVC-RMC

1. General

a. A proprietary colored urethane coating shall be uniformly and consistently applied to the interior of all

conduit and fittings. This internal coating shall be a nominal 2 mil thickness. Conduit or fittings having areas with thin or no coating shall be unacceptable.

- b. The PVC exterior and urethane interior coatings applied to the conduit shall afford sufficient flexibility to permit field bending without cracking or flaking at temperatures above 30 degrees F (-1 degrees C).
- c. All male and female threads on conduit, elbows, and nipples shall be protected by application of an electronically conducting corrosion resistant compound.
- d. Installation of the PVC coated conduit system shall be performed in accordance with the manufacturer's installation manual.
- e. Conduits and fittings shall meet the following standards:
 - i. ASTM D870
 - ii. ASTM D1151
 - iii. ASTM D3359
 - iv. ASTM D1308
 - v. NEMA RN1

2. Conduit

- a. The PVC coated rigid metal conduit must be UL listed. The PVC coating must have been investigated by UL as providing the primary corrosion protection for the rigid metal conduit. Ferrous fittings for general service locations must be UL listed with PVC as the primary corrosion protection. Hazardous location fittings, prior to plastic coating must be UL listed. All conduit and fittings must be new, unused material. Applicable UL standards may include: UL 6 Standard for Safety, Rigid Metal Conduit, UL 514B Standard for Safety, Fittings for Conduit and Outlet Boxes.

- b. The conduit shall be hot dip galvanized inside and out with hot dipped galvanized threads.

3. Fittings and Accessories

The design shall be equipped with a positive placement feature to ease and assure proper installation. Certified results confirming seal performance at 15 psig (positive) and 25 inches of mercury (vacuum for 72 hours shall be available).

- a. A PVC sleeve extending one pipe diameter or 2 inches, whichever is less, shall be formed at every female fitting opening except unions. The inside sleeve diameter shall be matched to the outside diameter of the conduit.
- b. The PVC coating on the outside of conduit couplings shall have a series of longitudinal ribs 40 mils in thickness to protect the coating from tool damage during installation.
- c. Conduit Form 8 Bodies shall be 1/2 inch through 2-inch diameter, shall have a tongue-in-groove "V-Seal" gasket to effectively seal against the elements. Conduit bodies shall be Form 8 and shall be supplied with plastic encapsulated stainless steel cover screws.
- d. Right angle beam clamps and U bolts shall be specially formed and sized to snugly fit the outside diameter of the coated conduit. All U bolts will be supplied with plastic encapsulated nuts that cover the exposed portions of the threads.
- e. Conduit clamps and fittings for PVC-Coated RGS conduits shall be 316L stainless steel.

4. Approved Material

- a. Plasti-Bond REDH2OT, Perma-Cote, or KorKap manufactured by Robroy Industries.
- b. Ocal-Blue Steel conduit and fittings as manufactured by Ocal, Inc.

- c. Any deviation from the above approved materials must be approved by the Engineer.

2.2 NONMETALLIC CONDUIT TYPES

A. PVC

1. Conduits

NEMA TC 2, Schedule 40 or 80 PVC.

2. Fittings and Accessories

NEMA TC 3; match to conduit type and material, but elbows shall be RMC.

3. Conduit bodies

Where allowed, shall match type, material, and gauge of conduit.

2.3 OUTLET AND DEVICE BOXES

A. STANDARD METAL BOXES

Assembled from stamped steel hot dipped zinc galvanized coated flat pieces, welded or mechanical assembled into a device box, with knockouts for conduit or connector entrance, meeting NEMA OS 1, with plaster or extension rings and necessary mounting appurtenances to suite construction and application.

B. CAST BOXES

1. Cast Aluminum

Epoxy coated cast aluminum box, one piece, with mounting lugs, with threaded holes or hubs, with internal green ground screw and with neoprene gaskets.

2. Cast Iron

Cast iron with electro-galvanized and aluminum acrylic paint finish, one piece, with mounting lugs, with threaded holes or

hubs, with internal green ground screw and with neoprene gaskets.

C. DEVICE COVERS

1. Plastic: Thermoplastic nylon, device-mount, ivory.
2. Aluminum: Sheet Aluminum.
3. Cast Iron: Iron alloy.

D. SWITCH ACTUATORS

1. Aluminum: Lever-arm type, raintight, cast aluminum matching the metallurgy of the device box.
2. Cast Iron: Lever-arm type, raintight, cast iron alloy matching the metallurgy of the device box.

E. WEATHERPROOF COVERS AND PLATES

Weather proof, self-closing, die-cast aluminum, UL listed.

F. IN-SERVICE COVERS

Shall be weather proof and hinged from top with removable cord slots.

2.4 JUNCTION BOXES, HANDHOLES, AND VAULTS

A. JUNCTION BOXES

1. Standard

Stamped steel, deep drawn one piece (without welds or tab connections), galvanized, with knockouts for conduit or connector entrance, meeting NEMA OS 1. Boxes 6" x 6" x 4" or larger may be code gauge fabricated steel continuously welded at seams and painted after fabrication.

2. Cast

Cast iron with electrogalvanized and aluminum acrylic paint finish, one piece, with threaded cover of the same metallurgy and finish, with mounting lugs, with threaded holes or hubs,

with internal green ground screw and with neoprene gaskets; explosion-proof, dust-ignition-proof, raintight, rated for Class I, Division 1 and 2, Groups C, D.

3. Stainless Steel

NEMA 4X 316L stainless steel with gasketed screw down cover.

4. Explosion Proof for Internal Wire Termination

Explosion proof junction boxes shall be 18"H x 12"W x 6"D (minimum inside dimension) cast aluminum; explosion-proof, dust-ignition-proof, raintight, rated for Class I, Division 1 and 2, Groups C, D; Killark #EXB-12186-N34 or equal.

Exception:

- *Unless specifically stated otherwise on the Plans.*

5. Explosion Proof, No Terminations

Cast iron with electrogalvanized and aluminum acrylic paint finish, one piece, with threaded cover of the same metallurgy and finish, with mounting lugs, with threaded holes or hubs, with internal green ground screw and with neoprene gaskets; explosion-proof, dust-ignition-proof, raintight, rated for Class I, Division 1 and 2, Groups C, D.

Exception:

- *Unless specifically stated otherwise on the Plans.*

B. HANDHOLES

1. Material and Strength

Handholes shall be made from Concrete or Polymer Concrete. The boxes and covers are required to conform to all test provisions of ANSI/SCTE 77 2002 "Specification For Underground Enclosure Integrity" for Tier 15 applications (Design Load Vertical 22,500 lbs. and Lateral 800 lbs/sq. ft.) and to be Listed and Labeled. The boxes must physically accommodate and structurally support compatible covers, which possess the Tier rating. In no assembly can the cover

design load exceed the design load of the box. All components in an assembly (box and cover) are to be manufactured by the same manufacturer. All covers are required to have a minimum coefficient of friction of 0.50 in accordance with ASTM C1028. Independent third party verification or test reports stamped by a registered Professional Engineer certifying that all test provisions of this specification have been met are required with each submittal. The cover is to have an identifying function descriptor imprinted on it. The Descriptor shall be ELECTRICAL, CONTROL, SIGNAL, TELEPHONE, STREET LIGHT, or similar approved by the Engineer.

Handholes with metallic lids shall be grounded per Specification Section 16060.

Handhole lid assemblies comprised of steel shall have a factory-applied galvanized finish.

Exception:

- *Unless the assembly is fabricated from stainless steel.*

2. Manufacturers

Quazite (Strongwell Corp.)
Carson Industries

C. PULLBOXES AND VAULTS

Precast concrete structures with preformed knockout holes for conduit entrance. Reference Section 02530, Utility Structures.

Pullboxes and vaults with metallic lids shall be grounded per Specification Section 16060.

Pullbox lid assemblies comprised of steel shall have a factory-applied galvanized finish.

Exception:

- *Unless the assembly is fabricated from stainless steel.*

PART 3 APPLICATION

3.1 CONDUIT BODIES

This section describes the types of raceways, junction boxes, and device boxes that can be used for different circuits and different environments. Reference Section 4.1 for methods and practices required for installation.

A. CABLE AND CONDUIT SCHEDULE

The Cable and Conduit Schedule shall be considered absolute. No changes to wire sizes, wire count, insulation type, circuit type, or conduit size shall be allowed without approval from the engineer.

The Cable and Conduit Schedule does not indicate conduit type (PVC, IMC, RGS, etc.) since, in many cases, a conduit's type may change between its source and destination. The rules stated in this specification define the necessary and allowed conduit type(s) for various applications and routes.

B. RACEWAY REQUIREMENTS

The term "RGS conduits" refers to a type of conduit body and does not imply whether the conduit is PVC-coated or not. Certain applications require RGS conduits with PVC coating, others do not. Reference Section 3.2, "RGS RACEWAY PROTECTIVE COATINGS" for these requirements.

1. Circuit Types And Categories

a. Circuit Types

Conduits are broken into three general circuit types; 1) Power, 2) Control, and 3) Instrumentation (see Definitions).

On the Cable and Conduit Schedule, Power conduits are those starting with the letter "P", Control conduits are those starting with the letter "C", and Instrumentation conduits are those starting with the letter "S".

b. Circuit Categories

Power circuits are broken into two categories, those that contain linear loads and those that contain non-linear loads (see Definitions).

Control and Instrumentation circuits are broken into two categories, those that contain intrinsically safe circuits and those that do not (see Definitions).

These types and categories are listed below in Table 3.1.B.1 below.

c. Relationships Between Circuit Categories and Conduit Types

Many electrical circuit types do not require special conduit routing considerations. However, Table 3.1.B.1 shows three (3) circuit types where the conduit route must be 100 PERCENT CONTINUOUS (reference Definitions).

Table 3.1.B.1

Circuit		
Type	Category	100% Continuous?
Power	Linear	No
Power	Non-linear	Yes
Control	Non-intrinsic	No
Control	Intrinsic	Yes
Instrumentation	Non-intrinsic	Yes
Instrumentation	Intrinsic	Yes

2. Conduit Shape

Wiring shall be routed in pipe or tubular conduits, NOT in fabricated wireways or gutters.

Exception:

- *Unless specifically called out otherwise in the Plans.*

C. PVC SCHEDULE 40 RACEWAY APPLICATIONS

1. All straight portions of conduits completely concealed in walls, attics, concrete, or below ground (not exposed) shall be PVC Schedule 40.

Exceptions:

- *Power conduits containing non-linear loads shall be 100 percent continuous over their entire length.*
- *Control conduits containing intrinsically safe circuits shall be 100 percent continuous over their entire length.*
- *All Instrumentation conduits shall be 100 percent continuous over their entire length.*
- *PVC conduit areas under roads or heavy traffic areas shall be Schedule 80.*
- *Where specifically called out otherwise in the Cable and Conduit Schedule.*

D. RGS RACEWAY APPLICATIONS

1. All conduits requiring 100 percent continuity per Section 3.1.B.1 shall be RGS over their entire length. For coating requirements, reference Section 3.2.

Exception:

- *LFMC conduit shall be allowed per the "LFMC Raceway Applications" section herein.*

2. Underground factory or bent elbows and offsets greater than or equal to 30 degrees shall be RGS.

Exceptions:

- *Where the radius of a conduit bend is greater than or equal to 15 feet per inch of trade size.*
- *Raceways used for the containment and protection of bare grounding electrode conductors shall be PVC*

Schedule 80. Reference PVC Schedule 80 raceway applications.

3. All portions of conduits exposed outdoors shall be RGS.

Exception:

- *All conduits containing grounding electrode conductors shall be PVC Schedule 80 over their entire length.*

4. All portions of conduits under covered structures open on any side shall be RGS.

Exception:

- *All conduits containing grounding electrode conductors shall be PVC Schedule 80 over their entire length.*
- *LFMC conduit shall be allowed per the "LFMC Raceway Applications" section herein.*

5. All portions of conduits exposed on the inside of below-ground pullboxes, equipment vaults, wet wells, and dry wells (vaults) shall be RGS.

Exceptions:

- *All conduits immediately terminating after penetrating a vault wall, that are allowed to be PVC Schedule 40 underground, shall terminate as a PVC conduit bell-end.*

If the conduit is connected inside the vault to any device, conduit body, junction box, control panel, or any other conduit, then all portions of the conduit inside the vault, through the wall penetration, and 24 inches outside the vault shall be RGS and shall be grounded.

- *All conduits containing grounding electrode conductors shall be PVC Schedule 80 over their entire length.*

6. All portions of conduits penetrating concrete floors, walls, or ceilings shall be RGS.

Exception:

- *In below ground vaults as described above.*

7. All conduit penetrations from grade shall be RGS.

Exception:

- *All conduits containing grounding electrode conductors shall be PVC Schedule 80 over their entire length.*

8. All portions of exposed conduits inside closed buildings shall be RGS.

Exceptions:

- *IMC conduit shall be allowed per the "IMC Raceway Applications" section herein.*
- *LFMC conduit shall be allowed per the "LFMC Raceway Applications" section herein.*
- *All conduits containing grounding electrode conductors shall be PVC Schedule 80 over their entire length.*
- *Unless otherwise specifically called out on a separate plan or detail.*

E. LFMC RACEWAY APPLICATIONS (reference Definitions)

1. LFMC conduit shall be used for the last 18 inches of connection to motors, transformers and other vibrating equipment.
2. LFMC conduit shall be used for the last 18 inches of connection to field instruments such as flow meters in vaults and ultrasonic level transducers.
3. LFMC conduit shall be used for the last 18 inches of connection to any device that may require minor movement

during maintenance or repair or that may require physical adjustment.

4. LFMC conduit may be used in pull vaults for connections between conduit penetrations and junction boxes inside the vault where space is limited.

F. IMC RACEWAY APPLICATIONS (reference Definitions)

1. Exposed conduits in dry well shall be IMC.

Exception:

- *LFMC conduit shall be allowed per the “LFMC Raceway Applications” section herein.*

3.2 RGS RACEWAY PROTECTIVE COATINGS

Protected RGS conduits are used to minimize conduit degradation from moisture and chemicals.

Where called in the Plans or Specifications as “Protected RGS,” “PVC-Coated RGS,” “PVC-Coated,” “PVC-RGS,” or “PVC-RMC,” all such conduits, elbows, and fittings shall be factory coated PVC as defined in Section 2.1.

A. PVC-COATED RGS CONDUIT APPLICATIONS

1. All portions of RGS elbows, bends, straight pipes, couplings, and fittings buried underground shall be PVC-Coated.
2. All portions of RGS elbows, bends, straight pipes, couplings, and fittings encased in concrete shall be PVC-Coated.
3. All portions of RGS elbows, bends, straight pipes, couplings, and fittings exposed outdoors shall be PVC-Coated.
4. All portions of RGS elbows, bends, straight pipes, couplings, and fittings inside underground vaults, pullboxes, wet wells, and dry wells shall be PVC-Coated.
5. All portions of RGS elbows, bends, straight pipes, couplings, and fittings exposed in Chemical Rooms (reference Definitions) shall be PVC-Coated.

6. All portions of RGS conduits penetrating concrete floors and below-ground walls and ceilings shall be PVC-Coated at least 12" into the exposed area and extending at least 24" underground.

Exceptions:

- *Where specifically noted to be otherwise in the Plans.*
- *Non-metallic conduits that terminate at the wall of a pullbox.*

3.3 JUNCTION AND DEVICE BOX APPLICATIONS

A. JUNCTION BOXES

1. Junction boxes for Instrumentation, Intrinsically Safe, and Non-Linear Power circuits (see Definitions) shall be hinged steel, 6" x 6" x 4" minimum.
2. Dry Areas (see Definitions).
 - a. Flush-mounted junction boxes may be the standard type.
 - b. Wall-mounted junction boxes shall be the NEMA 1 gasketed.
3. Wet Areas (see Definitions).
 - a. NEMA 4X 316L stainless steel.

Exceptions:

- *Except in pullboxes, cast junction boxes shall be allowed for applications where three conduits or less approach from three different directions and no terminations are made inside the junction box.*
- *Unless called out otherwise on the Plans*

4. Hazardous Areas (see Definitions).
 - a. Junction boxes shall be explosion-proof, dust and ignition-proof, raintight, rated for Class I, Division 1 & 2, Group C, d environments and shall conform to NEC Articles 500 through 517 (reference Section 2.5.A).

B. DEVICE BOXES, ACTUATORS, AND COVERS

All exposed boxes shall be of cast construction.

All aluminum and cast iron covers shall be provided with a weatherproof gasket.

1. Outdoors, In Pullboxes, In Equipment Vaults

a. Receptacles

Cast iron device box body with cast aluminum gasketed cover and top-opening "in-service" cover.

Exception:

- *Cast aluminum device box bodies may be used if specifically called out on the Plans or approved by the Engineer.*

b. Light Switches

Cast iron device box body with cast iron gasketed cover and lever-arm actuator.

Exception:

- *Cast aluminum device box bodies with gasketed die cast aluminum covers and lever arm actuators may be used if specifically called out on the Plans or approved by the Engineer.*

2. Hazardous Areas (see Definitions).

a. Explosion proof.

3.4 PULLBOX AND HANDHOLE APPLICATIONS

A. PULLBOXES

Pullboxes shall be provided as shown on the Plans and as required by the Utility Companies.

1. Pullboxes shall be 6' x 6' x 4' deep minimum.

Exceptions:

- *Pullboxes with less than 2 TYPE J1, TYPE J2, or TYPE J3 junction boxes (reference Definitions) shall be allowed to be 4' x 4' x 4' minimum.*
- *Unless specifically called out otherwise on the Plans.*
- *Unless called out otherwise by a Utility Company.*

2. Pullboxes shall be provided with metal H30 hatch lids.

Exceptions:

- *If pullboxes are located where only light load vehicular traffic is present, then the hatch lids shall be rated at H25.*
- *If pullboxes are located where no vehicular load traffic is present, then the hatch lids shall be rated at H20.*

3. Pullbox lids shall be cast, engraved, or otherwise permanently marked with the legend "ELECTRICAL."

B. HANDHOLES

Handholes are used as pull and splice points in underground installations and are typically installed in driveways, parking lots, and off-roadway applications subject to occasional non-deliberate heavy vehicular traffic.

1. Handholes shall be set adjacent to each pole light pedestal.

Exception:

- *Unless specifically shown or called out otherwise on the Plans.*

PART 4 EXECUTION

4.1 EXAMINATION

Examine surfaces and spaces to receive raceways, boxes, for compliance with installation tolerances and other conditions affecting performance of raceway installation. Do not proceed with installation until unsatisfactory conditions have been corrected.

4.2 INSTALLATION, GENERAL

A. COORDINATION WITH OTHER WORK

Wherever practical, route conduit with adjacent ductwork or piping.

1. Keep raceways at least 6 inches away from parallel runs of flues and steam or hot-water pipes or other heat sources operating at temperatures above 100 degrees F.
2. When installing utility conduits, comply with the spacing and depth requirements of the utilities.
3. Non-electrical buried piping has routing priority over electrical burials.

B. MOUNTING PRACTICES

1. All conduits in process areas shall be surface mounted unless specifically called out otherwise on the Plans.
2. Install raceways, boxes, enclosures, and cabinets as indicated, according to manufacturer's written instructions.
3. Where several conduits follow a common route, stagger pull boxes, junction boxes, pulling sleeves, and fittings.

C. DEVICE BOX INSTALLATION

1. Coordinate box locations with building surfaces and finishes to avoid bridging wainscots, joints, finish changes, etc.

2. Recess boxes in the wall, floor, and ceiling surfaces in finished areas. Set boxes plumb, level, square and flush with finished building surfaces within 1/16 of an inch for each condition. Set boxes so that box openings in building surfaces are within 1/8 of an inch of edge of material cut-out and fill tight to box with building materials. Back boxes with structural material to prevent rotation on studs or joists. Use gang boxes wherever more than one device is used at one location.
3. Surface mount boxes to building structures with a minimum of 1/4-inch spacing and with a minimum of two fasteners. Provide attachments to withstand an additional force of 100 pounds applied vertically or horizontally.
4. Set recessed boxes at the following heights to the bottom of the box, except where noted otherwise in the Plan Set:
 - a. Convenience outlet receptacles in finished areas at 18 inches above floor.
 - b. Lighting switches, dimmers, etc., at 42 inches above floor.
 - c. Wall mounted telephones at 60 inches above floor.
 - d. Boxes for outlets on cabinets, countertops, shelves, and above countertops at 2 inches above the finished surface or 2 inches above the back splash. Verify size, style, and location with the supplier or installer of these items before installation.
5. Set surface-mounted receptacle and lighting boxes in wet areas 42 inches above the finished floor to the center of the box, unless called out otherwise in the Plan Set.
6. Set surface-mounted boxes for lighting switches within 12 inches of the door opening on the strike or lock side of the door or on the side closing last unless indicated otherwise in the Plan Set.
7. Arrange boxes used in wet areas to drain moisture away from devices or enclosures for equipment and make conduit connections from below.

8. Set floor boxes level and adjust to finished floor surface.

D. CONDUIT INSTALLATION

Install conduit as a complete and continuous system without wires. Mechanically secure to boxes, fittings, and equipment. Electrically connect conduits to all metal boxes, fittings, and equipment.

1. All field or manufactured ferrous metal threaded connections of conduits and fittings shall be installed with a coating of electrically conductive, corrosion resistant, copper colloidal compound such as "Shamrock Kopr-Shield™ Compound" or equivalent.
2. Keep conduits clean and dry. Close each exposed end.
3. Properly ground each metallic box, cover, lid, hatch, conduit, etc., in compliance with the National Electrical Code and Specification Section 16060.
4. When blowing through conduits, cover electrical components installed in enclosures to avoid blowing dirt, shavings, or moisture into equipment.
5. Install pull wires in empty raceways. Use No. 14 AWG zinc-coated steel, monofilament plastic line, or woven polyester pull line with not less than 200-lb tensile strength. Leave at least 8 inches of slack at each end of the pull wire.
6. Install exposed raceways in lines parallel or perpendicular to the building or structural member's lines except if structure is not level then follow the surface contours as much as practical. Do not crossover or use offsets if they can be avoided by installing the raceway in a different routing.
7. Run parallel or banked conduits together, on common supports where practical.
8. Make bends in parallel or banked runs concentric (common radius point, expanding radius). Use factory elbows only where elbows can be installed concentrically; otherwise, provide field bends for parallel raceways.

9. Select surface raceway outlet boxes to which lighting fixtures are attached of sufficient diameter to provide a seat for the fixture canopy.
10. Provide surface metal raceway outlet box and the backplate and canopy at the feed-in location of each end-stem suspension fluorescent lighting fixture.
11. Labeling

With the exception of conduits supplying power to lighting and convenience receptacles, all conduits shall be labeled in the following manner.

- a. Conduits shall be labeled at each entrance and exit of a raceway, box, and device. Labels shall be placed no more than 3 inches from the relevant entrance or exit and shall be positioned in a manner where they can best be read by technicians and maintenance personnel.

Exception:

- *Only one label shall be required for conduits less than 6 feet in length where the entire conduit can be seen from a single point.*
- b. The labels used shall be permanent items manufactured specifically for tagging conduits in direct sunlight and wet environments.
 - c. The conduit label shall be the full conduit number as listed on the Cable and Conduit Schedule.
 - d. The conduit label shall be attached near the ends of conduit stub ups through floors and penetrations into vaults even if equipment is set over the conduit.

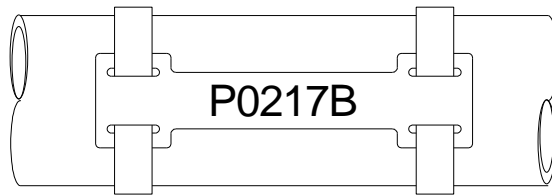


Figure 4.2.D.11

Example of a Conduit Label

E. RACEWAY TERMINATIONS AND CONNECTIONS

1. Join raceways with fittings designed and approved for the purpose and make joints tight.
2. Make connections waterproof and rustproof by application of a watertight, conductive thread compound. Clean threads of cutting oil before applying thread compound.
3. PVC–RMC Conduits

Use only fittings approved for use with that material. Patch all nicks and scrapes in PVC coating after installing conduits.
4. Apply PVC adhesive by brush.
5. Make raceway terminations tight. Use bonding bushings or wedges at connections subject to vibration. Use bonding jumpers where joints cannot be made tight.
6. Cut ends of conduit square with hand or power saw or pipe cutter. Ream cut ends to remove burrs and sharp ends. Make conduit threads cut in the field with the same effective length and same thread dimensions and taper as specified for factory-cut threads.
7. Flexible Connections

Use maximum of 18 inches of flexible conduit for equipment subject to vibration, noise transmission, removal, or movement; and for all motors. Do not use flexible conduit in place of elbows, offsets, or fittings to attach to fixed equipment. Use LFMC in wet or damp locations. Do not strap flexible conduit to structures or other equipment.

8. Provide double locknuts and insulating bushings at conduit connections to boxes and cabinets. Align raceways to enter squarely and install locknuts with dished part against the box. Use grounding type bushings where connecting to concentric or eccentric knockouts.

Exception:

- *In wet areas, use Myers hubs.*

9. Where raceways are terminated with threaded hubs, screw raceways or fittings tightly into the hub so the end bears against the wire protection shoulder. Where chase nipples are used, align raceways so the coupling is square to the box and tighten the chase nipple so no threads are exposed.
10. Support conduit connections to motors or other equipment independently of the motor or equipment. Raise or drop vertically to the nearest practicable point of connection to the unit. Run vertical drops to the floor and fasten with a floor flange. Unsupported drops are not permitted. Horizontal runs on the floor or on equipment are not permitted. Drop or raise at the appropriate closest location. Run conduit on equipment frames or supports to closely follow the contours of the equipment. Locate conduit to maintain access to all equipment services and adjustment points and so as not to interfere with operation of the equipment.
11. Connect conduit to hubless enclosures, cabinets, and boxes with double locknuts and with insulating type bushings. Use grounding type bushings where connecting to concentric or eccentric knockouts. Make conduit connections to enclosures at the closest point possible where the devices are located to which the circuits contained in the conduit will connect.

Exception:

- *In wet areas, connect to enclosures, boxes, and devices from the bottom side using Myer-type hubs.*

F. EXPANSION FITTINGS

Where conduits cross building expansion joints, use suitable sliding or offsetting expansion fittings. Unless specifically approved for bonding, use a suitable bonding jumper.

Exception:

- *For 100 percent continuous conduits, provide an LFMC loop to compensate for expansion. Include conduit outlet boxes for maximum bend compliance.*

G. RACEWAY SUPPORT

Support raceways as specified in Section 16050.

1. Provide anchors, hangers, supports, clamps, etc., to support the raceways from the structures in or on which they are installed. Do not space supports further apart than 10 feet.
2. Provide sufficient clearance to allow conduit to be added to racks, hangers, etc., in the future.
3. Support raceway within 3 feet of every outlet box, junction box, panel, fitting, etc.
4. Support raceway and boxes in an approved manner by:
 - a. Expansion shields in concrete or solid masonry;
 - b. Toggle bolts on hollow masonry units;
 - c. Wood screws on wood;
 - d. Metal screws on metal.
5. Raceway in wet areas shall have clamp backs or other appropriate spacers to hold them a minimum of 1/2 inch off the surface. Horizontal runs on the roof surface shall be blocked at every 5 feet to hold them a minimum of 2 inches above roof surface.

H. INSTALLING PVC-COATED RGS CONDUITS

1. Follow the manufacturer's requirements and recommendations when installing PVC-Coated RGS conduits.
2. Seal the connections to protect the conduit.
3. Provide manufacturer's PVC repair compound where the thickness of the conduit coating has been reduced or damaged (from bending, threading, nicking, etc.)

I. BENDS AND OFFSETS

Bend and offset metal conduit with hickey or power bender, standard elbows, conduit fittings or pull boxes. Bending of PVC shall be by hot box bender and, for PVC 2-inches in diameter and larger, expanding plugs. Make elbows, offsets and bends uniform and symmetrical. Make bends and offsets so ID is not reduced. Keep legs of bends in the same plane and straight legs of offsets parallel, unless otherwise indicated.

J. PENETRATIONS FOR RACEWAYS

1. Do not bore holes in floor and ceiling joists outside center third of member depth or within 2 feet of bearing points. Holes shall be 1-inch diameter maximum.

Exception:

- *Unless specifically approved by Structural Engineer.*
2. Penetrate through roofs with core drill hole 1/2 to 1 inch larger than conduit, flash with neoprene, caulk conduit in place and seal with silicone sealant under flashing. Sleeve roof opening where non-concrete roof construction occurs.

K. CONDUIT SEAL OFFS

Install raceway seal-off fittings according to manufacturer's written instructions. Locate fittings at suitable, approved, and accessible locations as per NEC Article 500 and fill them with UL-listed sealing compound. For concealed raceways, install each fitting in a flush steel box with a blank cover plate having a finish similar to that of adjacent plates or surfaces.

Install raceway seal-off fittings in compliance to NFPA 70 and NFPA 820.

Exceptions:

Seal-off fittings filled with removable compound may be used in non-hazardous applications as listed below to eliminate the possibility of the passage of water or water vapor.

- *Where conduits pass from warm to cold locations.*
- *Where conduits enter or exit buildings below grade.*
- *Where specifically called out on the Plans.*

4.3 PULLBOXES

A. PULLBOX STRUCTURAL INSTALLATION

Strict compliance must be followed regarding the installation of conduits, conductors, junction boxes, and grounding inside pullboxes.

1. Install pullboxes outside of classified areas. Field verify measurements to assure compliance.

Exception:

- *Unless specifically called out otherwise in the Plans.*

B. PULLBOX CONDUIT, CONDUCTOR, JUNCTION BOX, AND GROUNDING INSTALLATION

The six types/categories of electrical circuits as defined in Section 3.1.B.1 shall be installed as described herein (reference Figure 4.3.B).

1. Installing circuits in conduits NOT Identified As 100 percent Continuous in Pullboxes
 - a. Conduits NOT identified as 100 percent continuous shall terminate at the penetration into the pullbox with a PVC Schedule 40 bell-end.

- b. Cables and conductors shall be open-wire within the pullbox.
 - c. Coil 2 wraps at 24 inches per wrap of each open wire. Bind the wraps with Ty-Rap® cable fasteners.
 - d. Support open wires a minimum of 18 inches above the pullbox floor on 316L stainless supports mounted near the edges of the pullbox, leaving room in the center for safe entry, work, and exit. Secure wires with Ty-Rap® cable fasteners.
 - e. Physically separate power and control circuits as much as possible.
 - f. Plug the ends of all open conduits with a removable filler to minimize water entry into and out of the pullbox. Repair plugging after the movement of open wiring.
 - g. Seal around all conduit penetrations with non-shrink grout.
2. Installing Conduits Identified As 100 Percent Continuous in Pullboxes
- a. All conduits identified as 100 percent continuous passing through, or terminating in, a pullbox shall terminate in a TYPE J1, TYPE J2, or TYPE J3 junction box for pulling purposes, termination, and rerouting.
 - b. Provide separate junction boxes for the types of circuits listed below. Under no circumstance shall these circuit types be combined in a common junction box.
 - i. Non-linear power circuits (TYPE J1).
 - ii. Intrinsically safe circuits (TYPE J2). Note: intrinsically safe instrumentation and control circuits may be combined in TYPE J2 junction boxes.

- iii. Instrumentation circuits, not intrinsically safe (TYPE J3).
- c. All conduit entries into junction boxes shall be watertight, made with Myer-type hubs.
- d. All conduits shall be mounted and supported with 316L stainless steel hardware.
- e. Conduit composition and protective coating shall be per Sections 3.1 and 3.2.

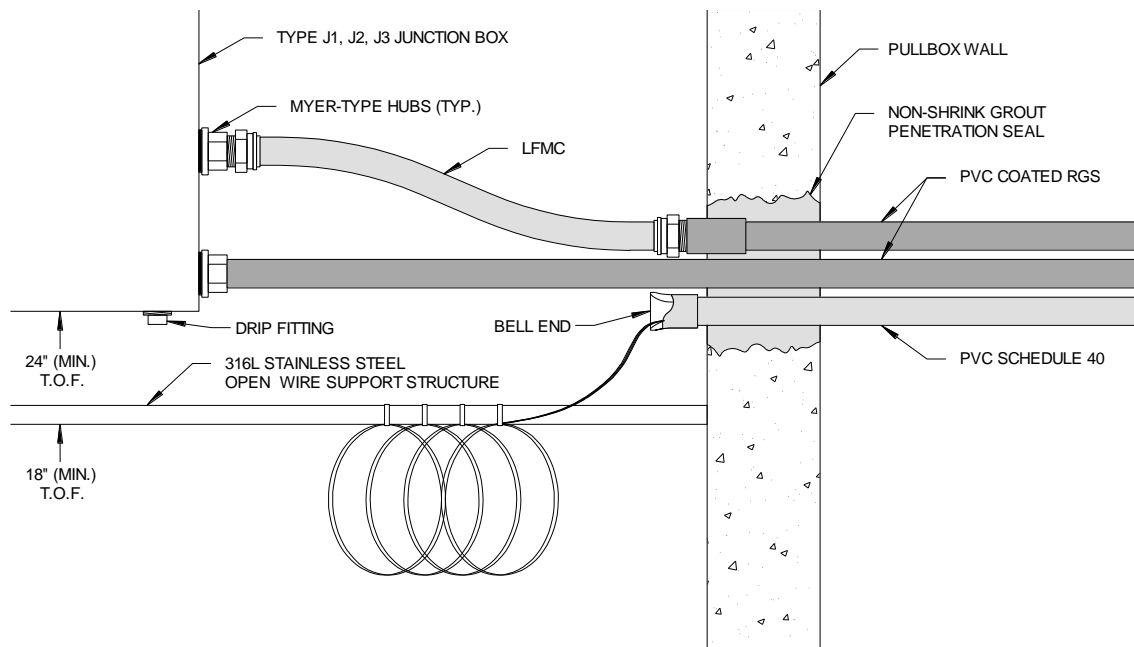


Figure 4.3.B

Typical Conduit Penetrations in Pullboxes

3. Installing Junction Boxes in Pullboxes
 - a. Junction boxes shall be NEMA 4X, 316L stainless steel, 18" x 18" x 6" (minimum) and shall comply with NEC 314.28(A)(1) and 314.28(A)(2).
 - b. Junction boxes shall be mounted with 316L stainless steel hardware at a height of 24 inches minimum from the bottom of the junction box to the floor of the pullbox.

- c. Junction boxes shall be mounted on separate walls.
- d. Junction boxes shall be provided with a water drip fitting mounted to the bottom of the box.
- e. Coil 4 wraps at 12 inches per wrap of each cable and conductor in a junction box.
- f. Splicing shall not be allowed in junctions boxes.

Exception:

- *Unless specifically called out otherwise in the Plans.*

4. Installing Grounding in Pullboxes

Reference Specification 16060.

4.4 HANDHOLES

A. HANDHOLE INSTALLATION

Install handholes for underground raceway systems true to line and grade. Provide a compacted foundation of fine sand or 3/8 minus crushed rock for the bearing surface edges of the handholes.

The handholes shall be installed per the NEC sections 314, and other applicable sections of the NEC.

B. HANDHOLE CONDUIT INSTALLATION

1. End all conduits with a vertical riser.
2. Conduits NOT identified as 100 percent continuous shall be allowed to extend into the handhole as a PVC conduit. Provide a PVC bell-end in each conduit as shown in Figure 4.5.B.2. Provide a removable filler at the end of each conduit to eliminate the possibility of water entry.

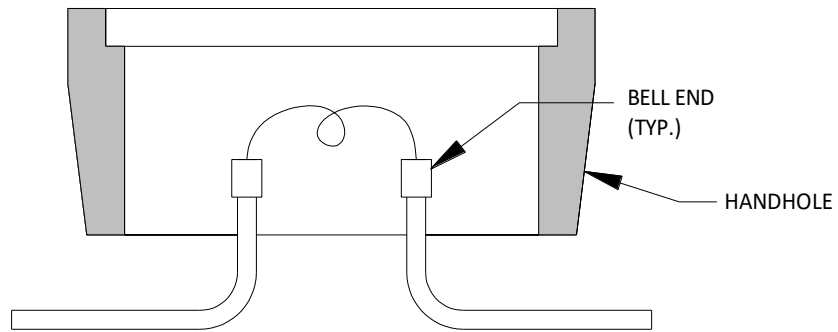


Figure 4.5.B.2

Typical PVC Conduit Terminations in a Handhole

3. Conduits identified as 100 percent continuous shall terminate into the bottom of a TYPE J1, TYPE J2, or TYPE J3 junction box, with Myer-type hubs, in PVC-Coated RGS conduit as shown in Figure 4.5.B.3. The door of the J-Box shall face upwards.

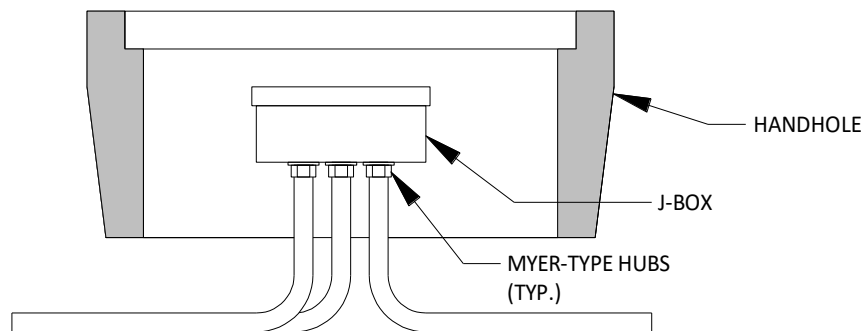


Figure 4.5.B.3

Typical 100 Percent Continuous Conduit Terminations in a Handhole

Exception:

- *Where a handhole contains only two conduits, and is being used solely as a pulling point, where one conduit is simply an extension of the other, a junction box may be replaced with a PVC-Coated RGS conduit pulling body.*

C. HANDHOLE GROUNDING

1. All handholes with metal conduits or with metal lids shall be grounded per Section 16060-3.

4.5 INSTALLATION OF CONDUITS UNDERGROUND AND IN CONCRETE

A. UNDERGROUND RACEWAYS

1. The minimum conduit depth shall be 24 inches.

Exceptions:

- *Electrical utility conduit depth shall be 36 inches.*
 - *Unless required otherwise by utility company.*
 - *Unless required to be shallower due to physical constraints (see requirements below).*
 - *Unless under a concrete slab (see requirements below).*
 - *Conduits contains a grounding electrode conductor shall be 30-inches deep.*
2. Conduits that require a buried depth of less than 18 inches shall require a 6-inch-thick concrete covering over that portion of such conduits. Such concrete covers need not be formed but shall be colored red or shall be painted red on top.
 3. Conduits under a concrete slab-on-grade shall be separated from the slab and from the supporting soil by at least 3 inches with soft sand on all sides.
 4. Provide separation of underground instrumentation conduits from power and control conduits by a minimum of 12 inches. Avoid parallel runs of instrumentation conduits with power and control conduits as much as possible. Where instrumentation conduits are required to crossover power or control conduits, maintain the 12-inch separation using depth and make the crossover as close to 90 degrees as possible.

Exception:

- *Provide 18 inches of separation between instrumentation conduits and non-linear power conduits.*
5. Run conduits as straight as practicable. Make changes in direction and/or grade of sufficient length to allow a gradual change (3-foot radius minimum). Make slight offsets with 5-degree couplings.
 6. Run trenches true and clear of stones or soft spots. Place 4-inches of fine sand in the trench bottom and tamp into place. Provide preformed plastic spacers on top of sand spaced 5-feet on center.

After the raceway is placed in the trench, backfill 6 inches with sand, then with native earth backfill passing a No. 8 sieve, free of stones. Do not tamp on top of the conduit until the final backfill is placed. Tamp or water-settle the final backfill to finish the grade. Compact the backfill as specified under Section 02300 "Site Earthwork."

7. Mark direct buried conduit by placing a red marking tape a minimum of 12 inches below grade during backfilling of the trench.
8. Seal conduit connections to eliminate leakage.

B. CONCRETE ENCASED RACEWAYS

Raceways encased in structural concrete must be defined in detail and presented to the Structural Engineer for approval at least 7 days prior to installation. As a minimum, approval will be based on the assurance that there will be no physical interference and that structural integrity will not be jeopardized.

1. In general, conduits encased in concrete may take the most direct route providing they do not jeopardize the structural integrity of the slab or interfere with process-related piping or equipment.
2. Conduits shall be at least 1-1/2 inches to the edge of a concrete body. If a structural block-out is desired for conduit bundling near the edge of a concrete body, then submit the

desired layout to the Engineer for approval and design as defined in this Section.

3. Conduit density, crossover, and routing must be minimized and coordinated to assure that structural integrity is not jeopardized.
4. At the point-of-exposure out of the slab, conduits must be perpendicular to the slab surface from all angles.
5. No part of an elbow's bending radius shall be seen at the point-of-exposure from the slab.

C. CONDUITS IN ELEVATED SLABS

See "CONCRETE ENCASED RACEWAYS" above.

D. CONDUITS UNDER SLABS ON GRADE

1. No conduits will be encased in slabs less than 8 inches in depth.
2. For slabs-on-grade, all conduits larger than 3/4-inch trade size must be run underground below the slab.
3. All conduits desired to be installed within slabs on grade shall be submitted to the Engineer for approval and design as defined in this Section.

Exceptions:

- *Conduits shown on the Plans as being designed into slabs on grade do not require further Engineering approval.*

E. CONDUIT TRANSITIONS

Where raceway exits from grade or concrete, provide the following:

1. All conduits exiting grade or concrete shall be PVC-Coated RGS.

Exception:

- *Raceways used for the containment and protection of bare grounding electrode conductors shall be PVC Schedule 80. No portion of these conduits shall be metallic.*
2. For equipment to be moved into place at a later date, install a PVC-Coated RGS coupling flush with the floor slab. Insert a threaded flush plug into the coupling. Provide a pull wire looped backed into the conduit that can be reached after removal of the plug.
 3. Only the straight portion of conduits shall exit grade or concrete. No curved portion of a factory or field-bent conduit shall be visible existing the penetration, even when covered or hidden by equipment.

F. CONDUIT STUB-UPS INTO EQUIPMENT AND ENCLOSURES

1. Where conduits are stubbed up into open bottom equipment and enclosures, extend the bottom of the conduit threads 1/2 inch above grade. Provide ground bushing and end fittings, flush with fitting and 2-inch stub, above the bottom of the enclosure. Stub conduits to a uniform height (plus or minus 1/8 of an inch) and align within plus or minus 1/4 inch.

Exception:

- *Conduits that do not meet the requirements of being 100 percent continuous, stubbing up directly under a Motor Control Center that is mounted on a housekeeping pad, shall be allowed to terminate as a PVC conduit with a bell-end.*
2. Locate stub-ups directly under the section gutter into which the conductors they contain are to be routed. Terminate conduit with insulating, grounding type bushing bonded to the ground bus of the equipment.
 3. Protect stub-ups from damage where conduits rise through floor slabs. Arrange so curved portion of bends are not visible above the finished slab.

4. Unless otherwise noted on the Plans, spare conduits stubbing up through concrete floors shall be finished flush with floor with an RGS coupling. Provide an in-set metal plug (male thread) into coupling flush with floor.
5. Provide conduit labels to these stub-ups.

4.6 PROTECTION

Provide final protection and maintain conditions, in a manner acceptable to manufacturer and installer that ensures coatings, and finishes are without damage or deterioration at the time of Substantial Completion.

- A. Repair damage to galvanized finishes with zinc-rich paint recommended by manufacturer.
- B. Repair damage to PVC or paint finishes with matching touchup coating recommended by manufacturer.

4.7 CLEANING

On completion of installation, including outlet fittings and devices, inspect exposed finish. Remove burrs, dirt, and construction debris and repair damaged finish, including chips, scratches, and abrasions.

4.8 QUALITY CONTROL

A. TESTS

1. Conduits identified as meeting the requirements of 100 percent continuity shall be tested between source and destination as follows:
 - a. Testing shall be performed using a Digital Voltmeter or Biddle ohmmeter.
 - b. Testing values shall not exceed 5 ohms.
 - c. If testing values exceed 5 ohms, then corrective action shall be taken to reduce the resistance to 5 ohms or below.

- d. These measurements shall be documented, signed, and submitted to the Engineer for approval.

***** END OF SECTION *****

SECTION 16140
WIRING DEVICES

PART 1 GENERAL

1.1 SCOPE

The work specified in this Section includes the various types of receptacles, connectors, switches, and finish plates.

1.2 RELATED WORKS SPECIFIED ELSEWHERE

<u>Section</u>	<u>Items</u>
16050	Basic Electrical Materials and Methods
16130	Raceways and Boxes

1.3 QUALITY ASSURANCE

See Section 16050.

1.4 COORDINATION

A. WIRING DEVICES FOR OWNER FURNISHED EQUIPMENT

Match devices to plug connectors for Owner-furnished equipment.

B. CORD AND PLUG SETS

Match cord and plug sets to equipment requirements.

1.5 DEFINITIONS

Reference Section 16050, "Definitions."

PART 2 PRODUCTS

2.1 MANUFACTURERS

A. AVAILABLE MANUFACTURERS

Subject to compliance with requirements, manufacturers offering products that may be incorporated in the work include the following:

1. Wiring Devices
 - a. Arrow Hart Div., Cooper Industries.
 - b. Bryant Electric, Inc.
 - c. Hubbell Inc.
 - d. Killark Electrical Mfg. Co.
 - e. Leviton Mfg. Co., Inc.
 - f. Pass & Seymour/Legrand.
2. Multi-Outlet Assemblies
 - a. Wiremold Co.

2.2 WIRING DEVICES

Comply with NEMA Standard WD 1, "General Purpose Wiring Devices."

A. ENCLOSURES

NEMA 1 equivalent, except as otherwise indicated.

B. COLOR

Ivory except as otherwise indicated or required by Code.

C. RECEPTACLES, STRAIGHT-BLADE AND LOCKING TYPE

Except as otherwise indicated, comply with Federal Specification W-C-596 and heavy-duty grade of UL Standard 498, "Electrical Attachment Plugs and Receptacles." Provide NRTL labeling of devices to verify compliance.

1. General Purpose Convenience Outlets
 - a. Duplex receptacle configuration
 - b. Nylon face
 - c. Staked screw terminals for line, neutral, and ground connections.

- d. Provisions for split bus
 - e. NEMA 5-20R
2. Special Purpose Receptacles
- a. Staked screw terminals for line, neutral, and ground connections.
 - b. NEMA configuration as indicated.

D. RECEPTACLES, STRAIGHT-BLADE, SPECIAL FEATURES

Comply with the basic requirements specified above for straight-blade receptacles of the class and type indicated, and with the following additional requirements:

1. Ground-Fault Circuit Interrupter (GFCI) Receptacles

UL Standard 943, "Ground Fault Circuit Interrupters," with integral NEMA 5-20R duplex receptacle arranged to protect only the connected receptacle and no other receptacles connected on the same circuit. Design units for installation in a 2-3/4-inch-deep outlet box without an adapter.

E. RECEPTACLES, INDUSTRIAL HEAVY-DUTY

Conform to NEMA Standard PK 4 "Plugs, Receptacles, and Cable Connectors of the Pin and Sleeve Type for Industrial Use."

Refer to Specification Section 16230 for pin and sleeve generator receptacles.

F. RECEPTACLES IN HAZARDOUS (CLASSIFIED) LOCATIONS

Comply with NEMA Standard FB 11 "Plugs, Receptacles, and Connectors of the Pin and Sleeve Type for Hazardous Locations" and UL Standard 1010 "Receptacle-Plug Combinations for Use in Hazardous (Classified) Locations."

120 VAC, 1 PH, 20 A and less, receptacles used in Class I, Divisions 1 and 2 areas, shall be dead-front, delayed action, circuit breaking type, rated for use in Class I, Division 1 and 2, Groups B, C, and D areas. These receptacles shall be rated NEMA 3, 7BCD,

9FG, and 12 and shall be suitable for use in explosion proof, dust-ignition proof, and raintight applications. Receptacles shall be rated 20 A, 125 VAC with 3/4" hubs; Crouse-Hinds #ENR 21201 with ENP 5201 plug, or equivalent.

G. PENDANT CORD/CONNECTOR DEVICES

Matching, locking type, plug and plug receptacle body connector, NEMA L5-20P and L5-20R, heavy-duty grade.

1. Bodies

Nylon with screw-open cable-gripping jaws and provision for attaching external cable grip.

2. External Cable Grip

Woven wire mesh type made of high-strength galvanized-steel wire strand and matched to cable diameter and with attachment provision designed for the corresponding connector.

H. CORD AND PLUG SETS

Match voltage, current ratings, and number of conductors to requirements of the equipment being connected.

1. Cord

Rubber-insulated, stranded copper conductors, with type SOW-A jacket. Grounding conductor has green insulation. Ampacity is equipment rating plus 30 percent minimum.

2. Plug

Male configuration with nylon body and integral cable-clamping jaws. Match to cord and to receptacle type intended for connection.

I. SNAP SWITCHES

Quiet-type ac switches, NRTL listed and labeled as complying with UL Standard 20 "General Use Snap Switches," and with Federal Specification W-S-896.

1. Lighting Switches
120/277 Vac only, rated 20 amperes.
2. Motor Rated Switches
Horsepower rated for application indicated.

J. WALL PLATES

Single and combination types that mate and match with corresponding wiring devices. Features include the following:

1. Color
Matches wiring device except as otherwise indicated.
2. Plate-Securing Screws
Metal with heads colored to match plate finish.
3. Material for Interior Finished Spaces
Lexan, except as otherwise indicated.
4. Material for Interior Unfinished Spaces: Galvanized steel.
5. Material for Laboratories: Stainless steel.
6. Material for Exterior or Wet Locations: Cast Aluminum.

K. LIMIT SWITCHES

Limit switches shall be Allen Bradley 802T with 1" wide adjustable lever and 3/4" nylon roller or equal.

L. FLOOD SWITCHES

Flood switch shall be Gems LS-3 single-point level switch or equal.

2.3 MULTI-OUTLET ASSEMBLIES

- A. Comply with Standard UL 5, "Surface Metal Raceways and Fittings."

B. COMPONENTS OF ASSEMBLIES

Products of a single manufacturer designed to be used together to provide a complete matching assembly of raceways and receptacles.

C. RACEWAY MATERIAL

Metal, with manufacturer's standard corrosion-resistant finish.

D. WIRE

No. 12 AWG.

PART 3 EXECUTION

3.1 INSTALLATION

A. IDENTIFICATION

Each receptacle, whether convenience, or dedicated, shall be labeled with the circuit from which its power is derived. Label as "CKT-XX" where XX = numerical circuit number

1. Only one Panelboard servicing the site:

Label as "CKT-XX" where XX = numerical circuit number within the Panelboard.

2. More than one Panelboard servicing the site:

Label as "CKT XX-YY" where XX = Panelboard number and YY = numerical circuit number within the Panelboard.

Example:

A receptacle powered from circuit 03 of Panelboard [01 PB 02] would be labeled "CKT 02-03"

B. RECEPTACLE BOXES

1. Reference Section 16130 for box types.

2. Mounting Height

a. Indoor, in DRY Areas

Indoor receptacle boxes in DRY areas shall be mounted 12 inches above the floor unless shown otherwise on the Plans.

b. Indoor, in WET Areas

Indoor receptacle boxes in WET areas shall be mounted 42 inches above the floor unless shown otherwise on the Plans.

c. Outdoor

Outdoor receptacle boxes shall be mounted 18 inches above grade unless shown otherwise on the Plans.

3. Reference Section 16130 for box cover types.

C. CONVENIENCE RECEPTACLES

Convenience receptacles shall be 20 A, duplex, white, GFCI, straight blade, 3-wire, grounding, unless called out otherwise on the Plans.

In addition to any GFCI requirements, all receptacles, convenience or dedicated, located in break rooms and kitchens shall be AFCI.

D. DEDICATED RECEPTACLES

Dedicated receptacles shall be 20 A, simplex, gray, non-GFCI, straight blade, 3-wire, grounding, unless called out otherwise on the Plans.

Power must be connected to a dedicated GFCI breaker in the panelboard.

In addition to any GFCI requirements, all receptacles, convenience or dedicated, located in break rooms and kitchens shall be AFCI.

Dedicated receptacles shall include a red phenolic placard with 3/8-inch lettering over the receptacle stating:

NON-GFCI RECEPTACLE
FOR (*specific device*)
NOT INTENDED FOR GENERAL USE

E. ARRANGEMENT OF DEVICES

Except as otherwise indicated, mount flush, with long dimension vertical, and grounding terminal of receptacles on bottom. Group adjacent switches under single, multigang wall plates.

1. See "Raceways and Boxes" Section for mounting height of devices.
2. Verify locations of outlets and switches in cabinetry with cabinet supplier and Owner prior to installation.

F. INSTALLATION PRACTICES

1. Install devices and assemblies plumb, level, flush and secure. Provide spacers on device screws to flush yokes or flanges to surface of wall within 1/16 of an inch where boxes are not flush with the wall surface. Install wiring devices such as receptacles to withstand 50 pounds force applied perpendicular to the device face with a maximum deflection of 1/16 of an inch.
2. Protect devices and assemblies during painting.
3. Use corrosion resistant devices in kitchen areas and outdoors.
3. Wiring connections shall be made by compression on the screw terminals. The wire shall be neatly and symmetrically wrapped around the screw a minimum of 180 degrees.

G. LIGHT SWITCH ORIENTATION

Install switches with the "off" position down. Install three and four way switches so the load is "off" when all switch handles are down.

H. TERMINATION PRACTICES

Connect phase, neutral, and grounding wires to devices with full loops around screws installed to tighten with tightening of the screw. Trim insulation to within 1/8 of an inch of screw terminal.

I. WALL PLATES

Install after painting is complete. Install with an alignment tolerance of 1/16 of an inch to plumb. Install at flush mounted devices so that all four edges are in continuous contact with finished wall surface without the use of mats or similar devices. Do not use plaster fillings.

3.2 GROUNDING

Connect receptacle or switch ground lug to device box for devices other than isolated ground type.

3.3 FIELD QUALITY CONTROL

Test wiring devices for proper connections, polarity, and ground continuity. Perform this testing with testing equipment designed for testing polarity and connections.

Operate each operable device at least six times.

Test ground-fault circuit interrupter operation with local fault simulations, using a tester designed for such testing, and according to manufacturer recommendations. Testing with integral test switches on the receptacle is not sufficient for this testing.

Replace damaged or defective components, and retest.

***** END OF SECTION *****

MEASUREMENT AND PAYMENT

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MEASUREMENT AND PAYMENT

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Section 4 - Measurement and Payment

Bid Item Introduction

It is the intent of these Specifications that the performance of all work under the bid items shall result in the complete construction, in proper operating condition, of the facilities described. It is understood that any additional material or work required to place the facilities in operating condition shall be provided by the Contractor as work covered by the listed bid items and shall be considered incidental thereto.

Submittals, shop drawings, calculations, start-up, testing, training, warranties, and operation and maintenance manuals as required shall be considered incidental to the various items of work and no additional compensation will be allowed.

Mobilization

The lump sum price bid for Mobilization shall be full compensation for all labor, equipment, tools and materials required for preparatory work and operations, including, but not limited to the following items:

1. The movement of personnel, equipment, supplies and incidentals to the project site as related to project mobilization, demobilization and cleanup.
2. The establishment of field offices and material storage areas.
3. Purchase, delivery and storage of pipe, fittings, appurtenances, and all other materials required for the project.
4. Insurance, bonding, submittals and other work and operations that must be performed or costs incurred before beginning contract work.
5. Mobilization costs for subcontracted work.

Payment for mobilization will be made monthly based upon the following partitions:

1. 10% of the original Contract amount, but not more than 100% of the amount bid for mobilization, will be paid as part of the first monthly pay estimate.
2. When 75% of the original contract amount is earned, 100% of the amount bid for mobilization will be paid.

Temporary Erosion & Sedimentation Control

The lump sum price bid for Temporary Erosion & Sedimentation Control shall be full compensation for all labor, materials, tools and equipment necessary and incidental to install, maintain and remove the TESC facilities. This item shall include, but not be limited to, the following: filter fabric fence, filter bags, storm drain inlet protection, straw bales, plastic sheeting, construction entrance mat, and street sweeping.

Trench Safety System

The lump sum price bid for Trench Safety System shall constitute full compensation for all labor, materials, tools and equipment necessary and incidental to providing a safe trench excavation. This item shall include, but not be limited to, the following:

1. Design, installation, proper use and removal of all sheeting, shoring, cribbing, boxes or other trench protection methods.
2. Excavation, backfill, compaction, dewatering, and other work required if extra excavation is used in lieu of trench box, shoring, cribbing or other trench protection. If imported backfill gravel is required for backfilling within the limits of the excavation, it shall also be required as backfill material for the extra excavation and shall be provided at the Contractor's expense.

The Contractor shall be solely responsible for the safety of his crew and public, and the District assumes no responsibility. The District will not be responsible for determining the adequacy of any system used by the Contractor and payment for protection systems will not imply District's approval of adequacy.

Temporary Sewer Bypass Pumping

The lump sum price bid for Temporary Sewer Bypass Pumping shall constitute full compensation for all labor, materials, tools and equipment necessary and incidental to construction. This item shall include, but not be limited to, the following:

1. Creating and furnishing a Temporary Sewer Bypass Pumping Plan.
2. Obtain and maintain all required private property authorization.
3. Designing, furnishing, installing, and maintaining pumps, floats and controls, auto-dialer, piping, storage container, fittings and appurtenances.
4. Maintaining and operating the bypass system during construction activities.

5. Furnishing, installing and maintaining, electrical source and backup power sources.
6. Decommissioning system and restoration of area upon abandonment of identified existing sanitary sewer system, completion and testing of new sanitary sewer system.
7. Excavation, dewatering, backfill and compaction of suitable native material where allowed, and wastehaul and disposal of excess native material as required to bypass sewer flows.

Demolition

The lump sum price bid for Demolition shall constitute full compensation for all labor, materials, tools and equipment necessary and incidental to demolish, remove, and wastehaul the existing pumps, floats, supports, rails, brackets, cables, piping, valves, fittings, control panels, conduit, electrical equipment, and appurtenances as required to install new facilities as shown on the Plans and specified herein.

Clearing and Grubbing

The lump sum price bid for Clearing and Grubbing shall constitute full compensation for all labor, materials, tools and equipment necessary and incidental to clearing and grubbing as designated on the Plans, including, but not limited to, removal, wastehaul and disposal of trees, shrubbery, vegetation, brush, stumps, logs, rubbish, and debris. This work shall also include all costs for grubbing deep enough to remove all large roots; as well as handling, hauling, placing and mechanical compaction of backfill, native or imported material as required to fill voids left by removal of tree, shrub, or vegetation.

Wet Well Modifications and Accessories

The lump sum price bid for Wet Well Modifications and Accessories shall include all labor, material, tools and equipment required to furnish and install all modifications to the existing fiberglass wet well including, cable supports, new wet well penetrations, and patching and repair of existing penetrations into existing fiberglass wet well as shown on the Plans and specified herein.

Valve Box and Discharge Piping

The lump sum price bid for Valve Box and Discharge Piping shall include all labor, material, tools and equipment required to furnish and install the valve box and cover, piping, fittings, valves, air-vac, buried valves, valve boxes, operating nut extensions, check valves, penetrations through new valve box, connection to the existing force main, excavation, dewatering, backfill and compaction of suitable native material where allowed, wastehaul and disposal of excess native material,

drain rock, filter fabric, pipe supports, and bypass pumping connection as shown on the Plans and specified herein.

Installation of Grinder Pumps, Discharge Elbows, and Guide Rails

The lump sum price bid for Installation of Grinder Pumps, Discharge Elbows, and Guide Rails shall include all labor, material, tools and equipment required to install the District procured grinder pumps, discharge elbows, guide rails, guide bracket, and lifting chains as shown on the Plans and as specified herein. This item shall also include all labor, material, tools and equipment necessary to furnish and install hardware, guide rail support, fabricated parts, and appurtenances as required to retrofit the existing fiberglass wet well for the installation of the District procured parts and equipment as Detailed in Appendix B.

Electrical

The lump sum price bid for Electrical shall include all labor, material, tools and equipment required to furnish and install electrical components of this project including conduit, wiring, cables, cement concrete pad for electrical equipment, control panel support structures, electrical handholes/pull boxes, excavation, wastehaul and disposal of excess native material, dewatering, backfill and compaction of suitable native material where allowed, crushed surfacing top course, foundation gravel, and appurtenances as shown on the Plans and specified herein. This item shall also include installation of the Owner-provided control panels, float switches, cables, and all other pre-procured equipment supplied by Quality Controls Corporation (QCC) as detailed in Appendix C.

Site Restoration

The lump sum price bid for Site Restoration shall constitute full compensation for all labor, material, tools and equipment necessary and incidental to restore disturbed ground surfaces and existing improvements to their pre-construction condition or better, not including work covered by other bid items. This item shall include, but not be limited to, the following:

1. Furnishing and placing of new topsoil, sod, bark, decorative rock, sand, river rock, or other surface treatment consistent with the adjacent undisturbed ground surface.
2. Excavation, grading and preparation of the areas to be restored.
3. Removal, storage and replacement of any existing decorative shrubs, hedges or trees.
4. Restoration of fences, rockeries, utilities or other structures.

5. Protection or replacement of existing culverts and asphalt lined ditches.
6. Protection of existing trees and improvements not to be removed.
7. Furnishing and installing root barriers, new plants, landscaping, and all other planting as shown on the Plans.
8. Removal and replacement of existing landscaping or irrigation system as required.

Payment shall be based on completion of the restoration satisfactory to the individual property owners or agency having jurisdiction over the affected property.

PROPOSAL

SECTION 5

Proposal

Honorable Commissioners
Northshore Utility District
King County, Washington

Dear Members of the Board:

The undersigned has examined the site, specifications, plans, laws and ordinances covering the improvements contemplated. In accordance with the terms, provisions and requirements of the foregoing, the following lump sums and unit prices are tendered as an offer to perform the work and furnish the equipment, materials, appurtenances and guarantees, where required, complete in place, in good working order.

As evidence of good faith, cash, bid bond, cashier's check, certified check, or postal money order made payable to the King County Treasurer is attached hereto. The undersigned understands and here agrees that, should this offer be accepted and the undersigned fail or refuse to enter into a contract and furnish the required construction performance bond and necessary liability insurance, the undersigned will forfeit to the District an amount from the "good faith token", equal to five percent (5%) of the amount bid as liquidated damages, all as provided for in the specifications.

The undersigned hereby proposes to undertake and complete the work embraced in this improvement, in accordance with the terms of the specifications and contract documents, at the following lump sum and unit prices.

Please find attached the itemized listing for said lump sum and unit prices, receipt of addenda, non-collusion declaration, the bidder responsibility checklist, the subcontractor responsibility checklist, the statement of bidder's qualifications, and the proposed subcontractors list for Contract 2022-01; Grinder Pump Stations 1-4 Replacement.

ATTACHMENTS

2022-01; GRINDER PUMP STATIONS 1-4 REPLACEMENT

SCHEDULE A – GRINDER PUMP STATION 1

Item	Item Description – Schedule A	Units	Quantity	Unit Price	Amount
1	Mobilization	LS	1	Lump Sum	\$
2	Temporary Erosion and Sedimentation Control	LS	1	Lump Sum	\$
3	Trench Safety System	LS	1	Lump Sum	\$
4	Temporary Sewer Bypass Pumping	LS	1	Lump Sum	\$
5	Demolition	LS	1	Lump Sum	\$
6	Clearing and Grubbing	LS	1	Lump Sum	\$
7	Wet Well Modifications and Accessories	LS	1	Lump Sum	\$
8	Valve Box and Discharge Piping	LS	1	Lump Sum	\$
9	Installation of Grinder Pumps, Discharge Elbows, and Guide Rails	LS	1	Lump Sum	\$
10	Electrical	LS	1	Lump Sum	\$
11	Site Restoration	LS	1	Lump Sum	\$
Subtotal, Schedule A					\$

SCHEDULE B – GRINDER PUMP STATION 2

Item	Item Description – Schedule B	Units	Quantity	Unit Price	Amount
1	Mobilization	LS	1	Lump Sum	\$
2	Temporary Erosion and Sedimentation Control	LS	1	Lump Sum	\$
3	Trench Safety System	LS	1	Lump Sum	\$
4	Temporary Sewer Bypass Pumping	LS	1	Lump Sum	\$
5	Demolition	LS	1	Lump Sum	\$
6	Clearing and Grubbing	LS	1	Lump Sum	\$
7	Wet Well Modifications and Accessories	LS	1	Lump Sum	\$
8	Valve Box and Discharge Piping	LS	1	Lump Sum	\$
9	Installation of Grinder Pumps, Discharge Elbows, and Guide Rails	LS	1	Lump Sum	\$
10	Electrical	LS	1	Lump Sum	\$
11	Site Restoration	LS	1	Lump Sum	\$
Subtotal, Schedule B					\$

SCHEDULE C – GRINDER PUMP STATION 3

Item	Item Description – Schedule A	Units	Quantity	Unit Price	Amount
1	Mobilization	LS	1	Lump Sum	\$
2	Temporary Erosion and Sedimentation Control	LS	1	Lump Sum	\$
3	Trench Safety System	LS	1	Lump Sum	\$
4	Temporary Sewer Bypass Pumping	LS	1	Lump Sum	\$
5	Demolition	LS	1	Lump Sum	\$
6	Clearing and Grubbing	LS	1	Lump Sum	\$
7	Wet Well Modifications and Accessories	LS	1	Lump Sum	\$
8	Valve Box and Discharge Piping	LS	1	Lump Sum	\$
9	Installation of Grinder Pumps, Discharge Elbows, and Guide Rails	LS	1	Lump Sum	\$
10	Electrical	LS	1	Lump Sum	\$
11	Site Restoration	LS	1	Lump Sum	\$
Subtotal, Schedule C					\$

SCHEDULE D – GRINDER PUMP STATION 4

Item	Item Description – Schedule B	Units	Quantity	Unit Price	Amount
1	Mobilization	LS	1	Lump Sum	\$
2	Temporary Erosion and Sedimentation Control	LS	1	Lump Sum	\$
3	Trench Safety System	LS	1	Lump Sum	\$
4	Temporary Sewer Bypass Pumping	LS	1	Lump Sum	\$
5	Demolition	LS	1	Lump Sum	\$
6	Clearing and Grubbing	LS	1	Lump Sum	\$
7	Wet Well Modifications and Accessories	LS	1	Lump Sum	\$
8	Valve Box and Discharge Piping	LS	1	Lump Sum	\$
9	Installation of Grinder Pumps, Discharge Elbows, and Guide Rails	LS	1	Lump Sum	\$
10	Electrical	LS	1	Lump Sum	\$
11	Site Restoration	LS	1	Lump Sum	\$
Subtotal, Schedule D					\$

2022-01; GRINDER PUMP STATIONS 1-4 REPLACEMENT

Subtotal, Schedule A	\$
Subtotal, Schedule B	\$
Subtotal, Schedule C	\$
Subtotal, Schedule D	\$
Total Schedules A, B, C, and D	\$
10.2% Sales Tax	\$
Total Bid	\$

Receipt of Addenda

Receipt of Addenda No(s). _____ to the Contract Documents is hereby acknowledged:

Note: Failure to acknowledge receipt of the addenda will be considered an irregularity in the proposal.

BIDDER RESPONSIBILITY CHECKLIST

The following checklist is used in documenting that a bidder meets the mandatory Bidder Responsibility Criteria. Please print a copy of documentation from the appropriate website to be included with the submittal.

General Information	
Project Name: Contract 2022-01; Grinder Pump Stations 1-4 Replacement.	Project Number: C2003
Bidder's Business Name:	Bid Submittal Deadline:
Contractor Registration	
License Number:	Status: Active: Yes <input type="checkbox"/> No <input type="checkbox"/>
Effective Date (must be effective on or before Bid Submittal Deadline):	Expiration Date:
Contractor and Plumber Infraction List	
Is Bidder on Infraction List?	Yes <input type="checkbox"/> No <input type="checkbox"/>
Current UBI Number	
UBI Number:	Account Closed: Open <input type="checkbox"/> Closed <input type="checkbox"/>
Industrial Insurance Coverage	
Account Number:	Account Current: Yes <input type="checkbox"/> No <input type="checkbox"/>
Employment Security Department Number	
Employment Security Department Number:	
Please provide a copy of your latest correspondence, containing your account number, with Employment Security Department. Please do not provide document containing personal information such as social security numbers.	
State Excise Tax Registration Number	
Tax Registration Number:	Account Closed: Open <input type="checkbox"/> Closed <input type="checkbox"/>
Not Disqualified from Bidding	
Is the Bidder listed on the "Contractors Not Allowed to Bid" list of the Department of Labor and Industries? Yes <input type="checkbox"/> No <input type="checkbox"/>	
Contractor Public Works Training (RCW 39.04.350 & RCW 39.06.020)	
Has the Bidder satisfied the PW training requirements? Yes <input type="checkbox"/> No <input type="checkbox"/>	
Information Supplied by:	
Print Name of Bidder Representative:	Date:
Verified by:	
Signature of District Employee:	Date:

SUBCONTRACTOR RESPONSIBILITY CHECKLIST

The following checklist is used in documenting that a subcontractor of any tier meets the subcontractor responsibility Criteria. Bidder must complete one of these forms for each of the first-tier subcontractor. Please print a copy of the documentation from the appropriate website to be included with the submittal.

General Information	
Project Name: Contract 2022-01; Grinder Pump Stations 1-4 Replacement.	Project Number: C2003
Subcontractor's Business Name:	Subcontract Execution Date:
Contractor Registration	
License Number:	Status: Active: Yes <input type="checkbox"/> No <input type="checkbox"/>
Effective Date (must be effective on or before Subcontract Bid Submittal Deadline):	Expiration Date:
Contractor and Plumber Infraction List	
Is Subcontractor on Infraction List? Yes <input type="checkbox"/> No <input type="checkbox"/>	
Current UBI Number	
UBI Number:	Account Closed: Open <input type="checkbox"/> Closed <input type="checkbox"/>
Industrial Insurance Coverage	
Account Number:	Account Current: Yes <input type="checkbox"/> No <input type="checkbox"/>
Employment Security Department Number	
Employment Security Department Number:	
<ul style="list-style-type: none"> • Has Subcontractor provided account number on the Bid Form? Yes <input type="checkbox"/> No <input type="checkbox"/> • And/or have you asked the Subcontractor for documentation from Employment Security Department on account number? Yes <input type="checkbox"/> No <input type="checkbox"/> 	
State Excise Tax Registration Number	
Tax Registration Number:	Account Closed: Open <input type="checkbox"/> Closed <input type="checkbox"/>
Not Disqualified from Bidding	
Is the Subcontractor listed on the "Contractors Not Allowed to Bid" list of the Department of Labor and Industries? Yes <input type="checkbox"/> No <input type="checkbox"/>	
Contractor Licenses	
<u>Electrical:</u> If required by Chapter 19.28 RCW, does the Subcontractor have an Electrical Contractor's License? Yes <input type="checkbox"/> No <input type="checkbox"/>	<u>Elevator:</u> If required by Chapter 70.87 RCW, does the Subcontractor have an Elevator Contractor's License? Yes <input type="checkbox"/> No <input type="checkbox"/>
Contractor Public Works Training (RCW 39.04.350 & RCW 39.06.020)	
Has the Subcontractor satisfied the PW training requirements? Yes <input type="checkbox"/> No <input type="checkbox"/>	
Information Supplied by:	
Print Name of <input type="checkbox"/> Contractor <input type="checkbox"/> Subcontractor Representative:	Date:
Verified by:	
Signature of District Employee:	Date:

STATEMENT OF BIDDER'S QUALIFICATIONS

Contracting Firm Name:
Number of years Contractor has been in the construction business under the present firm name:
Present gross dollar amount of work under contract: \$
Present gross dollar amount of contracts not yet completed: \$
General type of work performed by firm:

List the five major pieces of equipment to be used on this project:	Owned	Leased	Rented
1.			
2.			
3.			
4.			
5.			

List the general superintendents or other supervisory employees at your firm:	# of Years at Firm
Employee 1:	
Employee 2.:	
Employee 3:	

Bank Reference:
Have you changed bonding companies within the last three years?
If so, why? (optional)

PROPOSED SUBCONTRACTORS

Consistent with RCW 39.30.060, each bidder on a project in excess of \$1,000,000 is required to submit the completed Subcontractors list included in the proposal section with the bid. The completed list must identify each subcontractor who will perform heating, ventilation and air-conditioning (HVAC), or plumbing work as described in Chapter 18.106 RCW, electrical work as described in Chapter 19.28 RCW, or the contractor must name itself for the work. The requirement to name the bidder's proposed HVAC, plumbing and electrical subcontractor applies only to those subcontractors who will contract directly with the bidder (i.e. first-tier subcontractors only, even if that first-tier subcontractor intends to hire a sub-tier contractor to perform all or part of the HVAC, plumbing or electrical work

The bidder shall not list more than one subcontractor for each category of work identified, unless subcontractors vary with bid alternates, in which case the bidder must indicate which subcontractor will be used for which alternates.

Failure of the bidder to submit as part of the bid the names of such subcontractors, or name itself to perform such work, or the naming of two or more subcontractors to perform the work, shall render the bidder's bid it nonresponsive and therefore void.

In completing the form, bidders are advised that: 1) Ventilation is typically required to meet safety requirements for enclosed spaces and tunnels or certain shafts, but it may be incidental to other parts of the work, and may be required for the temporary construction facilities; 2) No plumbing work within buildings (as described in Chapter 18.106 RCW) has been specified in the contract, however plumbing work may be required for the temporary construction facilities and elsewhere in the contract documents; 3) Electrical work may be incidental to the work such as encountered with traffic control systems, electrical service to buildings and street lights, distribution wiring, conduit and junction box installation, generators, temporary electrical service and wiring for construction equipment and dewatering systems. In each instance above, the bidder should list the work in the table(s) above. Other areas may be identified by the bidder in the contract documents as well.

The subcontractors list for may be submitted with the Bid, or separately within one hour of the time and date for Bid submittal stated in the Call for Bids or by addendum. The form may be submitted in person or by facsimile (FAX number (425) 398-4430) to:

Northshore Utility District
Attention: George Matote
6830 NE 185th St
Kenmore, WA 98028

HVAC SUBCONTRACTOR	
Firm Name:	% of Project:
Contact Person:	
Address:	
City, State, Zip Code:	
Phone #:	Fax #:
E-mail Address:	

PLUMBING SUBCONTRACTOR	
Firm Name:	% of Project:
Contact Person:	
Address:	
City, State, Zip Code:	
Phone #:	Fax #:
E-mail Address:	

ELECTRICAL SUBCONTRACTOR	
Firm Name:	% of Project:
Contact Person:	
Address:	
City, State, Zip Code:	
Phone #:	Fax #:
E-mail Address:	

Subject to the time lost due to inclement weather and delay in delivery of materials, should such delay not be the result of the undersigned's actions, the undersigned agrees to complete all of the work embraced in this contract in 90 calendar days, all beginning with the date of written Notice to Proceed with the work.

The undersigned fully understands and agrees to the provisions of the Information for Bidders and herewith further agrees that the liquidated damages shall be \$1400.00 per day for each and every working day required beyond the construction time allowed above to complete this project.

Contractor Name:	
Contact Name:	
Mailing Address:	
Office Phone #:	
Cell Phone #:	
E-mail:	

NON-COLLUSION DECLARATION

I, by signing the proposal, hereby declare, under penalty of perjury under the laws of the United States that the following statements are true and correct:

1. That the undersigned person(s), firm, association or corporation has (have) not, either directly or indirectly, entered into any agreement, participated in any collusion, or otherwise taken any action in restraint of free competitive bidding in connection with the project for which this proposal is submitted.
2. That by signing the signature page of this proposal, I am deemed to have signed and to have agreed to the provisions of this declaration.

Signature: _____

Print Name: _____

Title: _____

Date Signed: _____

BID BOND FORM

Herewith find deposit in the form of a certified check, cashier's check, cash, or bid bond in amount of \$ _____, which amount is not less than five percent (5%) of the total bid.

SIGN HERE _____

BID BOND for Contract: Contract 2022-01; Grinder Pump Stations 1-4 Replacement.

KNOW ALL MEN BY THESE PRESENTS: That we, _____, as Principal, and _____,

as Surety are held and firmly bound unto the King County Treasurer, King County, Washington, as Obligee in the penal sum of _____ for the payment of which the Principal and Surety bind themselves, their heirs, executors, administrators, successors and assigns, jointly and severally, by these presents.

The conditions of the obligation are such that, if the Obligee shall make any award to the Principal for _____, according to the terms of said proposal or bid and award and shall give bond for the faithful performance thereof, with Surety or Sureties approved by the Obligee; or if the Principal shall, in case of failure so to do, pay and forfeit to the Obligee the penal amount of the deposit specified in the Call for Bids, then this obligation shall be null and void; otherwise, it shall be and remain in full force and effect and the surety shall forthwith pay and forfeit to the Obligee, as penalty and liquidated damages, the amount of this bond.

SIGNED, SEALED AND DATED this _____ day of _____, 20____.

By _____
Principal

By _____
Surety

Received return of deposit in the sum of \$ _____,
on _____, 20____.

BIDDER'S CHECKLIST

This checklist is intended to assist the Bidder in completing the Proposal. The Bidder should carefully review the Proposal form and Contract Documents to ensure a responsive bid is submitted.

- Bidders must bid on all items contained in the Proposal. Fill in the bid proposal form(s) included in this section, entering the unit price and total amount for each bid item. Verify all math.
- Only use the bid proposal form(s) included in this document or those issued with an addenda.
- Acknowledge receipt of any addenda.
- Read the *Non-Collusion Declaration* and include the form with the proposal.
- Fill out the *Bidder Responsibility Checklist*.
- Fill out the *Subcontractor Responsibility Checklist*.
- Fill out the *Statement of Bidder's Qualifications*.
- Fill out the *Proposed Subcontractors* list.
- Sign and date the proposal on the final page of the proposal and include all of the contact information as indicated.
- Submit the bid security (in the form of a certified check, cashier's check, cash or bid bond, with amount is not less than 5% of the bid total) with the proposal and fill out the Bid Bond Form.
- Submit the entire Proposal section from the contract documents as your bid documents.

CONTRACT

SECTION 6

Contract

THIS CONTRACT is dated this _____ day of _____, 20____, by and between Northshore Utility District, ("District"), a Washington municipal corporation, and _____ ("Contractor"), a _____.

In consideration of the mutual covenants hereinafter set forth, District and Contractor agree as follows:

ARTICLE 1. DESCRIPTION OF WORK.

The Contractor shall complete the work as specified under the Bid Schedule(s) of Section 5 – Proposal & Bid Bond of the District's Contract Documents entitled Contract 2022-01; Grinder Pump Stations 1-4 Replacement. The work is generally described as follows:

Project Description

Contract 2022-01; Grinder Pump Stations 1-4 Replacement

The project consists of the following work:

Rehabilitation of the District owned Grinder Pump Stations 1 through 4 located along the shore of Lake Washington within the City of Kirkland. Upgrades to each of the four stations in order to retrofit the existing 36-inch diameter fiberglass wet wells as shown on the Plans and specified herein includes, but is not limited to, demolition of the existing components of the stations, furnishing and installing piping, fittings, valves, check valves, valve boxes, instrumentation, electrical equipment and accessories, and electrical pad and mounting rack, as well as installation of District procured submersible grinder pumps, base elbow and guide rail system, float switches, and control panels.

This project also includes site restoration and landscaping.

Each grinder pump station site is within an existing easement on private lakefront property with limited accessibility for large equipment and motor vehicles. The means and methods for mobilization of materials and equipment to each site shall be at the option of the Contractor. Hand digging and/or barging in equipment may be necessary for completion of the work shown on the Plans and as described in the Specifications.

ARTICLE 2. WORK COMPLETION TIME.

The work shall be completed within 90 calendar days from the commencement date stated in the "Notice to Proceed" as described in Section 7 – Definitions and Abbreviations.

ARTICLE 3. LIQUIDATED DAMAGES.

District and the Contractor recognize that time is of the essence of this Contract and that the District will suffer financial loss if the work is not completed within the time period specified in Article 2 herein, plus any Extension thereof allowed in accordance with Section 8 – General Conditions. They also recognize the delays, expense, and difficulties involved in proving in a legal proceeding, the actual loss suffered by the District if the work is not completed on time. Accordingly, instead of requiring any such proof, the District and the Contractor agree that as liquidated damages for delay (but not as a penalty), the Contractor shall pay the District \$1400.00 for each day that expires after the work completion time specified in Article 2 herein.

ARTICLE 4. CONTRACT PRICE

District shall pay Contractor for completion of the work in accordance with the Contract Documents in current funds the amount set forth in the Bid Schedule(s) of Section 5 – Proposal & Bid Bond.

ARTICLE 5. CONTRACT DOCUMENTS.

The Contract Documents which comprise the entire agreement between District and Contractor concerning the work consist of this Contract and the following attachments to this Contract:

- Section 1 Instructions to Bidders
- Section 2 Special Provisions
- Section 3 Technical Specifications
- Section 4 Measurement and Payment
- Section 5 Proposal & Bid Bond
- Section 6 Contract & Performance, Payment and Guaranty Bond
- Section 7 Definitions and Abbreviations
- Section 8 General Conditions
- Plans consisting of 30 sheets, as listed in the Special Provisions.
- Addenda numbers _____ inclusive.
- Change Orders, which may be delivered or issued after the date of this Contract, are not attached hereto.
- Permit and easement stipulations.

There are no Contract Documents other than those listed in this Article.

ARTICLE 6. MISCELLANEOUS.

An assignment by a party hereto of any rights under or interests in the Contract Documents will not be binding on the other party hereto without the written consent of the party sought to be bound; and specifically but without limitation monies that may become due and monies that are due may not be assigned without such consent, and unless specifically stated to the contrary in any written consent to an assignment, an assignment will not release or discharge the assignor from any duty or responsibility under the Contract Documents.

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

IN WITNESS WHEREOF, District and Contractor have caused this Contract to be executed the day and year first above written.

DISTRICT

CONTRACTOR

By Alan G. Nelson,
its General Manager

By _____
its: _____

Address for giving notices:

6830 NE 185th Street,
Kenmore, WA 98028

Address for giving notices:

License No.:

--

MANAGEMENT OF RETAINED PERCENTAGE

The Contractor shall declare an option for management of statutory retained percentage of this Contract by initialing and dating the applicable box below:

Option 1

The Contractor hereby elects to have the retained percentage of this Contract held in a non-interest bearing fund by Northshore Utility District until sixty (60) days (minimum) following formal Acceptance of the work. The time of release of the retained percentage shall depend upon final receipt by the District of all required releases from the State of Washington.

Option 2

The Contractor hereby elects to have Northshore Utility District place the retained percentage of the Contract in escrow from time to time as such retained percentage accrues. Contractor hereby designates the following bank or trust company as the repository for said funds:

Name of Financial Institution: _____

Address of Financial Institution: _____

Escrow Account Number: _____

The Contractor understands that the District will issue a check or checks representing the retained percentage payable to the financial institutions and the Contractor jointly. This check shall be converted into bonds and securities chosen by the Contractor and approved by the District and the bonds and securities shall be held in escrow. Interest on the bonds and securities shall be paid to the Contractor as the interest accrues. Contractor agrees to be fully responsible for payment of all costs or fees incurred as a result of placing said retained percentage in escrow and investing it as authorized by statute. Northshore Utility District shall not be responsible for any cost, fees or loss in connection therewith.

Option 3

The Contractor hereby elects to have Northshore Utility District place the retained percentage of the Contract in an interest bearing account in a bank, mutual savings bank or savings and loan association. Contractor hereby designates the following bank or trust company as the repository for said funds:

Name of Financial Institution: _____

Address of Financial Institution: _____

Escrow Account Number: _____

Interest on moneys deposited into said fund by the District shall be paid to the Contractor. Contractor agrees to be fully responsible for payment of all costs or fees incurred as a result of placing said retained percentage in said account. Northshore Utility District shall not be responsible for any cost, fees or loss in connection therewith.

Option 4

Contractor hereby elects to post a retainage bond in the amount of 5% of the total bid, not including tax, in lieu of Northshore Utility District withholding the retained percentage from the monies earned by the Contractor. Contractor hereby designates the following surety company as bondholder (a copy of the bond must be attached to this form):

Name of Financial Institution: _____

Contact Name and Phone No.: _____

Address of Financial Institution: _____

Contractor's Signature

Date

PERFORMANCE, PAYMENT & GUARANTY BOND

KNOW ALL MEN BY THESE PRESENTS: That we,
_____, the Contractor named in the contract
hereinafter referred to as Principal, and
_____, as
SURETY, are held and firmly bound unto the NORTHSORE UTILITY
DISTRICT, hereinafter called and also being the DISTRICT named in said
contract,

Contract 2022-01; Grinder Pump Stations 1-4 Replacement. in the full sum of
_____ Dollars, (\$_____) lawful
money of the United States of America, for the payment of which sum well and
truly to be made, we bond ourselves, our heirs, executors, assigns,
administrators and successors jointly and severally, firmly by these presents.

THE CONDITION OF THIS OBLIGATION IS SUCH, that, **WHEREAS,** the
Principal entered into a certain contract with the District, dated
_____, 20___ for construction of sanitary sewers and
appurtenances including restoration, in connection with the District's construction
of **Contract 2022-01; Grinder Pump Stations 1-4 Replacement** in the County
of King, State of Washington.

NOW, THEREFORE, if the Principal shall well and truly and faithfully perform all
of the provisions and fulfill all of the undertakings, covenants, terms, conditions
and agreements of said contract during the period of the original contract and
any Extension thereof that may be granted by the District, with or without notice
to the Surety; and during the life of any guaranty required under the contract; and
shall also well and truly perform and fulfill all of the undertakings, covenants,
terms, conditions and agreements of any and all duly authorized modifications of
said contract that may hereafter be made; notice of which modifications to the
Surety being hereby waived; and furthermore shall pay all laborers, mechanics
and subcontractors and material men and all persons who shall supply such
person or persons and such Principal or subcontractors with provisions and
supplies for the carrying on of such work, shall indemnify and save harmless
District from all cost and damage by reason of the Principal's default or failure to
do so, and shall pay the State of Washington sales and use taxes, and amounts
due said State pursuant to Titles 50 and 51 of the Revised Code of Washington,
then this obligation to be void; otherwise to remain in full force and effect.

THIS BOND shall be continued in force for a period of two (2) years after
completion of the contract and acceptance by the District, and thereafter for such
additional period as shall be required for the performance by the Contractor
under this guaranty provision, or otherwise, of the contract.

IN WITNESS WHEREOF, the above bounded parties have executed this
instrument under their separate seals this _____ day of _____,

20____, the name and corporate seal of each corporate party hereto affixed, and these presents duly signed by its undersigned representatives pursuant to authority of its governing body.

Principal

Surety

By

By

Title

Title

Attest: (If Corporation)

Address:

By

Title

Corporate Seal:

Witness

1:

Witness

2:

Certificate as to Corporate Seal

I hereby certify that I am the (Assistant) Secretary of the Corporation named as Principal in the within Bond; that

_____, who signed the said Bond on behalf of the Principal, was _____ (title) of said Corporation; that I know its signature thereto is genuine and that said Bond was duly signed, sealed, and attested for and in behalf of said Corporation by authority of its governing body.

Secretary or Assistant Secretary

DEFINITIONS AND ABBREVIATIONS



SECTION 7

Definitions and Abbreviations

DEFINITIONS

The following terms as used in this Contract shall be defined and interpreted as follows:

Acceptance - The District's formal, written notice acknowledging completion and acceptance of the Work. Acceptance commences the time for submission of any third-party claims against performance or payment bonds under Chapter 39.08 RCW and statutory retention under Chapter 60.28 RCW.

Addendum - A written or graphic document issued by the District prior to the Proposal opening date that clarifies, corrects, or changes a document contained or referenced within the Bid Documents.

Adjusted Contract Work - The Contract Work as adjusted by any additive or deductive Change Orders executed prior to the District's termination of the Work or any portion thereof for convenience in accordance with Section 8.31 of the General Conditions.

As-Built Plans - A neatly and legibly marked set of Plans that reflect the manner in which the Work has been performed in the field. The requirements for the As-Built Plans are separately set forth in the Specifications.

Bidder - An entity that submits a Proposal for potential award of the Contract.

Bid Documents - All Contract Documents, excluding Change Orders, but including the Call for Bids.

Change Order - A document which is signed by Contractor and District and authorizes an addition, deletion, or revision in the Work or an adjustment in the Contract Price or the Contract Time, issued on or after the effective date of the Contract.

Claim - A written demand or assertion by the Contractor in accordance with Section 8.23 of the General Conditions after denial of a Request for Change Order seeking, as a matter of right, adjustment of Contract terms, payment of money, extension of time or other relief with respect to the terms of the Contract.



Contract Documents - The Contract Documents shall consist of the following and, in case of conflicting provisions, the first mentioned shall have precedence:

- Change Orders
- Addenda
- Contract
- Measurement and Payment
- Special Provisions
- General Conditions
- Detail Specifications
- Engineering Specifications – Materials of Construction
- Engineering Specifications – Methods of Construction
- Reference Specifications
- Plans
- Instructions To Bidders
- Bid Proposal
- Permit and easement stipulations
- Performance, Payment, and Guaranty Bond

Contractor - The entity contracting to do the Work under these Contract Documents.

Contractor's Equipment - All equipment remaining in the Contractor's ownership and removed from the Site upon completion of the Project.

Contract - The written form executed by the District and Contractor that binds the Contractor to perform the Work in accordance with the Contract Documents.

Contract Price - The total amount payable by the District to the Contractor for performance of the Work in accordance with the Contract Documents.

Contract Time - The time allotted in the Contract for the Substantial Completion of the Work. The Contract Time begins upon Notice to Proceed and ends on the date of Substantial Completion of the Work by the Contractor.

Day - The term Day shall mean a calendar day unless otherwise specifically designated.

District - The entity that is a party to the Contract, contracting under the official name Northshore Utility District.

Engineer - The person identified in the Invitation to Bid responsible for administration of the Contract for the benefit of the District in accordance with the Contract Documents.



Equipment - The machinery, accessories, appurtenances, and manufactured articles to be furnished and/or installed under the Contract.

Inspector - A representative of the Engineer that is assigned to make inspections and record the progress of Contractor's performance of the Work. The Inspector has no authority to bind the District to any modification of the Contract Documents or liabilities of any kind.

Materials - Manufactured articles, materials of construction (fabricated or otherwise) and any other classes of material to be furnished in connection with the Contract.

Notice of Award - The official notice from the District that it intends to execute the Contract with the selected responsible, responsive Bidder.

Notice to Proceed - Written notice issued by the District that indicates that the Contractor can mobilize on the Site and begin all, or a designated part, of the Work. Notice to Proceed starts the running of the Contract Time.

Or Equal - Equal or better function, quality and performance to that specified in the Contract Documents. An item is not Or Equal if it is materially different, with respect to other constraints or requirements in the Contract Documents, in size, weight or other aspect from the item specified in the Contract Documents. Similarly, an item is not Or Equal if it is expected to have significantly higher total cost of ownership over the life of the completed Work.

Permit - Any and all permits required to comply with local, State, and Federal laws and regulations in performance of the Work.

Physical Completion - The time at which all of the Work has progressed to the point where (a) Contractor has achieved Substantial Completion, (b) the Contractor has completed all items identified on the Punch List to the District's satisfaction and (c) the Contractor has submitted and the District has accepted all required As-Built Plans.

Plans - All official drawings or reproductions of drawings made or to be made pertaining to the Work provided for in the Contract.

Project - The Work to be constructed in whole or in part through the performance of the Contract.

Project Records - All records that document the performance and/or cost of the Work as well as any materials as more fully defined in Section 8.7 of the General Conditions.

Proposal - The offer of a Bidder, on the prescribed bid form, properly executed, setting forth the price or prices for the Work to be performed.



Punch List - A list(s) of the physical construction that remains to be completed after the achievement of Substantial Completion of the Work, which must be satisfactorily completed in order to attain Physical Completion.

Reference Specifications - The technical specifications of other agencies incorporated or referred to herein.

Request for Information (RFI) - The written document by which the Contractor requests clarification, verification or information concerning a portion of the Work.

Responsible - A responsible Contractor or Subcontractor who complies with the requirements of RCW 39.04.010, 39.04.350, and 39.06.020 and any requirements of any applicable supplemental bidder responsibility criteria and who is determined to have: adequate financial resources to perform the Contract; the ability to comply with the required delivery or performance schedule; a satisfactory performance record; a satisfactory record of integrity; the necessary organization, experience, accounting and operational controls, and technical skills; the necessary construction equipment and facilities; and be otherwise qualified and eligible to be awarded the Contract under applicable laws and regulations.

Schedule - The plan prepared by the Contractor in accordance with the requirements of the Contract and reviewed by the Engineer setting forth the logical sequence of activities required for the Contractor's orderly performance and completion of the Work in accordance with the Contract. The Schedule includes updates – whether by progress schedule(s), recovery schedule(s) or otherwise – required by the Contract.

Shop Drawing - All shop details of structural steel, pipe, machinery, equipment, schedules and bending diagrams of reinforcing steel, and other detail drawings furnished by the Contractor as required and provided for in the Submittal requirements of the Contract Documents.

Site - The location(s) where the Work will be performed or constructed by the Contractor as set forth in the Plans and Specifications. The Site may at the District's option include areas identified by the District for Contractor's logistics or staging but does not include any areas separately secured by the Contractor, a Subcontractor of any tier, or supplier for use in connection with the Work (e.g. Contractor's home office, an off-site fabrication plant, etc.).

Specifications - The written requirements for contract administration, Materials, Equipment, systems, standards, and workmanship for the Work and for the performance of any related services.

Subcontractor - A business entity that has a direct contract with the Contractor to perform a portion of the Work. Unless the context clearly requires otherwise, the term Subcontractor includes all of the Subcontractor's authorized representatives.



Submittal - Written or graphic document (including electronic) or sample that is required by the Contract Documents and is prepared for the Work by the Contractor or a Subcontractor or supplier at any tier, and submitted to the District by the Contractor, including Shop Drawings, product data, samples, certificates, schedules of material or other data. Submittals are not Contract Documents.

Substantial Completion - The stage in the progress of the Work where:

1. The District has full and unrestricted use and benefit of the facilities for the purpose intended;
2. All the systems and parts of the Work are functional;
3. Utilities are connected and operate normally;
4. Only minor incidental Work or correction or repair remains to complete all applicable Contract requirements; and,
5. At the District's option, the Contractor has provided all applicable occupancy Permits and easement releases.

As provided in the Contract, the District at its sole option may also require or grant Substantial Completion to specific Schedules, milestones or subsystems or portions of the Work. The date(s) of Substantial Completion shall be determined, in writing, by the District.

Surety - Any firm or corporation executing a surety bond or bonds payable to the District, securing the performance of the Contract, either in whole or in part.

Work - The construction to be completed under the terms of this Contract as detailed more fully in the Plans and Specifications. Work specifically includes the furnishing of all labor, Materials, Equipment, and all incidentals necessary to the successful completion of the construction, whether expressly required by or reasonably inferable from the Contract Documents, whether they are temporary or permanent, and whether they are incorporated into the finished Work or not. Work also includes all other obligations imposed on the Contractor by the Contract. The Work is sometimes generally referred to as the "Project."

Usage of Certain Words and Phrases - Whenever the words, "as directed", "as required", "as permitted", or words of like effect are used, it shall be understood that the direction, requirement or permission of the District and Engineer is intended. The words, "sufficient", "necessary", "proper", and the like shall mean sufficient, necessary or proper in the judgment of the District and Engineer. The words, "approved", "acceptable", "satisfactory", or words of like import shall mean approved by or acceptable to the District and Engineer.



ABBREVIATIONS

Whenever the following abbreviations are used on the Plans, Specifications, Proposal and Contract, they shall be construed to mean the words and terms as listed below:

A	Acre
AC	Asbestos Cement
AF	Acre-Feet
Adj	Adjust
AIA	American Institute of Architects
AISC	American Institute of Steel Construction
AITC	American Institute of Timber Construction
APWA	American Public Works Association
Asp. Pav.	Asphalt Pavement
Asp.Conc.Pav.	Asphalt Concrete Pavement
ASTM	American Society of Testing and Material
ATB	Asphalt Treated Base
AVE	Avenue
AWS	American Welding Society
AWWA	American Water Works Association
Bld	Boulevard
BO	Blow Off
BTU	British Thermal Unit
CB	Catch Basin
CB Inlet	Curb Inlet
CFS	Cubic Feet per Second
CI	Cast Iron
CIP	Cast Iron Pipe
CL	Centerline
CMP	Corrugated Metal Pipe
CMU	Concrete Mason Unit
Conc	Concrete
Conc. Cb.	Concrete Curb
Conc. Pav.	Concrete Pavement
Conc.Ret.Wall	Concrete Retaining Wall
Conc. Swr	Concrete Sewer
Cond.	Conduit
Conn	Connect
Cr	Cross
CTB	Cement Treated Base
Cu	Cubic



ABBREVIATIONS

Continued

DFPA	Douglas Fir Plywood Association
DI	Ductile Iron
Dr	Drive or Driveway
E	East
Elev.	Elevation
Exist.	Existing
Exc	Excavation
FBM	Foot Board Measure
FH	Fire Hydrant
FL	Flange
FT, FT ² , FT ³	Foot, Square Feet, Cubic Feet
GIP	Galvanized Iron Pipe
GPAD	Gallons Per Acre Day
GPH	Gallons Per Hour
GPM	Gallons per Minute
G Stl P	Galvanized Steel Pipe
GV	Gate Valve
Hyd	Hydrant
Hyd Ext	Hydrant Extension
ID	Inside Diameter
In, In ² , In ³	Inch, Square Inch, Cubic Inch
L	Length
Lbs	Pounds
LF	Lineal Feet
Max	Maximum
Mon	Monument Case
Min	Minimum
MG	Million Gallons
MGD	Million Gallons per Day
MH	Manhole
MJ	Mechanical Joint
N	North
NIC	Not in Contract
No.	Number
NRS	Non Rising Stem
OD	Outside Diameter
Pav	Pavement
PC	Point of Curvature
PJM	Premolded Expansion Joint Material



ABBREVIATIONS

Continued

PL	Property Line
Pl	Place
Plk	Planking
Pos	Position
PP	Power Pole
Pri	Primary
Prop	Proposed
PS	Permastran
PSF	Pounds per Square Foot
PSI	Pounds per Square Inch
PT	Point of Tangency
PVC	Polyvinyl chloride
R	Radius
RC	Reinforced Concrete
RCP	Reinforced Concrete Pipe
Rem	Remove
Repl	Replace
RS	Rising Stem
S	South
Sec	Secondary
Swr	Sewer
Sp	Special
Sq	Square
SS	Side Sewer
SSPC	Steel Structure Painting Council
Std	Standard
Stl	Steel
Temp	Temporary
Trans	Transformer
VC	Vertical Curve
W	West
WM	Water Main
Yd	Yard

GENERAL CONDITIONS



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Section 8 – General Conditions

8.1 EXECUTION, CORRELATION AND INTENT OF CONTRACT DOCUMENTS

The Contract Documents are complementary and what is called for by any one shall be as binding as if called for by all. The intent of the Contract Documents is to prescribe the complete Work. The Contractor shall furnish all labor, Materials, Equipment and incidentals necessary to complete all parts of the Work. Where the Contractor is directed to provide something as part of the Work, that term specifically includes everything necessary to furnish, install, connect, adjust, test and make ready for use or occupancy. Compensation for the cost of the complete Work and for full performance of the Contract is included in the Contract Price. Materials, Equipment, or Work described in words which so applied have a well-known technical or trade meaning shall be held to refer to such recognized standards.

It is intended that Work not covered under any heading, section, branch, class or trade of the Specifications shall be supplied if it is shown on Plans or is reasonably inferable as being necessary to produce the intended results. Minor items of Work, Materials, or Equipment omitted from the original Plans or Specifications, but clearly inferable from the information presented and which are called for by accepted good practice shall be provided and/or performed by the Contractor as part of its original cost.

Where the Contract Documents refer to Reference Specifications, such specifications shall be applicable to technical provisions only, unless otherwise designated.

The Contract represents the entire and integrated agreement between the District and the Contractor. It supersedes all prior discussions, negotiations, representations or agreements pertaining to the Work, whether written or oral.

8.2 PLANS AND SPECIFICATIONS - OMISSIONS AND DISCREPANCIES

Upon receipt of Notice of Award of the Contract, the Contractor shall carefully study and compare all Plans, Specifications and other instructions and shall, prior to ordering Materials or performing Work, report in writing to the Engineer any error, inconsistency or omission in respect to design, mode of construction or cost which the Contractor may discover. If the Contractor, in the course of this study or in the accomplishment of the Work, finds any discrepancy between the Plans and the physical condition of the locality as represented in the Plans, or any such errors or omissions in respect to design, mode of construction or cost in Plans or in the layout as given by points and instructions, it shall be its duty to provide timely notice thereof in accordance with Section 8.23 below. The Contractor shall



make all reasonable efforts to mitigate any impact resulting from such error, inconsistency, omission or variance. Any Work done after such discovery, until correction of Plans or authorization of extra Work is given, if the Engineer finds that extra Work is involved, will be done at the Contractor's risk. If extra Work is involved, the procedure shall be as provided in Section 8.23 below.

8.3 EXAMINATION OF SITE OF WORK

Before submitting its bid, the Contractor shall examine the Site of the Work and ascertain for itself all the physical conditions in relation thereto. In making a Proposal under these Contract Documents, the Contractor represents and warrants that it has satisfied itself as to construction conditions by personal examination of the Plans, Specifications and Site of the proposed Work, and by appropriate examination and investigation as to the nature of the soil and construction problems which may be encountered by reason thereof. Contractor also warrants and represents itself to be experienced and an expert in the construction contemplated. Contractor further understands that, in making the Contract award, District is relying upon the representations and warranties of Contractor herein contained.

Contractor's failure to examine the Plans, Specifications, and Site shall not relieve the Contractor from entering into a Contract nor excuse it from performing the Work in strict accordance with the terms of the Contract and Specifications. The Contractor will not be entitled to additional compensation if it subsequently finds the conditions to require other methods or equipment that it did not anticipate in making its Proposal. Any statement or representation (whether written or oral) made by an officer, agent or employee of the District (or by any third party consultant of the District) with respect to the physical or geotechnical conditions at the Site of the Work shall not be binding upon the District.

8.4 STATUS OF ENGINEER

- (a) The Engineer shall act as advisor and consultant to the District in engineering matters relating to the Contract; provided, however, nothing contained herein or elsewhere in the Contract Documents shall be construed as requiring or authorizing the Engineer to direct the method or manner of performing any Work by the Contractor under this Contract. The Engineer has authority to stop the Work whenever, in its opinion, such stoppage may be necessary to ensure the proper execution of the Contract. The Engineer may reject all Work, Materials, or Equipment which, in its opinion, do not conform to the Contract.
- (b) It is understood and agreed by and between the parties hereto that the Work included in the Contract is to be done to the complete satisfaction of the Engineer, and that the decision of the Engineer as to the true construction and meaning of the Contract, Plans, Specifications and estimates, and as to all questions arising as to proper performance of the



Work shall be final. The Engineer shall determine the unit quantities and the classification of all Work done and Materials and Equipment furnished under the provisions of this Contract and its determination thereof shall be final and conclusive and binding upon the Contractor.

- (c) The Engineer shall decide any and all questions which may arise as to the quality or acceptability of Materials and Equipment furnished and Work performed and as to the rate of progress of the Work, and all questions as to acceptable fulfillment and performance of the Contract on the part of the Contractor and as to compensation. The decision of the Engineer in such matters shall be final.
- (d) The Engineer shall have authority to make changes in the Work, not inconsistent with the purpose of the Work. Except in any emergency endangering life or property, no extra Work or change shall be made unless pursuant to a Change Order executed by the Engineer. If the District or Contractor believes that a Change Order justifies an adjustment in the Contract Price and/or Contract Time, the value of any such extra Work shall be determined as set forth in Sections 8.22 and 8.23.
- (e) The Engineer has no authority to waive the obligation of the Contractor to perform the Work in accordance with the Contract Documents. Failure or omission on the part of the Engineer to reject unsuitable, inferior or defective Work and/or labor or Materials or Equipment furnished under the Contract shall not release the Contractor or its bond from performing the Work in accordance with the Contract Documents.

8.5 INSPECTION AND TESTS

- (a) All Work and all Materials and Equipment furnished shall be subject to inspection by the Engineer and/or Inspector. The Engineer and/or Inspector shall, at all times, have access to the Work to observe the progress and quality wherever it is in preparation or progress, and the Contractor shall provide proper facilities for such access and for necessary inspection and testing. If any Work should be covered up without approval or consent of the Engineer or Inspector, it must, if required by the Engineer, be uncovered for inspection at the Contractor's expense.
- (b) The Contractor shall make reasonable tests of the Work at the Contractor's expense upon Engineer's request and shall maintain a record of such tests. Prior to the time scheduled for a performance test to be observed by the Engineer, the Contractor shall make whatever preliminary tests are necessary to assure that the Work is in accordance with the Specifications. If, for any reason, the test observed by the Engineer is unsatisfactory, the Contractor shall pay all costs incurred by the Engineer for the inspection of the unsatisfactory test.



- (c) Inspections, tests, measurements, or other acts or functions performed for or by the District are recognized as being solely to assist the Engineer in determining that the Work complies with the Contract requirements. Such activities shall in no manner whatsoever be construed to relieve the Contractor from the responsibility for performing its own inspections and tests as necessary to ensure compliance with the Contract. In addition, any inspection, test or measurement by or for the District does not constitute or imply acceptance of the Work by the District or waive any rights of the District to require the Work be completed in strict accordance with the Contract and does not impair the District's authority to reject non-conforming Work or evoke any remedy to which it may be entitled.
- (d) The Work may be subject to inspection by various governmental agencies or utility owners. The Contractor shall cooperate and make the Site available for all such persons or agencies with regard to their inspections, including providing access for inspection by way of safe and proper facilities. Such inspection shall in no way make such agencies or persons parties to this Contract and shall not constitute an interference with the Work or the rights of either the District or the Contractor. In its scheduling and planning the Contractor shall allow sufficient time for such inspections. Required certificates of inspection by any authority other than the Engineer shall be secured by the Contractor.
- (e) Except as provided herein, the District will at its cost observe performance of the Work during normal working days or hours during the Contract Time and any modification or extension of the Contract Time authorized by the District in approved Change Orders. If the Contractor is authorized by the District to work more than 8 hours per Day, or more than 5 Days per week, or on holidays, during the course of the Contract Time, then Section 2.1 of the Special Provisions governs.

8.6 PLANS, SPECIFICATIONS, SUBMITTALS, AND SHOP DRAWINGS ACCESSIBLE; RFIs

The Contractor shall keep at least one copy of the Plans, Specifications, Submittals, and Shop Drawings constantly accessible at the construction Site.

If the Contractor discovers, or in the exercise of reasonable diligence should have discovered, that the Work to be performed is not sufficiently detailed or explained in the Contract Documents, or that there is a conflict or inconsistency between any part of the Contract Documents, the Contractor shall promptly apply to the Engineer for such further written explanation(s) as may be necessary using a Request for Information (RFI) form to be provided or approved by the Engineer. The Engineer will address the RFI in writing. Before submitting a RFI, the Contractor shall diligently and thoroughly examine the Contract Documents. The Contractor shall also plan its Work in an efficient manner so as to allow for timely



responses to RFIs. If requested by the Engineer, the Contractor shall prioritize its RFIs and explain the reasons for such priority. District will reply to the RFI with reasonable promptness which on average is defined to mean twenty (20) Days. If Contractor submits an RFI on an activity and reasonably believes that a response from District within up to twenty (20) Days will cause a delay to the Work, Contractor shall denominate such particular RFI as "Priority" and indicate Contractor's preferred reasonable response date. Responses by the District to RFIs are not changes to the Contract. If Contractor believes a response to an RFI constitutes changed Work or causes an adverse impact to performance of the Work or construction schedule, the Contractor is required to submit a request for change in accordance with the requirements of the Contract.

8.7 AUDIT RECORDS

- a) The Contractor and all Subcontractors shall keep and maintain comprehensive records and documentation relating to the Work under this Contract, as well as documents related to the Contractor's Proposal and Project cost accounting records for this Contract, for an audit period of six (6) years. The Project Records shall include, but are not limited to, Contract Documents, subcontracts, purchase orders, employment records, payrolls, Project cost accounting records, prevailing wage records, Plans, Specifications, Addenda, Submittals, Shop Drawings, Change Orders and all working documents leading to Change Orders, field test records, quality control documents, daily construction logs by all field supervisors and Project management personnel, correspondence relating to the Contract, and As-Built Plans.
- b) Contractor and its Subcontractors shall segregate and separately record at the time incurred all costs resulting in any way from any event, act, omission or condition for which Contractor or its Subcontractors seek an adjustment to the Contract Price, Contract Time and/or monetary compensation of any kind. Any costs claimed to be delay or impact costs, acceleration costs, loss of productivity or inefficiency costs, increased costs of onsite or home office overhead or any similar costs shall be separately recorded at the time and shall be fairly and accurately allocated to each such event, act, omission or condition and to other causes of such costs. The Contractor shall be entitled to make a Claim or obtain extra compensation for any such event, act, omission or condition only to the extent the Project Records are kept in full compliance with all Contract requirements and the cost allocations support entitlement to such compensation.
- c) The Contractor and Subcontractors shall permit the District to audit, inspect, examine, and copy the Project Records and/or other documents related to any Claim or issue related to performance of the Work maintained by Contractor (including all Proposal documentation) or any affiliated company involved in the project (collectively, "Audit Records") at any reasonable time



and shall provide such assistance as may be reasonably required in the course of such inspection, including the right to interview personnel. The Contractor shall in no event dispose of, destroy, alter, or mutilate said Audit Records in any manner whatsoever for six (6) years after final payment and until all pending matters are closed. No additional compensation will be provided to the Contractor for compliance with the requirements of this subsection.

8.8 OWNERSHIP OF DOCUMENTS; NO WARRANTIES BY THE DISTRICT

All Plans, Specifications and copies thereof prepared or furnished by the District are its property. They are not to be used on other work.

The Reference Documents and any other information, records, or reports that may be made available by the District to the Contractor are provided solely for the convenience of the Contractor. The District makes no representations or warranties, express or implied, regarding the content of the Reference Documents or any other information, records, or reports. No information derived from inspection of Reference Documents or other information, records, or reports will in any way relieve the Contractor from its responsibility to properly perform its obligations under the Contract. The Contractor shall make its own conclusions and interpretations from the data supplied, information available from other sources, and the Contractor's own observations.

8.9 INSURANCE

The Contractor shall obtain and keep in force during the term of the Contract, Commercial General Liability insurance policies with insurance companies which have an A.M. Best's rating of A VII or better and who are approved by the Insurance Commissioner of the State of Washington pursuant to Title 48 RCW.

Prior to the execution of the Contract, the Contractor shall purchase and maintain during the term of this project a Commercial General Liability insurance policy meeting the requirements set forth herein. The Contractor shall file with the District either a certified copy of all policies with endorsements attached, or a certificate of insurance with endorsements attached as are necessary to comply with these specifications. Failure of the Contractor to fully comply with the requirements regarding insurance will be considered a material breach of Contract.

The Contractor shall not begin Work under the Contract or under any special condition until all required insurances have been obtained and until such insurances have been approved by the District. Said insurance shall provide coverage for the Contractor, its Subcontractors and the District. The coverage so provided shall protect against claims from bodily injuries, including accidental death, as well as claims for property damage which may arise from any act or



omission of the Contractor, its Subcontractors, or by anyone directly or indirectly employed by either of them.

The insurance policies shall specifically name the District, its elected or appointed officials, officers, employees, volunteers and King County (or as needed – City of Kenmore, Bothell, Kirkland, Lake Forest Park, etc.), as insured(s) with regard to damages and defense of claims arising from:

- Activities performed by or on behalf of the Contractor; and
- Products and completed operations of the Contractor; and
- Premises owned leased or used by the Contractor.

It is hereby understood and agreed that Northshore Utility District, its commissioners, officers, and employees, while acting within the scope of their duties as such, are named as additional insured. The insurance shall be maintained in full force and effect at the Contractor's expense throughout the term of the Contract and for any extended period after Acceptance as may be required hereunder.

The District shall be given at least 45 Days' written notice of cancellation, non-renewal, material reduction or modification of coverage. Such notice shall be by certified mail to the District.

The coverages provided by the Contractor's insurance policies are to be primary to any insurance maintained by the District. Any insurance that might cover this Contract which is maintained by the District shall be in excess of the Contractor's insurance and shall not contribute with the Contractor's insurances.

The Contractor's insurance policies shall protect each insured in the same manner as though a separate policy had been issued to each. The inclusion of more than one insured shall not affect the rights of any insured as respects any claim, suit or judgment made or brought by or for any other insured or by or for any employee of any other insured. However, this provision shall not increase the limits of the insurer's liability.

The General Aggregate provision of the Contractor's insurance policies shall be amended to show that the General Aggregate Limit of the policies applies separately to this Project.

The Contractor's insurance policies shall not contain deductibles or self-insured retentions in excess of \$10,000 (unless approved by the District) and Contractor shall be responsible for any such deductible or SIR if the loss arises from its operations or those of its Subcontractors or suppliers at any tier.



The Contractor's insurance policies shall contain a provision that the District has no obligation to report events which might rise to a claim until a claim has been filed with the District's Board of Commissioners.

Types and Limits of Insurance Required:

Commercial General Liability

- \$1,000,000 each occurrence Bodily Injury and Property Damage Liability.
- \$2,000,000 annual aggregate
- Employees and volunteers as Additional Insured(s)
- Premises and operations
- Broad form property damage including:
 - Underground
 - Explosion
 - Collapse Hazards (XCU)
 - Products completed operations
 - Blanket contractual
 - Subcontractors
- Personal injury with employee exclusion deleted
- Employers liability (Stop gap)

Automobile Liability

- \$1,000,000 per accident bodily injury and property damage liability, including:
 - any owned automobiles,
 - hired automobiles,
 - non-owned automobile.

Umbrella Liability

- \$2,000,000 per occurrence
- \$2,000,000 aggregate

Contractor shall purchase and maintain, in a company or companies lawfully authorized to do business in the jurisdiction in which the Project is located, property insurance written on a builder's risk "all-risk" policy form in the amount of the Contract Price, as adjusted by Change Orders. This insurance shall include interests of the District, the Contractor and Subcontractors on the Project. Property insurance shall be on an "all-risk" or equivalent policy form and shall include, without limitation, insurance against the perils of fire (with extended coverage) and physical loss or damage including, without duplication of coverage,



theft, vandalism, malicious mischief, collapse, earthquake, flood, windstorm, falsework, testing and startup, temporary buildings and debris removal including demolition occasioned by enforcement of any applicable legal requirements. Maximum deductible shall be \$10,000 and Contractor shall be responsible for such deductible if the loss arises from its operations of those of any Subcontractor.

District, Contractor and Subcontractors waive all rights against each other for damages caused by fire or other causes of loss to the extent of proceeds actually paid by property insurance obtained pursuant to this Section 8.9 or other property insurance applicable to the Work, except such rights as they have to proceeds of such insurance held by the District as fiduciary. The District or Contractor, as appropriate, shall require Subcontractors, by appropriate agreements, similar waivers each in favor of other parties enumerated herein. The policies shall provide such waivers of subrogation by endorsement or otherwise. A waiver of subrogation shall be effective as to a person or entity even though that person or entity would otherwise have a duty of indemnification, contractual or otherwise, did not pay the insurance premium directly or indirectly, and whether or not the person or entity had an insurable interest in the property damaged.

As an alternative to the above indicated Commercial General Liability and Umbrella Liability insurance policies the Contractor may provide the District with an Owners and Contractors Protective (OCP) policy with a limit of coverage of \$5,000,000 on terms and conditions acceptable to the District.

The Contractor shall additionally provide the District with evidence that the District has been named as additional insured on the Contractor's Commercial General Liability Policy through Acceptance plus six (6) additional years (inclusive of completed operations coverage).

Providing of coverage on the stated amounts shall not be construed to relieve the Contractor from liability in excess of such limits.

In addition, the Contractor shall have its insurance agent/representative complete the Insurance Coverage Questionnaire contained in the Special Provisions and attach it to the Certificate of Insurance for District's approval. The Contractor shall maintain Workers Compensation insurance and/or Longshore and Harbor Workers insurance as required by State or Federal statute for all of its employees to be engaged in Work on the Project under this Contract and, in case any such Work is sublet, the Contractor shall require the Subcontractor similarly to provide Workers Compensation insurance and/or Longshore and Harbor Workers Insurance for all of the latter's employees to be engaged in such Work. The Contractor's Department of Labor & Industries account number shall be noted on the certificate of insurance.

In the event any class of employees engaged in the Work under this Contract is not covered under Workers Compensation insurance or Longshore and Harbor Workers insurance as required by State and Federal statute, the Contractor shall



maintain and cause each Subcontractor to maintain, Employers Liability insurance for limits of at least \$1,000,000 each employee for disease or accident, and shall furnish the District with satisfactory evidence of such.

The contractual coverage of the Contractor's policy shall be sufficiently broad enough to insure the provisions of the HOLD HARMLESS AND INDEMNIFICATION AGREEMENT of this Contract.

Nothing contained in these insurance requirements is to be construed as limiting the extent of the Contractor's responsibility for payment of damages resulting from its operations under this Contract.

8.10 SCHEDULE AND PRE-CONSTRUCTION CONFERENCE

- (a) The Schedule shall set forth the order in which the Contractor plans to perform the Work. The Schedule and any supplemental Schedule shall show:
1. Substantial Completion of all Work within the specified Contract Time,
 2. The proposed order of Work, and
 3. Projected starting and completion times for major phases of the Work and for the total Project.

The Schedule shall also reflect any phasing, sequencing, or timing restrictions set forth in the Contract Documents.

The District allocates resources to a Contract based on the total time allowed in the Contract. The District will accept a Schedule indicating an early Substantial Completion date, but cannot guarantee the District's resources will be available to meet the accelerated Schedule. No additional compensation will be allowed if the Contractor is not able to meet its accelerated Schedule due to the unavailability of the District's resources or for other reasons beyond the District's control.

The Contractor shall submit supplemental Schedules when requested by the Engineer or as required by any provision of the Contract. The supplemental Schedules shall reflect any changes in the proposed order of Work, any construction delays, or other conditions that may affect the progress of the Work. The Contractor shall provide the Engineer with the supplemental Schedules within ten (10) Days of receiving written notice of the request.

The original and all supplemental Schedules shall not conflict with any time and order-of-work requirement in the Contract.



If the Engineer deems that the original or any necessary supplemental Schedule does not provide the information required in this subsection, the District may withhold progress payments until a Schedule containing the required information has been submitted by the Contractor and approved by the Engineer.

- (b) The Schedule may be in graph or tabular form and shall include the date of submission for approval of Plans as may be required, starting dates for construction of the several parts of the Work, and estimated completion dates of such parts, and completion date of the Project. Review by the Engineer of the Schedule shall not in any event excuse the Contractor of the obligation to complete the Work within the time specified in the Contract or of complying with all terms, conditions and provisions of the Contract Documents. Failure of the Contractor to follow the Schedule submitted and accepted, including revisions thereof, shall relieve the District of any and all responsibility for furnishing and making available all or any portion of the Site from time to time and will relieve the District of any responsibility for delays to Contractor in the performance of the Work.
- (c) A pre-construction conference shall be held at a time and place fixed by the Engineer which will generally be within one month from date of Notice of Award. The Contractor must be prepared for a thorough discussion and review of the following:
- Schedule
 - Materials and Equipment
 - Traffic Control
 - Job Procedures
 - Inspection Procedures
 - Plans and Specifications
 - Shop Drawings
 - Schedule of Values of Lump Sum Work
 - Safety
 - Other Matters pertaining to Performance of the Work

8.11 SCHEDULE OF VALUES OF LUMP SUM WORK

If payments are to be made on lump sum items, the Contractor shall submit a schedule of values of the various parts of the Work, including quantities, aggregating the total Contract Price. When approved by the Engineer, the schedule of values shall be used as the basis for certificates for payment unless it is found to be in error. In applying for payments for lump sum Work, the Contractor shall submit estimates of the percentage of Work completed and payment will be based upon the schedule of values for lump sum Work.



8.12 MATERIALS AND EQUIPMENT FURNISHED BY CONTRACTOR

The Contractor shall furnish all Materials and Equipment for the completion of the Work to be performed under this Contract and shall be fully responsible for all Materials and Equipment until the completed Project is delivered to and accepted by the District.

The Contractor shall, at its own expense, secure and maintain a storage place for Materials and Equipment. Contractor shall protect Materials and Equipment against damage from careless handling, exposure to weather, mixture with foreign matter, and all other causes. The District will reject and refuse to test Materials and Equipment improperly handled or stored.

- (a) All Materials and Equipment required to be incorporated into the Work shall be new and in accordance with the Plans and Specifications, except as otherwise provided in the Contract Documents. All such Materials and Equipment shall be applied, installed, connected, erected, used, cleaned, maintained and conditioned in accordance with the instructions of the applicable manufacturer, fabricator or processor, except as otherwise provided in the Contract Documents. Upon the request of the Engineer, the Contractor shall furnish satisfactory evidence as to the kind, quality and manufacturer of Materials and Equipment. The Contractor shall furnish the District with copies of the supplier's warranty and adopt the same as the warranty of the Contractor and shall also be liable thereon to the District.
- (b) The Contractor shall furnish for approval all samples as directed by the Contract Documents. The finished Work shall be in accordance with approved samples. Approval of samples by the Engineer does not relieve the Contractor of performance of the Work in accordance with the Contract Documents.
- (c) Substitutions requested by the Contractor will be subject to the District's prior written acceptance and at the District's sole discretion. For each proposed substitution, the Contractor shall submit samples, descriptive and technical data, and reports of tests to the District for approval. The Contractor shall also indicate the difference in Contract Price and/or Contract Time by reason of the proposed substitutions. All costs of any redesign or modification to other systems, parts, equipment or components of the Project or Work, which result from the substitution, shall be borne by the Contractor.
- (d) When the District approves a substitution proposed by the Contractor, the Contractor shall guarantee the substituted Materials or Equipment to be equal to, or better than, those originally specified and shall be compatible with all other systems, parts, Materials, Equipment, or components of the Project and Work. The District has the right to order an unaccepted,



substituted article removed and replaced without additional cost to the District.

- (e) When Materials or Equipment are specified by one or more patents, brand names, or catalog numbers, it shall be understood that this is for the purpose of defining the performance or other salient requirements and shall, unless otherwise expressly stated, be understood as if followed by the words Or Equal whether or not such words appear. If the Contractor proposes to furnish Or Equal Materials or Equipment, then Contractor shall demonstrate (1) conformance to the specified performance, testing, quality, life-cycle or dimensional requirements and (2) suitability of the Materials or Equipment for the use intended. Intended use of any Or Equal Materials or Equipment shall be specifically identified as part of the submittal process, and the Engineer must accept the Contractor's proposed Or Equal Materials or Equipment before it may be used. Any such acceptance shall not relieve Contractor of its obligations to achieve the specified performance, testing, quality, life-cycle or dimensional requirements and suitability of any accepted the Or Equal Materials or Equipment for the use intended under this Contract.
- (f) In the event that the Contractor proposes an alternate design or designs for some portion of the Work, the District may at its option allow the Contractor to proceed on the condition that the Contractor assume full responsibility for the alternate design.

8.13 MATERIALS AND EQUIPMENT FURNISHED BY DISTRICT

- (a) Unless otherwise specifically provided in the Contract Documents, if the Contract requires that the Contractor install Materials and Equipment provided by the District, in the absence of a reasonably apparent defect, such Materials and Equipment shall be considered compliant with the Contract Documents.
- (b) If the Contractor discovers defects in the District-furnished Materials or Equipment the Contractor shall immediately notify the District in writing.
- (c) After such discovery, the Contractor shall not proceed with Work involving such District-furnished Materials and Equipment unless otherwise authorized in writing by the District.
- (d) Contractor's failure to provide immediate written notice of any defects in District-furnished Materials or Equipment shall constitute acceptance of such Materials and Equipment as fit for incorporation into the Work.
- (e) Contractor shall be responsible for any damages or delays resulting from Contractor's failure to provide timely written notice or Contractor's improper



incorporation of such defective District-furnished Materials or Equipment into the Work.

8.14 SUBMITTALS

- (a) The Contractor shall perform no portion of the Work requiring Submittals until the Submittals have been reviewed and returned by the District with one of the following annotations: (1) "No Exception Taken" or (2) "Make Corrections Noted" or (3) "Revise and Resubmit" or (4) "Rejected" or (5) "Submit Specified Item".
- (b) Prior to furnishing the Submittals to the District, the Contractor shall: (1) review all Contractor and Subcontractor Submittals for accuracy, completeness, and compliance with the Contract; (2) coordinate all Submittals with all Contract Work by other trades and with field measurements; and (3) indicate approval on the Submittals as a representation that it has complied with its obligation to review and coordinate Submittals. Where required by law or by the Contract, an appropriate licensed professional shall stamp Submittals. Submittals lacking required stamps or evidence of Contractor review and approval will be returned without review by the District for resubmission. Submittals shall be sequentially numbered.
- (c) When submitting information, the Contractor shall identify and state reasons for any alteration, variation, addition, deviation, or omission from the Contract. The Contractor shall not perform work that alters, varies, adds, deviates, or omits Work without prior specific written acceptance by the District.
- (d) The Contractor shall provide Submittals with reasonable promptness and in such sequence as to facilitate the timely completion of the Contract. The Contractor shall prepare and keep current, for review by the District, a schedule of Submittals which is coordinated with the Contractor's Project Schedule and allows the District reasonable time for review.
- (e) The District shall review the Contractor's Submittals and respond in writing with reasonable promptness. Unless otherwise agreed, no delay to the Contractor's Work shall be attributable to the failure by the District to respond to a Submittal until thirty (30) Days after the Submittal is received by the District, and then only if failure by the District to respond is unreasonable and affects the Substantial Completion date.
- (f) If the Contractor is required to resubmit a Submittal, any revisions on resubmittals, shall be specifically identified in writing and the resubmitted Submittal shall be sequentially alpha denoted and note revisions in numerical order. The cost of the review of the initial Submittal and the first revised Submittal shall be borne by the District. The costs of all additional



revised Submittals shall be charged to the Contractor. The cost of review shall include, without limitation, administrative, design, and engineering activities directly related to review of Submittals. The District may deduct these costs from any amounts due the Contractor.

- (g) The District shall review the Contractor's Submittals only for conformance with the design of the Work and compliance with the Contract Documents. Review of the Submittals are not conducted to verify the accuracy of dimensions, quantities, or calculations, the performance of Materials, systems, or Equipment, or construction means, methods, techniques, sequences, or procedures, all of which remain the Contractor's responsibility. Failure by the District to take exception to a Submittal shall not relieve the Contractor from any duty, including its responsibility for errors or omissions in Submittals, its duty to make Submittals and its duty to perform the Work according to the requirements of the Contract. The District's review of a Submittal shall not alter or waive the requirements of the Contract unless the District has issued prior written approval of such change or alteration of the Contract requirements.
- (h) The Contractor's failure to identify any error, deviation, or omission and subsequent acceptance of the Submittal by the District shall not relieve the Contractor from the obligation to comply with the all requirements in the Contract Documents.

8.15 LABOR AND FACILITIES

- (a) The Contractor shall provide and pay for all labor, water, tools, light, power, transportation and other facilities necessary for the execution and completion of the Work, except as otherwise stipulated in the Contract Documents.
- (b) Necessary sanitation conveniences for the use of workmen on the Site, properly secluded from public observation, shall be provided and maintained by the Contractor.
- (c) The Contractor shall, at all times, enforce strict discipline and good order among its employees and shall not employ on the Work any person unfit or not skilled in the Work assigned to him. At the Engineer's written request, the Contractor shall immediately remove and replace any incompetent, careless, or negligent employee.
- (d) The Contractor shall remain onsite whenever the Work is under way. Before the Work begins, the Contractor shall name in writing an experienced superintendent who understands the Contract and is able to continuously supervise the Work. This superintendent shall have full authority to represent and act for the Contractor. Any superintendent who repeatedly fails to follow the Engineer's written or oral orders, directions, instructions, or determinations shall be subject to removal from the Project.



Upon the written request of the Engineer, the Contractor shall immediately remove such superintendent and name a replacement in writing.

- (e) During the term of this Contract, neither party shall employ nor hire any employee of the other party, nor of the Engineer, without the written consent of the other party or of the Engineer. The Contractor shall not use any Work performed or any information obtained from any employee hired in violation of this provision in making a claim against the District or Engineer and shall also be liable to the District as liquidated damages in an amount equal to double the amount of salary or wages paid to any such employee so hired in violation hereof.

8.16 ROYALTIES AND PATENTS

The Contractor shall be liable for all suits brought against the District by reason of infringement of patent rights or licenses on any Materials, Equipment, or process used on the Work or incorporated into the finished Project, except where specifically exempted by the Special Provisions. Prices named in the Proposal shall include payment of royalties, if any. Contractor shall defend and hold District harmless from any such suit, costs of defense and any judgment which may be made or entered against District thereon.

8.17 PROJECT SITE; PERMITS, LAWS, AND REGULATIONS

The District will furnish the Site and rights-of-way necessary for carrying out this Contract and completion of the Work herein contemplated and will use due diligence in acquiring said lands and rights-of-way as speedily as possible. If the District's right of access to any lands for the Site, Permits, or rights-of-way is delayed for any reason, Contractor shall exercise reasonable efforts to mitigate consequences and work around the delay. If Contractor believes it is entitled to a change in the Contract Time and/or Contract Price by reason of such delay, Contractor shall comply with the notice and Claim requirements provided in Section 8.23. Nothing in this section shall limit the District's right to terminate as provided in Section 8.31.

Contractor's Work shall be confined to the District's premises, including easements and construction Permit limits. The Contractor shall not enter upon or place Materials or Equipment on other property except by written consent of the individual property owners and the Contractor shall save District harmless from all suits and actions of every kind and description that might result from its use of property other than that of the District.

The Contractor shall be responsible for obtaining all Permits except those specified herein or in the Special Provisions.

The Contractor shall keep fully informed concerning all governmental requirements, including but not limited to all State, Federal, county and municipal laws, ordinances and regulations which in any manner affect the performance of



the Work or the Materials and Equipment used in the Work, or which in any way affect those employed to work in connection with the Project, and of all such orders and decrees of bodies or tribunals having any jurisdiction or authority over the same including the specific legal requirements referenced in the Contract Documents (collectively, the “Governmental Requirements”). The Contractor shall at all times comply with, and shall cause all the Contractor’s agents, employees and Subcontractors to comply with all such Governmental Requirements, and shall indemnify, defend and hold harmless District and all of its commissioners, officers, agents, and employees against all claims, liabilities, losses, damages and expenses (including attorney’s fees and related costs) arising from or based on the violation of any such Governmental Requirement whether by the Contractor or contractor’s agents, employees or Subcontractors. If any discrepancy or inconsistency is discovered in the Contract Documents for the work in relation to any such Governmental Requirements, the Contractor shall immediately report the same to the Engineer in writing.

Wherever the law of the place of construction requires a sales, consumer, use or similar tax, the Contractor shall pay such tax.

8.18 PAYMENT OF PREVAILING WAGES

The wage rates to be paid all laborers, workers and mechanics who perform any part of this Contract shall meet or exceed the prevailing wage rates as required by Chapter 39.12 of the Revised Code of Washington, as amended. This requirement applies to laborers, workers and mechanics whether they are employed by the Contractor, Subcontractors, sub-Subcontractors, or any other person who performs a portion of the Work contemplated by this Contract.

The current prevailing wage rates as provided to the District by the Industrial Statistician of the Washington State Department of Labor and Industries are available at the following location: <https://lni.wa.gov/licensing-permits/public-works-projects/prevailing-wage-rates/>. In referencing such rates, the District does not imply or warrant that the Contractor will find labor available at those rates. It is the Contractor’s sole responsibility to determine the wage rates it will actually have to pay.

In case any dispute arises as to what are the prevailing rates of wages for work of a similar nature and such dispute cannot be adjusted by the parties in interest, including labor and management representatives, the matter shall be referred for arbitration to the Director of the Department of Labor and Industries of the State and the Director’s decision therein shall be final and conclusive and binding on all parties involved in the dispute, as provided for by Section 39.12.060 of the Revised Code of Washington, as amended.

In connection with this Contract, the Contractor will be required, pursuant to Section 39.12.040 of the Revised Code of Washington to file with the District a “Statement of Intent to Pay Prevailing Wages” and an “Affidavit of Wages Paid” for



itself and all Subcontractors and sub-Subcontractors. The Statements require the “approval” of, and the Affidavits the “certification” of, the industrial statistician of the State Department of Labor and Industries before the Statements or Affidavits are to be presented to the District. The Department of Labor and Industries charges a fee for such approval and certification, which fee shall be paid by the Contractor. Any change in the fee will not be grounds for revision in Contract Price.

All workers delivering fill, sand, gravel, crushed rock, transit/concrete mix, asphalt or other similar Materials and all workers removing any Materials from the Site as required by the Specifications are subject to the provisions of RCW Chapter 39.12 and are entitled to the appropriate prevailing wage rate. For purposes of this Contract, such Materials are for specified future use and per WAC 296-127-018, delivery and pick-up of the above listed Materials constitutes incorporation.

The Contractor is required to include this provision in all subcontracts and shall require that it be placed in all sub-subcontracts at any tier.

8.19 PROTECTION OF WORK, PERSONS, AND PROPERTY

The Contractor shall be solely and completely responsible for conditions of the Site, including protecting all persons and property, during performance of the Work. The Contractor shall maintain the Site and perform the Work in a manner which meets all statutory and common law requirements or other specific contractual requirements for the provision of a safe place to work and which adequately protects the safety of all persons and property on or near the Site. This obligation shall apply continuously and shall not be limited to normal working hours. The District’s inspection of the Work or presence at the Site does not and shall not be construed to include review of the adequacy of the Contractor’s safety measures in, on or near the site of the Work.

Unless otherwise required in the Contract Documents, the Contractor shall protect and be responsible for any damage or loss to the Work, or to the Materials and Equipment associated with the Work until the date of Substantial Completion. The Contractor remains responsible for any damage or loss caused directly or indirectly by the acts or omissions of the Contractor, Subcontractors, suppliers or third parties authorized or allowed on the Site by the Contractor until Acceptance. The Contractor shall repair or replace without cost to the District any damage or loss that may occur, except damages or loss caused by the acts or omissions of the District.

Contractor shall take adequate precautions to protect existing lawns, trees and shrubs, sidewalks, curbs, pavements, adjoining property, and structures, and to avoid damage thereto. The Contractor shall, at its own expense, completely repair any damage thereto caused by its operations to the satisfaction of the Engineer, except as otherwise provided elsewhere in the Contract Documents. The Contractor shall be solely and completely responsible for damages arising from the Work that affect property adjacent to the Site.



Whenever it is necessary in the course of construction to remove or disturb culverts, driveways, roadways, pipelines, or other existing improvements, without limiting the generality thereof and whether on private or public property, they shall be replaced to a condition equal to that existing before they were so removed and disturbed and all such costs for this replacement shall be borne by the Contractor and considered incidental to the construction and Work covered by the Contract Documents.

The Contractor shall erect and maintain adequate signs, fencing, barricades, lights or security measures and persons to protect the Work until the Engineer authorizes in writing the removal of signs, fencing, barricades, lights or security measures.

8.20 SAFETY

The Contractor shall take all reasonable precautions for the safety of all employees working on this Contract and all other persons who may be affected by such Work. The Contractor shall designate a responsible member of its organization at the Site whose duty shall be to manage and coordinate the Safety Programs and to prevent accidents of the Contractor and Subcontractor and suppliers.

Except as otherwise stated in the Contract, if the Contractor encounters on the Site material reasonably believed to be Hazardous Material including but not limited to asbestos, lead, or polychlorinated biphenyl (PCB), the Contractor shall immediately stop Work in the area affected and give notice of the condition to the District. Work in the affected area shall not be resumed without written direction by the District.

In order to protect the lives and health of persons performing Work under this Contract, the Contractor shall comply with the Federal Occupational Safety and Health Act of 1970 (OSHA), including all revisions, amendments and regulations issued thereunder, and the provisions of the Washington Industrial Safety Act of 1973 (WISHA), including all revisions, amendments and regulations issued thereunder by the Washington State Department of Labor and Industries. The WISHA regulations shall apply, without limitation, to all excavation, tunneling, trenching and ditching operations. In case of conflict between any such requirements, the more stringent regulation or requirement shall apply. There is no acceptable deviation from these safety requirements, regardless of practice in the construction industry. Any violation of OSHA, WISHA or other safety requirements applicable to the Work may be considered a breach of this Contract.

8.21 UTILITIES

In connection with any underground and utility Work, the Contractor shall strictly comply with Chapter 19.122 of the Revised Code of Washington. Any cost or



scheduling impact resulting from the Contractor's failure to comply with these statutory provisions shall be borne by the Contractor.

Unless specified otherwise by the Contract, Contractor shall plan and execute its Work to prevent outages in existing utilities or disruption of service. Where removal or relocation of known or disclosed utilities or temporary utility connections are necessary to accommodate the Work, such removal, relocation or temporary connections shall be performed at the Contractor's sole expense unless it is specified in the Contract Documents that it will be performed by the District or by others.

The District or utility owner may enter the Site from time to time to make changes as may be necessary for the relocation of utilities or to make necessary connections or repairs. Where the utility owner is identified as being responsible for removing or relocating utilities, the Contractor shall make timely arrangements with the utility owner to schedule such work to accommodate the Work. The Contractor shall also cooperate with and facilitate any necessary access to or on the Site by the forces engaged in such work and shall conduct its operations in such a manner as to avoid delay or hindrance to the work being performed by such other forces.

Contractor shall not commence any excavations until existing utilities have been staked or marked by the utility owner. The District will provide utility locates for District-owned utilities. The Contractor may encounter underground utilities adjacent to their Work operations. It shall be the Contractor's responsibility to protect these utilities from damage. If the Contractor discovers the presence of any unknown/unidentified utilities at the Site, the Contractor shall provide the District oral or written notice promptly (and in no event more than 24 hours after discovery). If any underground utility not identified in the Contract Documents must be relocated to accommodate the Project, the Engineer will either arrange for the relocation of such utility or provide a Change Order to the Contractor to do such work. If the Contractor asserts that the discovery entitles it to a change in Contract Price and/or Time, written notification shall be made in accordance with Section 8.24.

The Contractor may request District approval for changes or rearrangement to any utility for the Contractor's convenience in order to facilitate construction of the Work. The District shall be the sole judge of whether the proposed change or rearrangement is acceptable. The Contractor shall be responsible for any delay or cost resulting from this request.

Loss of time, if any, suffered by the Contractor due to delays in removal or relocation of any utilities by others may be considered in relation to a request by the Contractor for an adjustment to the Contract Time in accordance with Sections 8.23 and 8.26.



Utilities damaged by the Contractor shall be repaired by the Contractor to their original condition at the Contractor's expense. The Contractor shall notify the Engineer of any such damage promptly (and in no event more than 24 hours after the damage occurs) and shall begin repairs immediately and work continuously until the utility is restored to the satisfaction of the Engineer.

8.22 DISTRICT-INITIATED CHANGES IN THE WORK

- (a) The District, without invalidating the Contract, may order extra work or make changes by altering, adding to or deducting from the Work. The District reserves the right to make such alterations in the Plans or in the quantities of Work as may be considered necessary. Such alterations shall be in writing by the District and shall not be considered a waiver of any condition of the Contract nor invalidate any of the provisions thereof.
- (b) All such changes in the Work shall be authorized and directed by Change Order.
- (c) Unless the District in its sole discretion agrees otherwise in writing by way of Change Order, an alteration that only increases or decreases the quantity of bid item units to be installed shall not modify or adjust the unit prices set forth in the Proposal or contained in the Contract Price.
- (d) Subject to the limitation set forth above in (c), any modification to the Contract Price due to such changed Work shall be determined, in order of precedence, in the following methods:
 - 1. By unit or lump sum prices set by the Contract.
 - 2. If method (1) does not apply, by prices mutually agreed upon.
 - 3. If no agreement is reached under method (2), such Work will be paid for under Force Account rules established pursuant to Section 8.25 of these General Conditions. In such cases, the Contractor shall keep and present in such form as the Engineer may direct a correct account of such costs, together with supporting time cards and vouchers. The Engineer shall evaluate and determine the amount due Contractor.
- (e) This Section 8.22 applies only to District-initiated changes in the Work.

8.23 CONTRACTOR REQUESTS FOR CHANGE / CLAIMS

If the Contractor believes it is entitled to any additional compensation or time extension for any reason, the Contractor shall comply with the terms and conditions of this Section 8.23. In general, as described further below, the Contractor must adhere to a three-step process in making any request for additional compensation and/or time extension: (1) a timely written Notice of Intent



(2) a timely and properly documented Request for Change Order and, if such Request is denied (3) a timely and properly documented submission of a Claim.

Step 1: If the Contractor claims that the cost to perform the Work has been increased through any act or omission believed to be the District's responsibility (including without limitation District instructions, Plans, Site conditions or any alleged interference or impact by the District) the Contractor shall give the Engineer written Notice of Intent within five (5) Days after the receipt of any such instructions, or occurrence of any other act, omission or impact, and in any event before proceeding to execute the Work (except in emergency endangering life or property). The Notice of Intent shall describe (1) the date, circumstances, and source of the direction, instruction, interpretation, determination by the District and/or the event or impact to the Project (2) reasonable order of magnitude estimate of the change to the Contract Price (3) reasonable order of magnitude estimate of the time impact to the Contract Time; and (4) Contract provisions and substantive basis to support entitlement. Contractor's failure to provide the Notice of Intent as required by this Section 8.23 will act as a waiver of any right to bring any Claim related to the act, omission or impact in question.

Step 2: Within no more than 14 Days of submitting its Notice of Intent, The Contractor shall provide a detailed Request for Change Order to the Engineer. The Request for a Change Order shall include:

- Specific dollar amount covering all costs associated with the requested Change Order calculated in accordance with the Contract;
- Specific request for time extension (number of days);
- All documentation supporting the Request for a Change Order, including but not limited to all cost records and any schedule analysis.

Contractor's failure to provide the Request for Change Order as required by this Section 8.23 will act as a waiver of any right to bring any Claim related to the act, omission or impact in question.

The District will review each submitted Request for Change Order within thirty (30) Days after receipt and will respond in writing approving or denying the Request.

Step 3: If the Request for Change Order is denied, the Contractor within no more than thirty (30) Days of the denial shall file a written Claim. At a minimum, a fully documented Claim must contain the following information:

- A detailed statement of the Claim providing all necessary details, locations, and items of Work affected;
- The date on which the incident arose that gave rise to the Claim;



- The name of each person employed or associated with the Contractor, Subcontractors, suppliers, and/or the District with knowledge about the event or condition which gave rise to the Claim;
- Copies of documents and a written description of the substance of any oral communications that concern or relate to the Claim;
- The specific provisions of the Contract Documents on which the Claim is based;
- If an adjustment in the Contract Price is sought, the exact amount sought, calculated in accordance with the Contract and accompanied by all records supporting the Claim;
- If an adjustment in the Contract Time is sought, the specific days and dates for which it is sought; the specific reason the Contractor believes an adjustment in the Contract Time should be granted; and the Contractor's analyses of its Schedule, any specific Schedule analysis as required by the Contract Documents, and all updates to demonstrate the reason for the adjustment in Contract Time; and,
- A statement certifying, under penalty of perjury, that after the exercise of reasonable diligence and investigation the Claim is made in good faith, that the supporting cost and pricing data are true and accurate to the best of the Contractor's knowledge and belief, that the Claim is fully supported by the accompanying data, and that the amount requested accurately reflects the adjustment in the Contract Price or Contract Time for which the Contractor believes the District is liable.

Failure to comply with the time requirements set for filing a Claim shall constitute acceptance by the Contractor, on behalf of itself and its Subcontractors and suppliers, of the District's denial of a Request for Change Order. Such acceptance shall be considered complete, full, and final settlement of all costs, damages, and Claims related to or arising from the Request for Change Order.

Any modification to the Contract made on account of any Request for Change Order or Claim shall be determined, in order of precedence, in the following ways:

1. By unit or lump sum prices set by the Contract.
2. If method (1) does not apply, by prices mutually agreed upon.
3. If no agreement is reached under method (2), payment for the Request for Change Order or Claim will be made under Force Account rules established pursuant to Section 8.25 of these General Conditions. In such cases, the Contractor shall keep and present in such form as the Engineer may direct a correct account of such costs, together with supporting time cards and vouchers.

After the Contractor has submitted a fully documented Claim that complies with this provision, the District shall respond, in writing, to the Contractor within thirty



(30) Days from the date of receipt of the fully documented Claim. If the District denies the Claim, the Contractor's sole remedy is as set forth in Section 8.46 (Venue/Limitation).

8.24 DIFFERING SITE CONDITIONS

If the Notice of Intent, Request for Change Order or Claim arises from an alleged Differing Site Condition, the requirements of this Section will apply in addition to those set forth in Section 8.23. In the event this Section imposes requirements, deadlines or rules more stringent than those set forth in Section 8.23, the requirements, deadlines or rules of this Section will govern.

The Contractor shall within 24 hours of discovery notify the Engineer in writing of: (1) pre-existing subsurface or latent physical conditions differing materially from those indicated in the Contract, or (2) pre-existing unknown physical conditions of an unusual nature, differing materially from those ordinarily encountered and generally recognized as inherent in the work of the character provided for in the Contract. This 24-hour Notice of Intent is in place of the 5 Day Notice of Intent listed in Section 8.23. Provided Contractor complies with this 24 hour Notice of Intent requirement and wishes to pursue relief, it must then comply with Step 2 and Step 3 set forth in Section 8.23. Contractor shall at all times preserve (and not dispose) the physical conditions or materials constituting the alleged Differing Site Condition and upon request make them available to the District for review and/or inspection.

Any geotechnical reports provided to Contractor shall have the following order of precedence: (1) Geotechnical Baseline Report (GBR) and/or Geotechnical Baselines described in the Specifications; (2) Geotechnical Data Report (GDR); (3) Geotechnical Design Report; (4) other soils reports, borings, test pits or additional investigative data. Baseline statements in the GBR and/or Geotechnical Baselines described in the Specifications shall take absolute precedence over any data in the GDR or elsewhere (or any inference or interpolation from such data) even if the baseline statements exceed the physical conditions identified in the data.

8.25 FORCE ACCOUNT

Except as provided herein, Force Account will be paid under the terms and conditions of Section 1-09.6 of the latest published Standard Specifications for Road, Bridge and Municipal Construction of the Washington State Department of Transportation. Notwithstanding the foregoing, the following provisions for Contractor Owned Equipment and Standby shall apply to all Force Account work performed under this contract:

Contractor Owned Equipment: For equipment owned by the Contractor, payment shall be made on the basis of Actual Cost. The term Actual Cost means the ownership and operating cost of the equipment as determined



by the District based on records made available by the Contractor. The District in determining Actual Cost may consider the equipment's acquisition cost, the equipment's useful life, any indirect costs associated with ownership of the equipment, depreciation and other commercially reasonable factors. It is the responsibility of the Contractor to provide cost records to the District upon request to assist with determining the Actual Cost for the equipment. If the Contractor did not keep and maintain such cost records or fails to comply with the document request made by the District, the District may at its option make a reasonable determination of the Actual Cost. If the Contractor disagrees with this determination, it must file a written Notice of Intent and pursue a Request for Change Order as set forth in Section 8.23.

Standby: Payment for equipment during any standby time or shutdown caused by the District shall be paid at: (i) 25% of Actual Cost (for owned equipment) or (ii) 100% of the applicable rental rate (for rental equipment) for a period not to exceed ten (10) Days.

8.26 DELAYS AND EXTENSION OF TIME

- (a) If the Contractor seeks an extension of the Contract Time or additional compensation due to an allegedly compensable impact to the Contract Time, its sole remedy is to comply with the Notice of Intent / Request for Change Order / Claim process identified in Section 8.23. The remainder of this Section 8.26 describes the general rules applicable to any timely-filed Notice of Intent / Request for Change Order / Claim related to Contract Time.
- (b) Non-Excusable and Non-Compensable Delays. Delays in the prosecution of the Work that could have been avoided by the exercise of due care, coordination and diligence on the part of the Contractor, its Subcontractors or its suppliers at any tier are neither excusable nor compensable under the Contract. No extension of Contract Time or increase in the Contract Price shall be allowed for any claimed delay that is caused by or results from the breach, fault, negligence, or collusion of the Contractor, or its Subcontractors, sub-Subcontractors, or suppliers.
- (c) Excusable and Non-compensable Delays. The Contract Time may be extended without compensation by the District for a period equivalent to the time that the Engineer determines that the Contractor was delayed in the Work by one or more of the following causes, beyond the control of the District and the Contractor, occurring during the performance of the Work:
 - 1. Fire or other casualty for which the Contractor is not at fault or otherwise responsible;
 - 2. Riot, war, or civil disorder;



3. Unusual and severe weather
4. General industry strikes or labor disputes beyond the reasonable control of Contractor,
5. Unreasonable delay in issuance of a permit by the agency having jurisdiction, and
6. Delay to the Work resulting from causes beyond the control of Contractor and District and that could not have been avoided by Contractor with the exercise of coordination, foresight and diligence.

Such non-compensable extensions of Contract Time will be allowed only to the extent that Substantial Completion of the Work is unreasonably delayed through no fault of the Contractor, which must in all cases be substantiated by impact to the Work on the Schedule. Any extension of the Contract Time by the District will be set forth in a Change Order, which shall specify the Days by which the Contract Time is to be increased.

(d) Excusable and Compensable Delays. The Contract Time may be extended and the Contract Price increased in the event that:

1. The Work was delayed by reason of changes made by the District or by any unreasonable act or omission of the District,
2. The Contractor was not concurrently responsible for the delay in the Work,
3. The Contractor has suffered actual losses as a result of the delay in the Work,
4. The delay in the Work could not have been mitigated despite the Contractor taking reasonable work-around actions, and
5. The delay in the Work was not within the contemplation of the Contract.

In that event, the Contract Time will be extended for a period equivalent to the time that the Engineer determines that the Contractor was delayed in the Work and the Contract Price will be increased to compensate the Contractor for its loss from such delay and associated disruption. Any extension of the Contract Time and increase in the Contract Price by the District will be set forth in a Change Order, which shall specify the Days by which the Contract Time is to be increased and the amount by which the Contract Price is to be increased.



8.27 COMPLETION AND/OR CORRECTION OF WORK

- (a) If the Contractor should neglect to prosecute the Work properly and/or fail to perform any provision of this Contract, the District, after five (5) Days' written notice to the Contractor, may, without prejudice to any other remedy it may have, make good such deficiencies and deduct the cost thereof from payments then or thereafter due the Contractor.
- (b) The Contractor shall promptly remove from the construction Site all Materials and/or Equipment rejected by the Engineer as failing to conform to the Contract, whether incorporated in the Work or not; and the Contractor shall promptly replace and re-execute its own Work in accordance with the intent of the Contract and without expense to the District and shall bear the expense of making good all work of other contractors destroyed or damaged by such removal or replacement. If the Contractor does not remove such rejected Work and Materials and/or Equipment and commence re-execution of the Work within five (5) Days of notice from the Engineer, the District may correct the same as otherwise provided herein.
- (c) If the Contractor does not remove such rejected Work and Materials and/or Equipment within the period herein above described, the District may remove and store any such Materials and/or Equipment at the expense of the Contractor. If the Contractor does not pay the cost of such removal within ten (10) Days from the notice to Contractor of the fact of such removal, the District may, upon an additional ten (10) Days' written notice, sell such Materials and/or Equipment at public or private sale, and deduct all costs and expenses incurred, including costs of sale, accounting to the Contractor for the net proceeds remaining, and District may bid at any such sale. Contractor shall be liable to District for the amount of deficiency remaining between the costs incurred and the proceeds of sale. District may deduct the costs of such removal, storage and sale and/or remaining deficiency from any funds otherwise due the Contractor.

8.28 DEFECTS ARISING IN TWO YEARS AND REMEDIES

- (a) The Contractor shall be responsible for correcting all defects in workmanship and Materials and/or Equipment within two (2) years after Acceptance. When corrections of defects are made, Contractor shall be responsible for correcting all defects in workmanship and/or Materials and Equipment in the corrected Work for two years after proper completion of the correction. The Contractor shall start work to remedy such defects within seven (7) Days of mailing notice of discovery thereof by District and shall complete such work within a reasonable time. In emergencies, where damage may result from delay or where loss of service may result, such corrections may be made by the District, in which case the cost shall be borne by the Contractor. In the event the Contractor does not accomplish



corrections at the time specified, the Work will be otherwise accomplished and the cost of same shall be paid by the Contractor.

- (b) The Contractor shall be liable for any costs, losses, expenses, or damages, including consequential damages suffered by the District resulting from defects in the Work including, but not limited to, cost of Materials and labor extended by District in making emergency repairs and cost of engineering, inspection and supervision by District or Engineer. The Contractor shall hold the District harmless from any and all claims which may be made against the District as a result of any defective Work and the Contractor shall defend any such claims at its own expense.

8.29 SUSPENSION OF WORK

- (a) The District may order the Contractor, in writing, to suspend all or any part of the Work of this Contract for the period of time that the District determines appropriate for the convenience of the District. The Contractor shall not suspend the Work without written direction from the District specifically authorizing the suspension of Work.
- (b) Upon receipt of a written notice suspending the Work, the Contractor shall immediately comply with its terms and take all reasonable steps to minimize costs attributable to such suspension. The District may require the Contractor to furnish temporary roads, patches, safety barricades, restorative work, or other measures to protect the Work, the Site, property adjacent to the Site, and public safety. Within a period up to 120 Days after the suspension notice is received by the Contractor, or within any extension of that period which the District requires, the District shall either:
 - 1. Cancel the written notice suspending the Work; or
 - 2. Terminate the Work for either Default or Convenience as provided in Sections 8.30 and 8.31.
- (c) If a written notice suspending the Work is canceled or the period of the Suspension or any extension thereof expires, the Contractor shall resume Work as required by the District.
- (d) If the performance of all or any part of the Work is, for an unreasonable period of time, suspended by the written direction of the District, and if the cause of the suspension is not the fault, breach or negligence of the Contractor or those for whom Contractor is responsible, the Contractor may be entitled to an adjustment in the Contract Price and/or Contract Time for increases in the time or cost of performance directly attributable to such unreasonably long suspension and provided that the Contractor sufficiently documents all costs and time impacts attributable to the suspension. No adjustments to Contract Price and/or Contract Time shall be allowed unless



the Contractor can demonstrate that the unreasonable period of suspension caused by the District impacted the Work and delayed the Contractor from completing the Work within the Contract Time. The Contractor shall comply with the requirements of Sections 8.23 and 8.26 in seeking an adjustment. Any sums paid to Contractor on account of suspension shall be determined in accordance with the order of precedence described in Section 8.23. Failure to comply with these requirements shall constitute a waiver of Contractor's rights to any adjustment in Contract Time and/or Contract Price.

- (e) No adjustment shall be made under this provision for any suspension to the extent that (1) Contractor's performance would have been suspended, delayed, or interrupted as a result of actions, omissions, fault or negligence caused, in whole or in part, by the Contractor or any of its Subcontractors and suppliers, (2) Contractor failed to diligently pursue the Work before the suspension, (3) the District suspended the Work due to Contractor's failure to comply with the Contract or the Engineer's orders, or (4) an equitable adjustment is provided for or excluded under any other provision of the Contract.
- (f) When ordered by the Engineer to suspend or resume Work, the Contractor shall do so immediately.
- (g) Before and during any suspension the Contractor shall protect the Work from damage or deterioration. Suspension shall not relieve the Contractor from anything the Contract requires unless this section states otherwise.

8.30 DISTRICT'S RIGHT TO TERMINATE CONTRACT FOR DEFAULT

- (a) The District may terminate the Contract and take possession of the premises and of all Materials and Equipment thereon and finish the Work by whatever methods it may deem expedient, upon the occurrence of any one or more of the events hereafter specified, and receipt of the certificate by the Engineer that sufficient cause exists to justify such action:
 - If the Contractor is insolvent, files a petition for bankruptcy protections, is adjudged bankrupt, makes a general assignment for the benefit of its creditors, or a receiver is appointed on account of its insolvency.
 - If the Contractor fails to supply a sufficient number of properly skilled workmen or proper Materials or Equipment for completion of the Work.
 - If the Contractor fails to prosecute the Work or any portion thereof with such diligence as will ensure Substantial Completion within the original Contract Time and any extensions of time which may have been granted to the Contractor by Change Order or otherwise.



- If the Contractor fails to prosecute the Work or any portion thereof with such diligence as will ensure Physical Completion of the Work in a timely manner.
- If the Contractor fails in a material way to repair, replace, or correct Work not in conformance with the Contract.
- If the Contractor fails to make prompt payment to its employees or Subcontractors and suppliers.
- If the Contractor disregards laws, ordinances, rules, codes, regulations, orders or similar requirements of any public entity having jurisdiction over the Contractor, the Work, or the Site.
- If Contractor fails to comply with any Contract safety requirement.
- If the Contractor otherwise materially breaches any provisions or requirements of the Contract or persistently disregards instructions of Engineer.

District shall give Contractor five (5) Days' written notice to cure the default and, if not cured to the satisfaction of District as certified by Engineer, the District may, upon three (3) Days' written notice, elect to so terminate. Any such termination shall be without prejudice to any other right or remedy which District may have against Contractor.

- (b) If Contractor fails to cure the default to the District's satisfaction within the five (5) Day cure period, or if the Contractor abandons the Work undertaken under the Contract, District may, at its option, upon ten (10) Days' written notice to the Surety and without any written notice to Contractor, transfer the employment of said Work from Contractor to Surety. Upon receipt of such notice, the Surety shall enter upon the premises and take possession of all Materials, Equipment, tools and appliances thereon for the purpose of completing the Work included under this Contract and employ, by contract or otherwise, any person or persons to finish the Work and provide the Materials and Equipment therefore, without termination of the continuing full force and effect of the Contract. In case of transfer of such employment to the Surety, the Surety shall be paid in its own name on estimates covering the Work subsequently performed under the terms of the Contract and according to the terms hereof, without any right of Contractor to make any claim for the same or any part thereof.
- (c) In the event that the Contract is terminated for default by the District, Contractor shall not be entitled to receive any further balance of the amount to be paid under this Contract until the Work shall have been fully finished. At such time, if the unpaid balance of the amount to be paid under this Contract exceeds the expense incurred by District in finishing the Work, and all damages sustained or which may be sustained by District by reason of such refusal, neglect, failure of discontinuance of employment, such excess



shall be paid by District to Contractor. If such expense and damages shall exceed the unpaid balance, Contractor and its Surety and each thereof shall be jointly and severally liable therefore to District and shall pay the difference to District. Such expense and damage shall include all reasonable legal costs incurred by District in the employment of attorneys to protect the rights and interests of District under the Contract.

8.31 DISTRICT'S RIGHT TO TERMINATE CONTRACT FOR CONVENIENCE

- (a) Upon written notice to the Contractor, the District may terminate the Work, or any part of it, without prejudice to any right or remedy of the District inclusive of all audit rights in the Contract, for the convenience of the District.
- (b) If the District terminates the Work or any portion thereof for convenience, Contractor shall be entitled to be paid, at applicable Contract rates and prices, for Adjusted Contract Work executed in conformance with the Contract and completed prior to the effective date of the termination.
- (c) Termination for Convenience shall not enlarge, expand, modify, alter or in any way subsume or convert the rights or remedies (if any) of Contractor with respect to any Claim, Request for Change Order, Notice of Intent or other request for any revision to the Contract Price or Contract Time asserted or accrued at the time of the termination (collectively, "Pending Requests"). Without limiting the foregoing, the termination for convenience shall not have the effect of converting the Pending Requests into no-fault or assumed liabilities of the District. Following any Termination for Convenience, Contractor's rights or remedies (if any) to any extra compensation, change in the Contract Price or additional Contract Time for any Pending Requests shall continue to be subject to and governed by the same Contract provisions, legal rules and processes, defenses and burdens of proof that would apply but for the termination.
- (d) Except as provided for above in Section 8.31(b) or (c), the Contractor shall not be entitled to any other costs or damages whatsoever (including without limitation profit or overhead on the terminated Work). The total sum payable upon termination shall also not exceed the Contract Price reduced by prior payments.
- (e) If it appears that due to any cause or reason the Contractor would have incurred a loss on the entire Contract had it been completed, the District shall not reimburse Contractor for any indirect costs for the Adjusted Contract Work completed and shall reduce the settlement to reflect the indicated rate of loss.
- (f) If the payments made by the District prior to the effective date of the termination exceed the reasonable direct cost of the Adjusted Contract



Work completed as of the effective date of the termination (as in, for example, a mobilization payment that exceeds direct mobilization costs or other similar front-loaded payments), the District shall at its option be entitled to a credit for the overpayment. The Contractor shall cooperate with any audit the District elects to conduct pursuant to the terms of the Contract.

- (g) The rights and remedies of the District in this provision are in addition to any other rights and remedies provided by law or under this Contract, inclusive specifically of all audit rights.

8.32 CONTRACTOR'S OBLIGATIONS DURING TERMINATION

Unless the District directs otherwise, after receipt of a written notice of Termination for Default or Termination for Convenience, Contractor shall promptly:

- (a) Stop performing Work on the date and as specified in the notice of termination;
- (b) Place no further orders or subcontracts for Materials, Equipment, services or facilities, except as may be necessary for completion of such portion of the Work not terminated;
- (c) Cancel all orders and subcontracts, upon terms acceptable to the District, to the extent that they relate to the performance of Work terminated;
- (d) Assign as specifically requested by the District all of the rights, title, and interest of Contractor in all orders and subcontracts;
- (e) Take such action as may be necessary or as directed by the District to preserve and protect the Site and any other property related to this Project in the possession of Contractor in which the District has an interest;
- (f) Continue performance of the Work only to the extent not terminated;
- (g) If notified to do so by the District, promptly remove any part or all of its Equipment, Materials, and supplies from the Site; and,
- (h) Take any other steps required by the District with respect to the Project.

If Contractor fails to remove its Equipment, Materials, or supplies within three (3) Days of District's notice to do so, District shall have the right to remove such Equipment, Materials, and supplies at the expense of Contractor, deducting the cost thereof from any funds otherwise due Contractor.



8.33 USE OF COMPLETED PORTION OF WORK

District shall have the right to take possession of and use any completed or partially completed portions of the Work, notwithstanding that the time may not have expired for completing the entire Work. Such taking possession and use shall not be deemed to be completion of the Contract in respect to such Work nor shall the same be deemed to be Acceptance of the Work.

8.34 APPLICATION FOR PAYMENT

On or about the first business day of each month, the Contractor shall submit to the District an Application for Payment. Each application shall be on a form acceptable to the District and designated as an "Application for Payment." The Contractor shall include with each Application for Payment:

1. Current schedule of values reflecting the Work done since the last Application for Payment and the cumulative Work completed to date;
2. Project Schedule and the most current updates; and,
3. Affidavits signed by all Subcontractors performing Work as of the last Application for Payment, stating that each of them has been paid, less earned retainage, as their interests appeared in the last Application For Payment.

The Contractor is not entitled to payment for any Work unless the Application for Payment includes all required documentation. The District reserves the right to withhold payment pursuant to Section 8.38 if it is subsequently determined that all required documentation was not provided by the Contractor or any of the documentation provided by the Contractor was inaccurate or otherwise objectionable. At the District's option, no payments will be made after the date of expiration of the Contract Time, as established in the Contract, until final payment.

The Application for Payment shall correlate the amount requested with the schedule of values and with the state of completion of the Work, as measured by the current Project Schedule. In addition to Work performed by the Contractor, Applications for Payment may include the cost of Materials suitably stored on the Site in accordance with Section 8.35.

The District shall comply with RCW 39.76, as amended, and promptly review each Application for Payment and identify in writing any cause for disapproval within eight (8) working days. In addition to withholding payment for unsatisfactory performance or failure to comply with Contract requirements, if the Contractor's Application for Payment fails to recognize any back-charges, off-sets, credits, change orders, or deductions in payment made in accordance with Section 8.35, the District shall have the right to revise or disapprove Contractor's Application For



Payment because the Application For Payment is not considered a properly completed invoice.

8.35 PROGRESS PAYMENTS

Progress payments will be made no more often than monthly following Contractor's Application for Payment. Payment shall be based upon the actual quantities of Work performed as verified and agreed by the Engineer according to the Contract Documents. Payment shall be based upon invoices approved by the Engineer. Progress payments will be made within forty-five (45) Days of the District's receipt of the properly prepared invoice (Application for Payment). Monthly progress payments will be made to the Contractor during the working period but not after the Substantial Completion date. Five per cent (5%) of the amount of the estimated progress payment will be retained by the District as provided in Chapter 60.28 RCW. The statutory retained percentage shall be managed by the District as specified by the Contractor in the Proposal form of the Bid Documents.

The Contractor is required to make payment to all Subcontractors and suppliers for all Work included within the progress payment within ten (10) Days from the receipt of the progress payment. Furthermore, the Contractor shall require all subcontracts issued under this contract to all Subcontractors and suppliers at all tiers to also make all due payments within ten (10) Days of their receipt of payment. The Contractor must justify to the District in writing any intent to withhold payment of monies due to any Subcontractor or supplier.

The cost of Materials, properly stored, protected and insured at the Site of the Work, will be paid on monthly estimates only when provided for in the Special Provisions, and then only for the specific Materials listed therein for partial payment. In preparing the monthly estimates, advancement will be made therein for ninety per cent (90%) of the cost of such Materials, as evidenced by invoices to Contractor. Advances will not be made for any item of Material amounting to less than five hundred dollars (\$500.00). All Materials must conform to the requirements of the Specifications. However, advancement for Materials will not constitute acceptance of same, and any faulty Materials will be condemned although advancement may have been made for same in the estimates. Deductions at the same rates and equal in amount to the advancements, will be made on the estimates as the Materials are used. All Materials for which costs are allowed under this subparagraph must be substantiated by written documentation from the Material supplier that the Material has been paid for.

8.36 FINAL PAYMENT

The District will make final payment, excluding held retention, to the Contractor following (1) Physical Completion and (2) final resolution by settlement, mediation or litigation of all Requests for Change Orders or Claims. Final payment shall include the entire sum found to be due hereunder after deducting therefrom such



amounts as the terms of the Contract permit. Prior estimates and payments, including those relating to unit price Work, extra Work or Work omitted, shall be subject to review and correction by the final payment. Final payment will be made only for Materials actually incorporated in the Work; and, all Materials remaining for which progress payments have been made shall revert to the Contractor, unless otherwise agreed, and progress payments made for these items shall be deducted from the final payment for the Work.

By accepting final payment, the Contractor shall be deemed thereby to have released the District from all claims of Contractor and all liability to the Contractor for things done or furnished in connection with the Work and for every act and neglect of the District and others relating to or arising out of the Work, other than release and held retention. Final payment by the District shall not release the Contractor or its Surety from any obligation under the Contract or under the performance and payment bonds or under any warranty obligations.

Neither the final payment nor any part of the retained percentage shall become due until Contractor, if requested, shall deliver to District a complete release of all liens arising out of this Contract, or receipts in full in lieu thereof, and, if required in either case, an affidavit that so far as it has knowledge or information, the release and receipts include all labor and Material for which a lien could be filed; but Contractor may, if any Subcontractor refuses to furnish a release or receipt in full, furnish a bond satisfactory to Engineer to indemnify District against any lien. If any lien remains unsatisfied after all payments are made, Contractor shall reimburse to District all moneys that the latter may be compelled to pay in discharging such lien, including all costs and reasonable engineer's and attorney's fees.

8.37 ACCEPTANCE AND RELEASE OF RETAINAGE

Following issuance of the Notice of Physical Completion and the completion of all closeout administrative requirements, the District will formally accept the Project. Once the District determines that the Contractor has fulfilled these requirements, the Engineer will issue a formal Notice of Acceptance.

Promptly following Acceptance, the District will prepare the Notice of Completion of Public Works Contract and submit it to the relevant Washington State agencies.

Release of the retainage will be made no sooner than sixty (60) Days after issuing the Notice of Completion of a Public Works Contract provided the following conditions are met:

1. On Contracts totaling more than \$35,000, a release has been obtained from the Washington State Department of Revenue (RCW 60.28.051);
2. Receipt of a certificate of Payment of Contributions Penalties and Interest on Public Works Contract from the Washington State Employment Security Department;



3. Receipt of a certificate from Washington State Department of Labor and Industries showing the Contractor is current with payments of industrial insurance and medical aid premiums;
4. All claims, as provided by law, filed against the retainage have been resolved. In the event claims are filed and provided the conditions of 1 through 3 above are met, the Contractor will be paid such retained percentage less an amount sufficient to pay any such claims together with a sum determined by the District sufficient to pay the cost of foreclosing on claims and to cover attorney's fees.

It is the responsibility and a condition of this Contract that Contractor promptly notifies all Subcontractors and suppliers of the commencement of the period and of the final day for submitting any liens. As a further condition of this Contract the Contractor is required to place within all subcontracts a clause that states that this shall be done. The Contractor shall by letter inform the District of the compliance with this provision. Failure of the Contractor to comply with this provision may be used by the District as a basis to withhold retainage to ensure payment to uninformed Subcontractors. Failure to comply will also be made a matter of record for future determinations of Bidder responsibility.

8.38 DISTRICT'S RIGHT TO WITHHOLD PAYMENTS

In addition to moneys retained pursuant to RCW 60.28 and without waiver of any other available remedies, the District at its sole option has the right to recapture, withhold, nullify, or back-charge, in whole or in part, any payments due to Contractor or payments made to the Contractor on the following grounds:

1. The Work for which the Contractor is claiming payment was not performed in accordance with the Contract;
2. The Contractor's pay request does not contain the required documentation or is otherwise not in conformance with the requirements of the Contract;
3. There is a good faith dispute over all or a portion of the amount due, in accordance with 39.04.250 RCW;
4. Failure of the Contractor to make payments owed to Subcontractors, or for labor, Materials, or Equipment;
5. Failure of the Contractor to submit Schedule(s), schedule(s) of value or update any schedules as required by the Contract;
6. Failure to prosecute progress of the Work in a timely manner or failure to take necessary steps to regain time or deliver the Work in the prescribed Contract Time;
7. A reasonable doubt that the Contract can be completed for the balance then unpaid;



8. Cost or liability that may occur to the District as the result of the Contractor's or Subcontractor's acts, omissions, fault, or negligence;
9. Failure of the Contractor to repair damaged materials, equipment, property, or Work;
10. Imposition of any liquidated or other delay damages under the Contract;
11. Payments made by mistake; or
12. Payments made erroneously and/or in excess of the sum actually due under the Contract.

The withholding, nullification, or back-charge of any payment(s) by the District shall in no way relieve the Contractor of any of its obligations under this Contract. In the event the District withholds all or a part of a payment for deficiencies in either performance, or in a payment request, the District will notify the Contractor in accordance with RCW 39.76. The Contractor shall have the right to correct all deficiencies that are the basis for the withholding and resubmit the pay request at any time for reconsideration.

8.39 HOLD HARMLESS AGREEMENT

The Contractor shall protect, defend, indemnify and hold harmless the District, its officers, officials, separate contractors, employees, agents, and successors and assigns, (collectively "the Indemnified Parties") from any and all liability, claims, demands, suits, penalties, losses, damages, judgments, or costs of any kind whatsoever (hereinafter "claims"), arising out of or in any way, whether direct, indirect or consequential (including, but not limited to, attorneys' and consultants' fees and other expenses of litigation or arbitration) resulting from the Contractor's and/or Subcontractor's and supplier's of all tiers acts or omissions, performance or failure to perform this Contract, to the maximum extent permitted by law or as defined by RCW 4.24.115, now enacted or as hereinafter amended; provided, however, that if the provisions of RCW 4.24.115 apply to the Work and any injuries to persons or property arising out of performance of this Contract are caused by or result from the concurrent negligence of the Contractor or its Subcontractors, agents or employees, and an Indemnified Party, the indemnification applies only to the extent of the negligence of the Contractor and its Subcontractors, agents or employees. This Paragraph shall not be construed so as to require the Contractor to defend, indemnify, or hold harmless the District from such claims, damages, losses or expenses caused by or resulting from the sole negligence of the District or its agents.

The Contractor specifically assumes potential liability for actions brought by the Contractor's own employees or former employees against any Indemnified Party, and for that purpose the Contractor specifically waives all immunity and limitations on liability under the workers compensation act, RCW Title 51, or any industrial insurance act, disability benefit act or other employee benefit act of any jurisdiction



that would otherwise be applicable in the case of such claim. The Contractor recognizes that this waiver was specifically entered into and was the subject of mutual negotiation. Provided, however, the Contractor's waiver of immunity by the provisions of this paragraph extends only to claims against the Contractor by District, and does not include, or extend to, any claims by the Contractor's employee directly against the Contractor.

The District may, in its sole discretion, (1) withhold amounts sufficient to pay the amount of any claim for injury, and/or (2) pay any claim for injury of which the District may have knowledge, regardless of the formalities of notice of such claim, arising out of the performance of this Contract. Any amount withheld will be held until the Contractor secures a written release from the claimant, obtains a court decision that such claim is without merit, or satisfies any judgment on such claim. In addition, the Contractor shall reimburse and otherwise be liable for claims costs incurred by the District, including, without limitation, attorneys' fees and costs and costs for claims adjusting services, engineering, and administration.

In the event the District incurs any judgment, award, and/or costs arising therefrom, including attorneys' fees, to enforce the provisions of this article, all such fees, expenses, and costs shall be recoverable from the Contractor.

The foregoing indemnities and duties to defend shall survive the termination of this Contract and final payment hereunder, and are in addition to any other rights or remedies which District and/or any of the Indemnified Parties may have by law or under this Contract.

8.40 PERFORMANCE AND PAYMENT BOND

The Contractor shall furnish a surety bond in compliance with RCW 39.08 in the full amount of the Contract Price which shall guarantee the faithful performance of the Contract and the payment of all labor, mechanics, Subcontractors and Material suppliers. This bond shall remain in force until all obligations of the Contract are extinguished or until the expiration of all applicable statutes of repose or limitation, whichever is later. Without limiting the foregoing, this bond shall cover, for a period of two (2) years after Physical Completion, all faulty workmanship and Materials or items of Work warranted by Contractor. This bond shall be furnished by a corporate surety company rated A-VII or higher by A. M. Best, authorized to do business in the State of Washington, acceptable to the District, and subject to the approval of the District's attorney as to form.

8.41 ASSIGNMENT AND SUBCONTRACTING

- (a) Contractor shall not assign the Contract in whole or in part without the written consent of District, nor shall Contractor assign any moneys due or to become due to him hereunder without the prior written consent of District.



- (b) Contractor agrees that it is fully responsible to District for the acts or omissions of Subcontractors and persons either directly or indirectly employed by Subcontractors, as well as for the acts and omissions of persons directly employed by Contractor. District's consent to subcontracting parts of the Work shall in no way release Contractor from responsibility for performance of the Work. Contractor will be held, in all aspects, accountable for subcontracted Work as if no consent had been given. Contractor shall be required to give its personal attention to the Work that is subcontracted. Nothing contained in the Contract Documents shall create any contractual relation between any Subcontractor and District.

8.42 SEPARATE CONTRACT - INTERFERENCE WITH OTHER CONTRACTORS

- (a) District reserves the right to perform work with its own forces or to let other contracts for work under similar general conditions in connection with this Project, of which the work awarded to one or more contractors under separate contracts is a part. Contractor shall afford District and other contractors reasonable opportunity for the introduction and storage of their materials and the execution of their respective work and shall properly connect and coordinate its Work with theirs.
- (b) If the performance of any contract for the Project is likely to be interfered with by the simultaneous execution of some other contract or contracts, Engineer shall decide which contractor shall cease work temporarily and which contractor shall continue or whether the work under the contractor can be coordinated so that the contractors may proceed simultaneously. District shall not be responsible for any damages suffered or extra costs incurred by Contractor resulting directly or indirectly from the award, performance, or attempted performance of any other contract or contracts on the Project or caused by any decision or omission of Engineer respecting the order of precedence in the performance of the contractors other than for an extension of Contract Time.

8.43 CLEANUP

- (a) During performance of the Work, Contractor shall frequently clean up all refuse, rubbish, scrap material and debris caused by its operations. The Site of the Work shall present a neat, orderly and workmanlike appearance at all times.
- (b) Upon completion of the Work, Contractor shall remove all rubbish, scrap material, tools, scaffolding and surplus Materials and Equipment used in and about the Work. Before the Contract shall be considered complete and prior to final payment, Contractor shall remove all surplus Materials and Equipment, falseworks, temporary structures, including foundations thereof, plants of any description, and debris of every nature, resulting from its



operations, shall clean out all ditches that may have been filled during the Work, replace damaged surfacing, and put the Site in a neat, orderly condition and, in respect to structures, shall clean all windows and leave buildings broom clean.

8.44 PROPERTY RESTORATION RELEASE

The Contractor shall obtain a written release from each property owner upon whose property Work has been performed or Materials stored. A sample form of such release is included in the Special Provisions section.

8.45 PREVENTION OF ENVIRONMENTAL POLLUTION

The Contractor shall comply with all Federal, State and local statutes, ordinances and regulations dealing with the prevention of environmental pollution and preservation of public human resources that affect or are affected by this Project including, but not limited to, the State Environmental Policy Act of 1971, the National Environmental Policy Act of 1969, King County Council Ordinance No. 1700, King County Council Motion 1335, and any current amendments thereto which are hereby incorporated into the Contract as if written herein in full. All costs for compliance shall be included in the unit or lump sum prices bid for the several items of Work as indicated in the Proposal.

8.46 VENUE/LIMITATION

The exclusive venue for any litigation arising from or relating to this Contract or the Project is King County Superior Court, Seattle, Washington. This Contract and all provisions hereof shall be interpreted in accordance with the laws of the State of Washington.

No legal action against the District may be filed on account of a Claim or other liability arising out of or related to this Contract unless:

1. The requirements of Sections 8.23, 8.24, and 8.26 have been strictly complied with;
2. The procedures of Sections 8.23 and 8.24 have been exhausted; and,
3. The lawsuit is filed in the exclusive venue specified above and served on the District within 180 Days of the date of Substantial Completion.

The Contractor's failure to strictly comply with all requirements of this Section shall be a complete bar to any lawsuit.

APPENDICES

APPENDIX A

PERMITS

BUILDING PERMIT



City of Kirkland
123 Fifth Avenue
Kirkland WA 98033
425-587-3600

Permit Number: BNO21-09625
Type: Building Not Occupied
Work Class: Repair

BNO21-09625

Permit Information

Plans Location: Electronic

Job Address: 13819 62ND AVE NE	Project:	Application Date: 12/13/2021
	Parcel: 3761700205	Issue Date: 03/25/2022
	Valuation: \$100,000.00	Expiration Date: 03/25/2025
	Sprinklered:	Code Edition: 2018 IBC
	Dwelling Units: 0	

Scope of Work

Grinder Pump 1: Northshore Utility District: Upgrades to an existing grinder pump station owned and operated by Northshore Utility District along the shore of Lake Washington within a utility easement on private property. Components of the station, which was installed in 1979, have reached their useful life and are in need of replacement. Upgrades will include demolition and replacement of the two existing submersible grinder pumps, piping, valves, check valves, electrical equipment, and accessories. The existing fiberglass wet well will be reused but the remainder of the station components will be replaced. A valve box will be added to the site along with necessary electrical handholes and control panels.

Public Works: Erosion control inspections related to installation of NUD sewer pump.

Contacts

Type	Name	Address	Phone
Owner	MOHAMMAD & TABARE RASTEGARI	13819 62ND AVE NE KIRKLAND, WA 98034	B: C:
Project Contact	GRAY & OSBORNE INC. ERIC DELFEL	1130 RAINIER AVE S SEATTLE, WA 98144	B: 2062840860 1111 C:
Primary Contact	GRAY & OSBORNE INC ERIC DELFEL	1130 RAINIER AVE S SEATTLE, WA 98144	B: 206-284-0860 x1111
Applicant	STEPHEN DENNEHY	6830 NE 185TH STREET KENMORE, WA 98028	B: 4255213725 C:

ELECTRONIC

General Conditions

1. The issuance of this permit shall not be construed to be a permit for, or an approval of, any violation of any of the provisions of this code or of any other ordinances of the jurisdiction.
2. The approved plans shall not be changed, modified, or altered without authorization from the building official.
3. This permit, inspection record and approved plans are required to be on the job site at all times.
4. All development activity and heavy equipment operation is restricted to 7:00 a.m. to 8:00 p.m., Monday through Friday, and 9:00 a.m. to 6:00 on Saturdays. No development activity or heavy equipment operation may occur on Sundays or holidays observed by the City.
5. All work is subject to field inspection. Do not cover any work until approved by a City inspector.
6. Inspection(s) required - Schedule on <http://MyBuildingPermit.com>
7. Contact the Building Division at 425-587-3600 with any questions.
8. Any sales tax reported to the State in association with this project should be coded to the City of Kirkland tax location code 1716.

SEE ATTACHED SHEET FOR SPECIFIC CONDITIONS

Illicit Discharges and Connections

Illicit Discharges and Connections (Municipal Code 15.52) as prohibited in the Storm Drain System:

Contractor is responsible for keeping streets clean and free of contaminants at all times, removing pollutants from a private system that enters the municipal storm system and/or surface and ground water, and preventing an illicit discharge (KMC 15.52) into the municipal storm drain system and/or surface and ground water. If your construction project violates Municipal Code 15.52, the City of Kirkland Storm Maintenance Division will be called to clean the public storm system, and other affected public infrastructure. The contractor(s), property owner, vendor, and any other responsible party may be charged all costs associated with the clean-up and may also be assessed a fine (KMC 1.12.200). The minimum fine is \$500. A fine for a repeat violation shall be determined by multiplying the surface water fine by the number of violations. A fine may be reduced or waived for persons who immediately self-report violations to the city at 425-587-3900. A Final Inspection of your project will not be granted until all costs associated with the clean-up, and penalties, are paid to the City of Kirkland.

13819 62ND AVE NE

SPECIFIC PERMIT CONDITIONS



BUILDING ADDRESS	PERMIT NUMBER	PERMIT TYPE / WORK CLASS	DATE PRINTED
13819 62ND AVE NE	BNO21-09625	Building Not Occupied / Repair	3/17/2022

DESCRIPTION OF WORK:

Grinder Pump 1: Northshore Utility District: Upgrades to an existing grinder pump station owned and operated by Northshore Utility District along the shore of Lake Washington within a utility easement on private property. Components of the station, which was installed in 1979, have reached their useful life and are in need of replacement. Upgrades will include demolition and replacement of the two existing submersible grinder pumps, piping, valves, check valves, electrical equipment, and accessories. The existing fiberglass wet well will be reused but the remainder of the station components will be replaced. A valve box will be added to the site along with necessary electrical handholes and control panels.

Fire Department Conditions:

Non-occupied project. No fire protection requirements.

Planning Department Conditions:

PLANNING CONDITIONS – Contact Kelly Wilkinson, Phone Number 425-587-3264:

PBD 15. ALL - HOURS OF CONSTRUCTION - All development activity and heavy equipment operation is restricted to 7:00 AM to 8:00 PM Monday through Friday, and 9:00 AM to 6:00 PM Saturday. Other restrictions on Saturday include: no working in the right-of-way, no work requiring inspection, and no trucking into or out of the site; however, light grading work on-site on Saturday is allowed. NO development activity or heavy equipment operation may occur on Sundays or the following holidays: New Year's Day, Memorial Day, Independence Day, Labor Day, Thanksgiving Day, and Christmas Day.

PBD 16. MAXIMUM NOISE LEVELS - All mechanical units shall comply with the maximum environmental noise levels established pursuant to the Noise Control Act of 1974, Revised Code of Washington (RCW) 70.107. See Chapter 173-60 Washington Administrative Code (WAC). A link to the WAC and RCW is available at http://www.kirklandwa.gov/Government/Codes_and_Laws.htm.

PBD 17. BALD EAGLE PROTECTION – This permit is conditioned upon strict observance of all applicable federal laws for bald eagle protection. The permittee is responsible for adhering to the applicable bald eagle management guidelines and/or their federal permit. Visit www.fws.gov/pacific/eagle/ if you need assistance with federal permitting requirements.

PBD 72. WATER QUALITY (KZC 83.480) - Shoreline development and use shall incorporate all known, available, and reasonable methods of prevention, control, and treatment to protect and maintain surface and/or ground water quantity and quality in accordance with Chapter 15.52 KMC and other applicable laws.

PBD 100. SHORELINE RESTORATION (KZC 83.240) All shoreline areas disturbed by utility construction and maintenance shall be replanted and stabilized with approved vegetation by seeding, mulching, or other effective means immediately upon completion of the construction or maintenance activity. Such vegetation shall be maintained until established.

PBD 101. SHORELINE SCREENING (KZC 83.240) Provide landscape screening of electrical boxes from the lake and adjacent properties in a manner that is compatible with the surrounding environment.

Public Works Department Conditions:

PUBLIC WORKS CONDITIONS

General Conditions

1. Scheduling a Public Works Inspection: All required inspections must be requested by the contractor or permit applicant by 6:00 PM on the day prior to the inspection. Request inspections by going online at www.mybuildingpermit.com. If you need to speak with your Public Works Construction Inspector prior to scheduling your first inspection, call 425.587.3800; be prepared to provide your permit number and site address.
2. The contractor must notify the Public Works Inspector at least one working day prior to starting site work.
3. Clearing limits shall be accurately flagged and tree protection in place prior to commencement of site work.
4. A copy of the approved plans must be on the job site whenever construction is in progress. All changes agreed to must be shown on the "record drawings" prior to project completion.
5. Streets and sidewalks shall not be used for stockpiling building materials, debris, or equipment.
6. Before a street, traffic lane, pedestrian route, or sidewalk is closed, a traffic/pedestrian plan must be submitted to and approved by the City of Kirkland 48 hours prior to closure. Do not block sidewalks with equipment or traffic control signs unless you have a pedestrian detour route in place.
7. Daily work is limited to Monday through Friday, from 7:00 a.m. to 8:00 p.m. (arterial traffic lanes is 9 a.m. to 3:30 p.m.) and Saturday 9:00 a.m. to 6:00 p.m. No utility work in the ROW after 12:00 p.m. on Fridays; restoration only.
 - A. No work will be allowed on holidays that are observed by the City of Kirkland.
 - B. No work on Sunday.
 - C. No work is allowed on Saturday in the public right-of-way or any on-site utilities; light grading is permitted onsite. Also, no trucks permitted to haul in or out.
 - D. The following is the schedule of City closure days and holidays, and the work allowed:
 - MLK Jr. Day - onsite grading only
 - President's Day - onsite grading only
 - Memorial Day - no work
 - Independence Day - no work
 - Labor Day - no work
 - Veteran's Day observed - onsite grading only
 - Thanksgiving Day - no work
 - Day after Thanksgiving - onsite grading only
 - Christmas Eve observed - onsite grading only
 - Christmas Day - no work
 - New Year's Eve observed - onsite grading only
 - New Year's Day - no work
8. No water system work allowed on Fridays (or any day before a holiday or City closure day).
9. No steel sheets are allowed in Right-of-Way over weekend or on city closure days. Sheets must be removed and asphalt patching in place before 3:00 p.m. Friday.
10. All water valves shall be operated ONLY by City field crews.
11. For water emergencies such as a service or main break, first call Public Works Water Department at (425) 587-3900. Then, call your inspector.
12. Density test reports will be required as directed by the Public Works Department and must be submitted to the inspector at least one day prior to paving or curb and gutter installation.
13. Dust / Erosion / Sedimentation Controls, Developer and Contractor Responsibilities:
 - A. All required erosion /sedimentation controls must be constructed and in operation prior to land clearing.
 - B. During the period from October 1 to April 30, any area stripped of vegetation, including roadway embankments, shall be stabilized within 12 hours with the approved control methods (e.g., seeding, mulching, netting, erosion blankets, etc.).
 - C. During the period from May 1 to September 30, any cleared areas shall not lie open for a period longer than 7

Public Works Department Conditions:

days. If any erosion problem already exists on the site, immediate seeding, mulching, or other cover protection will be required.

- D. Per Kirkland Municipal Code 15.52.100, the City of Kirkland may determine at any time during construction that implemented dust, erosion, and sedimentation control measures are not sufficient and additional action is required.
 - E. Developer/Contractor is responsible for controlling dust, mud, and debris within the project limits and onto existing streets.
 - F. DO NOT ALLOW RUNOFF FROM THE WASHING OF TRUCKS OR OTHER TOOLS OR EQUIPMENT (GENERATING MUD, SILT, CONCRETE WASTE, PAINT, ETC) INTO DRAINAGE SYSTEM.
14. All Work Must Meet Kirkland Standards: All work associated with this project, including street improvements and utility connections, must meet the City of Kirkland Public Works Standards and Policies. Purchase the Manual from Public Works or view on-line at www.kirklandwa.gov (navigate to PW Development Services).
15. Field Conditions May Warrant Revisions: Field conditions during construction may warrant required revisions or modifications to the site plan, utility plan, or street improvement plan.
16. Maintain Survey Monuments: Any existing survey monuments or other permanent survey markers within the public right-of-way shall be maintained during construction. If a monument or other survey marker in the right-of-way is disrupted during construction, it shall be replaced by a licensed surveyor.
17. Redline Comments Included: The owner/contractor is responsible for the implementation of any "redline", plan review comments found in the plans submitted to, and reviewed by the Public Works Department.
18. Traffic Control per MUTCD: All construction activity within the public right-of-way shall have traffic control signing and flagging per the standards within the Manual on Uniform Traffic Control Devices (MUTCD).
19. Re-inspection Fee: An additional review or inspection fee will be assessed for additional review or inspection of a modified design and for re-inspections when the applicant is not prepared for the requested inspection.
20. Plan Revision Clouding: Revisions submitted after the permit is issued shall be clouded and indexed with a number circumscribed in a triangle with the revision described in a revision block.
21. Replace Damaged Public Improvement: Any public improvements damaged during construction shall be replaced prior to final building inspection.
22. Contact PW Inspector when unknown utility lines are encountered: If existing unknown utility lines are encountered during construction, contact your Public Works Inspector before proceeding with work. Do not place any structure over an existing utility line.
23. Do not install utility lines in foundation bearing zone: No utility lines will be allowed in the "load bearing zone" of piers and footings. The Public Works Inspector shall be notified if these utilities are found near the excavation area for piers or footings.

Erosion Control Conditions

24. Install Erosion Control Prior to Construction: Erosion control measures approved by the Public Works Department must be installed and inspected prior to the commencement of any construction.
25. Mandatory TESC Material Stockpiling: In addition to the mandatory TESC materials installed at the time of grading, the owner/contractor shall stockpile the following materials prior to work startup:
- ☑ Minimum of 6 straw bales or wattles, and 6 additional bales /wattles per additional acre disturbed.
 - ☑ Minimum 75 feet of filter fabric, and 75 feet per additional disturbed acre.
 - ☑ Minimum of 15 silt fence stakes, and 15 stakes per additional disturbed acre.
- This material must be protected from the elements and readily available to the contractor, if installation of emergency erosion control measures becomes necessary. Also, if any of the stockpiled materials are used, they shall be replaced within 2 days.
26. Protect Adjacent Property: Adequate drainage protection must be provided for adjacent properties. Applicants must control development runoff to ensure activities will not cause nuisance or adverse impact to adjacent private and public property.

Public Works Department Conditions:

27. Erosion Control Inspections: Erosion and Sediment Control (ESC) Inspections Required: Approved ESC measures must be installed prior to commencement of construction, and periodic inspections will be conducted during the course of construction.
 28. Cover All Exposed Soil: Construction drainage control shall be maintained by the developer and subject to periodic inspections. During the period from May 1 to September 30, all denuded soils must be covered within 7 days; between October 1 and April 30, all denuded soils must be covered within 12 hours. Additional erosion control measures may be required based on site and weather conditions. Exposed soils shall be stabilized at the end of the workday prior to a weekend, holiday, or predicted rain event.
 29. Illicit Discharges and Connections (Municipal Code 15.52) are prohibited into the Storm Drain System: Contractor is responsible for keeping streets clean and free of contaminants at all times, removing pollutants from a private system that enters the municipal storm system and/or surface and ground water, and preventing an illicit discharge (KMC 15.52) into a the municipal storm drain system and/or surface and ground water. If your construction project violates Municipal Code 15.52, the City of Kirkland Storm Maintenance Division will be called to clean the public storm system, and other affected public infrastructure. The contractor(s), property owner, vendor, and any other responsible party may be charged all costs associated with the clean-up and may also be assessed a fine (KMC 1.12.200). The minimum fine is \$500. A fine for a repeat violation shall be determined by multiplying the surface water fine by the number of violations. A fine may be reduced or waived for persons who immediately self-report violation to the city at 425-587-3900. A Final Inspection of your Project will not be granted until all costs associated with the clean-up, and penalties, are paid to the City of Kirkland.
 30. The long-term use of plastic covering on a site shall be limited to one wet season (October 1 to April 30). After that, the site will be required to hydroseed or install other TESC methods as approved by the Public Works Department.
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BUILDING PERMIT



City of Kirkland
123 Fifth Avenue
Kirkland WA 98033
425-587-3600

Permit Number: BNO21-09775
Type: Building Not Occupied
Work Class: Repair

Permit Information

Plans Location: Electronic

Job Address: 13649 62ND AVE NE	Project:	Parcel: 3761700165	Application Date: 12/16/2021
	Valuation: \$100,000.00		Issue Date: 03/25/2022
	Sprinklered:		Expiration Date: 03/25/2025
	Dwelling Units: 0		Code Edition: 2018 IBC

Scope of Work

NUD - Grinder Pump Station #2: Upgrades to an existing grinder pump station owned and operated by Northshore Utility District along the shore of Lake Washington within a utility easement on private property. Upgrades will include demolition and replacement of the two existing submersible grinder pumps, piping, valves, check valves, electrical equipment, and accessories. The existing fiberglass wet well will be reused but the remainder of the station components will be replaced. A valve box will be added to the site along with necessary electrical handholes and control panels.

Public Works: Erosion control inspections related to installation of NUD sewer pump.

Contacts

Type	Name	Address	Phone
Owner	STACEY GIFT TRU CASTLEBERRY	13649 62ND AVE NE KIRKLAND, WA 98034	B: C:
Project Contact	GRAY & OSBORNE INC. ERIC DELFEL	1130 RAINIER AVE S SEATTLE, WA 98144	B: 2062840860 1111 C:
Primary Contact	GRAY & OSBORNE INC ERIC DELFEL	1130 RAINIER AVE S SEATTLE, WA 98144	B: 206-284-0860 x1111
Applicant	STEPHEN DENNEHY	6830 NE 185TH STREET KENMORE, WA 98028	B: 4255213725 C:

General Conditions

1. The issuance of this permit shall not be construed to be a permit for, or an approval of, any violation of any of the provisions of this code or of any other ordinances of the jurisdiction.
2. The approved plans shall not be changed, modified, or altered without authorization from the building official.
3. This permit, inspection record and approved plans are required to be on the job site at all times.
4. All development activity and heavy equipment operation is restricted to 7:00 a.m. to 8:00 p.m., Monday through Friday, and 9:00 a.m. to 6:00 on Saturdays. No development activity or heavy equipment operation may occur on Sundays or holidays observed by the City.
5. All work is subject to field inspection. Do not cover any work until approved by a City inspector.
6. Inspection(s) required - Schedule on <http://MyBuildingPermit.com>
7. Contact the Building Division at 425-587-3600 with any questions.
8. Any sales tax reported to the State in association with this project should be coded to the City of Kirkland tax location code 1716.

SEE ATTACHED SHEET FOR SPECIFIC CONDITIONS

Illicit Discharges and Connections

Illicit Discharges and Connections (Municipal Code 15.52) as prohibited in the Storm Drain System:

Contractor is responsible for keeping streets clean and free of contaminants at all times, removing pollutants from a private system that enters the municipal storm system and/or surface and ground water, and preventing an illicit discharge (KMC 15.52) into the municipal storm drain system and/or surface and ground water. If your construction project violates Municipal Code 15.52, the City of Kirkland Storm Maintenance Division will be called to clean the public storm system, and other affected public infrastructure. The contractor(s), property owner, vendor, and any other responsible party may be charged all costs associated with the clean-up and may also be assessed a fine (KMC 1.12.200). The minimum fine is \$500. A fine for a repeat violation shall be determined by multiplying the surface water fine by the number of violations. A fine may be reduced or waived for persons who immediately self-report violations to the city at 425-587-3900. A Final Inspection of your project will not be granted until all costs associated with the clean-up, and penalties, are paid to the City of Kirkland.

BNO21-09775

ELECTRONIC

13649 62ND AVE NE

SPECIFIC PERMIT CONDITIONS



BUILDING ADDRESS	PERMIT NUMBER	PERMIT TYPE / WORK CLASS	DATE PRINTED
13649 62ND AVE NE	BNO21-09775	Building Not Occupied / Repair	3/24/2022

DESCRIPTION OF WORK:

NUD - Grinder Pump Station #2: Upgrades to an existing grinder pump station owned and operated by Northshore Utility District along the shore of Lake Washington within a utility easement on private property. Upgrades will include demolition and replacement of the two existing submersible grinder pumps, piping, valves, check valves, electrical equipment, and accessories. The existing fiberglass wet well will be reused but the remainder of the station components will be replaced. A valve box will be added to the site along with necessary electrical handholes and control panels.

Fire Department Conditions:

Exterior project only. No impact on fire protection systems.

Planning Department Conditions:

PLANNING CONDITIONS – Contact Kelly Wilkinson, Phone Number 425-587-3264:

PBD 15. ALL - HOURS OF CONSTRUCTION - All development activity and heavy equipment operation is restricted to 7:00 AM to 8:00 PM Monday through Friday, and 9:00 AM to 6:00 PM Saturday. Other restrictions on Saturday include: no working in the right-of-way, no work requiring inspection, and no trucking into or out of the site; however, light grading work on-site on Saturday is allowed. NO development activity or heavy equipment operation may occur on Sundays or the following holidays: New Year's Day, Memorial Day, Independence Day, Labor Day, Thanksgiving Day, and Christmas Day.

PBD 16. MAXIMUM NOISE LEVELS - All mechanical units shall comply with the maximum environmental noise levels established pursuant to the Noise Control Act of 1974, Revised Code of Washington (RCW) 70.107. See Chapter 173-60 Washington Administrative Code (WAC). A link to the WAC and RCW is available at http://www.kirklandwa.gov/Government/Codes_and_Laws.htm.

PBD 17. BALD EAGLE PROTECTION – This permit is conditioned upon strict observance of all applicable federal laws for bald eagle protection. The permittee is responsible for adhering to the applicable bald eagle management guidelines and/or their federal permit. Visit www.fws.gov/pacific/eagle/ if you need assistance with federal permitting requirements.

PBD 72. WATER QUALITY (KZC 83.480) - Shoreline development and use shall incorporate all known, available, and reasonable methods of prevention, control, and treatment to protect and maintain surface and/or ground water quantity and quality in accordance with Chapter 15.52 KMC and other applicable laws.

PBD 100. SHORELINE RESTORATION (KZC 83.240) All shoreline areas disturbed by utility construction and maintenance shall be replanted and stabilized with approved vegetation by seeding, mulching, or other effective means immediately upon completion of the construction or maintenance activity. Such vegetation shall be maintained until established.

PBD 101. SHORELINE SCREENING (KZC 83.240) Provide landscape screening of electrical boxes from the lake and adjacent properties in a manner that is compatible with the surrounding environment.

Public Works Department Conditions:

PUBLIC WORKS CONDITIONS

General Conditions

1. Scheduling a Public Works Inspection: All required inspections must be requested by the contractor or permit applicant by 6:00 PM on the day prior to the inspection. Request inspections by going online at www.mybuildingpermit.com. If you need to speak with your Public Works Construction Inspector prior to scheduling your first inspection, call 425.587.3800; be prepared to provide your permit number and site address.
2. The contractor must notify the Public Works Inspector at least one working day prior to starting site work.
3. Clearing limits shall be accurately flagged and tree protection in place prior to commencement of site work.
4. A copy of the approved plans must be on the job site whenever construction is in progress. All changes agreed to must be shown on the "record drawings" prior to project completion.
5. Streets and sidewalks shall not be used for stockpiling building materials, debris, or equipment.
6. Before a street, traffic lane, pedestrian route, or sidewalk is closed, a traffic/pedestrian plan must be submitted to and approved by the City of Kirkland 48 hours prior to closure. Do not block sidewalks with equipment or traffic control signs unless you have a pedestrian detour route in place.
7. Daily work is limited to Monday through Friday, from 7:00 a.m. to 8:00 p.m. (arterial traffic lanes is 9 a.m. to 3:30 p.m.) and Saturday 9:00 a.m. to 6:00 p.m. No utility work in the ROW after 12:00 p.m. on Fridays; restoration only.
 - A. No work will be allowed on holidays that are observed by the City of Kirkland.
 - B. No work on Sunday.
 - C. No work is allowed on Saturday in the public right-of-way or any on-site utilities; light grading is permitted onsite. Also, no trucks permitted to haul in or out.
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 - MLK Jr. Day - onsite grading only
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 - Memorial Day - no work
 - Independence Day - no work
 - Labor Day - no work
 - Veteran's Day observed - onsite grading only
 - Thanksgiving Day - no work
 - Day after Thanksgiving - onsite grading only
 - Christmas Eve observed - onsite grading only
 - Christmas Day - no work
 - New Year's Eve observed - onsite grading only
 - New Year's Day - no work
8. No water system work allowed on Fridays (or any day before a holiday or City closure day).
9. No steel sheets are allowed in Right-of-Way over weekend or on city closure days. Sheets must be removed and asphalt patching in place before 3:00 p.m. Friday.
10. All water valves shall be operated ONLY by City field crews.
11. For water emergencies such as a service or main break, first call Public Works Water Department at (425) 587-3900. Then, call your inspector.
12. Density test reports will be required as directed by the Public Works Department and must be submitted to the inspector at least one day prior to paving or curb and gutter installation.
13. Dust / Erosion / Sedimentation Controls, Developer and Contractor Responsibilities:
 - A. All required erosion /sedimentation controls must be constructed and in operation prior to land clearing.
 - B. During the period from October 1 to April 30, any area stripped of vegetation, including roadway embankments, shall be stabilized within 12 hours with the approved control methods (e.g., seeding, mulching, netting, erosion blankets, etc.).
 - C. During the period from May 1 to September 30, any cleared areas shall not lie open for a period longer than 7

Public Works Department Conditions:

days. If any erosion problem already exists on the site, immediate seeding, mulching, or other cover protection will be required.

- D. Per Kirkland Municipal Code 15.52.100, the City of Kirkland may determine at any time during construction that implemented dust, erosion, and sedimentation control measures are not sufficient and additional action is required.
 - E. Developer/Contractor is responsible for controlling dust, mud, and debris within the project limits and onto existing streets.
 - F. DO NOT ALLOW RUNOFF FROM THE WASHING OF TRUCKS OR OTHER TOOLS OR EQUIPMENT (GENERATING MUD, SILT, CONCRETE WASTE, PAINT, ETC) INTO DRAINAGE SYSTEM.
- 14. All Work Must Meet Kirkland Standards: All work associated with this project, including street improvements and utility connections, must meet the City of Kirkland Public Works Standards and Policies. Purchase the Manual from Public Works or view on-line at www.kirklandwa.gov (navigate to PW Development Services).
 - 15. Field Conditions May Warrant Revisions: Field conditions during construction may warrant required revisions or modifications to the site plan, utility plan, or street improvement plan.
 - 16. Maintain Survey Monuments: Any existing survey monuments or other permanent survey markers within the public right-of-way shall be maintained during construction. If a monument or other survey marker in the right-of-way is disrupted during construction, it shall be replaced by a licensed surveyor.
 - 17. Redline Comments Included: The owner/contractor is responsible for the implementation of any "redline", plan review comments found in the plans submitted to, and reviewed by the Public Works Department.
 - 18. Traffic Control per MUTCD: All construction activity within the public right-of-way shall have traffic control signing and flagging per the standards within the Manual on Uniform Traffic Control Devices (MUTCD).
 - 19. Re-inspection Fee: An additional review or inspection fee will be assessed for additional review or inspection of a modified design and for re-inspections when the applicant is not prepared for the requested inspection.
 - 20. Plan Revision Clouding: Revisions submitted after the permit is issued shall be clouded and indexed with a number circumscribed in a triangle with the revision described in a revision block.
 - 21. Replace Damaged Public Improvement: Any public improvements damaged during construction shall be replaced prior to final building inspection.
 - 22. Contact PW Inspector when unknown utility lines are encountered: If existing unknown utility lines are encountered during construction, contact your Public Works Inspector before proceeding with work. Do not place any structure over an existing utility line.
 - 23. Do not install utility lines in foundation bearing zone: No utility lines will be allowed in the "load bearing zone" of piers and footings. The Public Works Inspector shall be notified if these utilities are found near the excavation area for piers or footings.

Erosion Control Conditions

- 24. Install Erosion Control Prior to Construction: Erosion control measures approved by the Public Works Department must be installed and inspected prior to the commencement of any construction.
- 25. Mandatory TESC Material Stockpiling: In addition to the mandatory TESC materials installed at the time of grading, the owner/contractor shall stockpile the following materials prior to work startup:
 - ☐ Minimum of 6 straw bales or wattles, and 6 additional bales /wattles per additional acre disturbed.
 - ☐ Minimum 75 feet of filter fabric, and 75 feet per additional disturbed acre.
 - ☐ Minimum of 15 silt fence stakes, and 15 stakes per additional disturbed acre.This material must be protected from the elements and readily available to the contractor, if installation of emergency erosion control measures becomes necessary. Also, if any of the stockpiled materials are used, they shall be replaced within 2 days.
- 26. Protect Adjacent Property: Adequate drainage protection must be provided for adjacent properties. Applicants must control development runoff to ensure activities will not cause nuisance or adverse impact to adjacent private and public property.

Public Works Department Conditions:

27. Erosion Control Inspections: Erosion and Sediment Control (ESC) Inspections Required: Approved ESC measures must be installed prior to commencement of construction, and periodic inspections will be conducted during the course of construction.
 28. Cover All Exposed Soil: Construction drainage control shall be maintained by the developer and subject to periodic inspections. During the period from May 1 to September 30, all denuded soils must be covered within 7 days; between October 1 and April 30, all denuded soils must be covered within 12 hours. Additional erosion control measures may be required based on site and weather conditions. Exposed soils shall be stabilized at the end of the workday prior to a weekend, holiday, or predicted rain event.
 29. Illicit Discharges and Connections (Municipal Code 15.52) are prohibited into the Storm Drain System: Contractor is responsible for keeping streets clean and free of contaminants at all times, removing pollutants from a private system that enters the municipal storm system and/or surface and ground water, and preventing an illicit discharge (KMC 15.52) into a the municipal storm drain system and/or surface and ground water. If your construction project violates Municipal Code 15.52, the City of Kirkland Storm Maintenance Division will be called to clean the public storm system, and other affected public infrastructure. The contractor(s), property owner, vendor, and any other responsible party may be charged all costs associated with the clean-up and may also be assessed a fine (KMC 1.12.200). The minimum fine is \$500. A fine for a repeat violation shall be determined by multiplying the surface water fine by the number of violations. A fine may be reduced or waived for persons who immediately self-report violation to the city at 425-587-3900. A Final Inspection of your Project will not be granted until all costs associated with the clean-up, and penalties, are paid to the City of Kirkland.
 30. The long-term use of plastic covering on a site shall be limited to one wet season (October 1 to April 30). After that, the site will be required to hydroseed or install other TESC methods as approved by the Public Works Department.
-

BUILDING PERMIT



City of Kirkland
123 Fifth Avenue
Kirkland WA 98033
425-587-3600

Permit Number: BNO21-09804
Type: Building Not Occupied
Work Class: Repair

BNO21-09804

Permit Information

Plans Location: Electronic

Job Address: 13635 62ND AVE NE, None	Project:	Application Date: 12/16/2021
	Parcel: 3761700145	Issue Date: 03/24/2022
	Valuation: \$100,000.00	Expiration Date: 03/24/2025
	Sprinklered:	Code Edition: 2018 IBC
	Dwelling Units: 0	

Scope of Work

Grinder Pump Station 3 Replacement: Upgrades to existing grinder pump station owned and operated by Northshore Utility District along the shore of Lake Washington within a utility easement on private property. Components of the station, which was installed in 1979, have reached their useful life and are in need of replacement. Upgrades will include demolition and replacement of the two existing submersible grinder pumps, piping, valves, check valves, electrical equipment, and accessories. The existing fiberglass wet well will be reused but the remainder of the station components will be replaced. A valve box will be added to the site along with necessary electrical hand holes and control panels. *Separate Electrical Permit Required*

Public Works: Erosion control inspections related to installation of NUD sewer pump.

Contacts

Type	Name	Address	Phone
Contractor	ELLSWORTH BUILDERS INC ELLSWBI099CF	8425 219TH ST SE, 100 WOODINVILLE, WA 98072-8043	B: 425.482.2904 C:
Owner	DAVID SCHOEGGL	13635 62ND AVE NE KIRKLAND, WA 98034	B: 206 484-7048 C:
Project Contact	GRAY & OSBORNE INC. ERIC DELFEL	1130 RAINIER AVE S SEATTLE, WA 98144	B: 2062840860 1111 C:
Primary Contact	GRAY & OSBORNE INC ERIC DELFEL	1130 RAINIER AVE S SEATTLE, WA 98144	B: 206-284-0860 x1111

ELECTRONIC

General Conditions

1. The issuance of this permit shall not be construed to be a permit for, or an approval of, any violation of any of the provisions of this code or of any other ordinances of the jurisdiction.
2. The approved plans shall not be changed, modified, or altered without authorization from the building official.
3. This permit, inspection record and approved plans are required to be on the job site at all times.
4. All development activity and heavy equipment operation is restricted to 7:00 a.m. to 8:00 p.m., Monday through Friday, and 9:00 a.m. to 6:00 on Saturdays. No development activity or heavy equipment operation may occur on Sundays or holidays observed by the City.
5. All work is subject to field inspection. Do not cover any work until approved by a City inspector.
6. Inspection(s) required - Schedule on <http://MyBuildingPermit.com>
7. Contact the Building Division at 425-587-3600 with any questions.
8. Any sales tax reported to the State in association with this project should be coded to the City of Kirkland tax location code 1716.

SEE ATTACHED SHEET FOR SPECIFIC CONDITIONS

Illicit Discharges and Connections

Illicit Discharges and Connections (Municipal Code 15.52) as prohibited in the Storm Drain System:

Contractor is responsible for keeping streets clean and free of contaminants at all times, removing pollutants from a private system that enters the municipal storm system and/or surface and ground water, and preventing an illicit discharge (KMC 15.52) into the municipal storm drain system and/or surface and ground water. If your construction project violates Municipal Code 15.52, the City of Kirkland Storm Maintenance Division will be called to clean the public storm system, and other affected public infrastructure. The contractor(s), property owner, vendor, and any other responsible party may be charged all costs associated with the clean-up and may also be assessed a fine (KMC 1.12.200). The minimum fine is \$500. A fine for a repeat violation shall be determined by multiplying the surface water fine by the number of violations. A fine may be reduced or waived for persons who immediately self-report violations to the city at 425-587-3900. A Final Inspection of your project will not be granted until all costs associated with the clean-up, and penalties, are paid to the City of Kirkland.

13635 62ND AVE NE, N/A, NONE

SPECIFIC PERMIT CONDITIONS



BUILDING ADDRESS	PERMIT NUMBER	PERMIT TYPE / WORK CLASS	DATE PRINTED
13635 62ND AVE NE, #None	BNO21-09804	Building Not Occupied / Repair	3/21/2022

DESCRIPTION OF WORK:

Grinder Pump Station 3 Replacement: This project consists of upgrades to an existing grinder pump station owned and operated by Northshore Utility District along the shore of Lake Washington within a utility easement on private property. Components of the station, which was installed in 1979, have reached their useful life and are in need of replacement. Upgrades will include demolition and replacement of the two existing submersible grinder pumps, piping, valves, check valves, electrical equipment, and accessories. The existing fiberglass wet well will be reused but the remainder of the station components will be replaced. A valve box will be added to the site along with necessary electrical handholes and control panels.

Fire Department Conditions:

Non-occupied project. No fire protection requirements.

Planning Department Conditions:

PLANNING CONDITIONS – Contact Kelly Wilkinson, Phone Number 425-587-3264:

PBD 15. ALL - HOURS OF CONSTRUCTION - All development activity and heavy equipment operation is restricted to 7:00 AM to 8:00 PM Monday through Friday, and 9:00 AM to 6:00 PM Saturday. Other restrictions on Saturday include: no working in the right-of-way, no work requiring inspection, and no trucking into or out of the site; however, light grading work on-site on Saturday is allowed. NO development activity or heavy equipment operation may occur on Sundays or the following holidays: New Year's Day, Memorial Day, Independence Day, Labor Day, Thanksgiving Day, and Christmas Day.

PBD 16. MAXIMUM NOISE LEVELS - All mechanical units shall comply with the maximum environmental noise levels established pursuant to the Noise Control Act of 1974, Revised Code of Washington (RCW) 70.107. See Chapter 173-60 Washington Administrative Code (WAC). A link to the WAC and RCW is available at http://www.kirklandwa.gov/Government/Codes_and_Laws.htm.

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Public Works Department Conditions:

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 - ☐ Minimum 75 feet of filter fabric, and 75 feet per additional disturbed acre.
 - ☐ Minimum of 15 silt fence stakes, and 15 stakes per additional disturbed acre.This material must be protected from the elements and readily available to the contractor, if installation of emergency erosion control measures becomes necessary. Also, if any of the stockpiled materials are used, they shall be replaced within 2 days.
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-

APPENDIX B

PUMP TECH



Sales Quotation

Customer#: 0176685

TO:
 Hans Thoreson
 Gray & Osbourne Inc.
 Attn: Debra Polley
 701 Dexter Avenue North
 Suite 200
 Seattle, WA 98109
 Phone: 206.284.0860

Salesperson: Kirk Jackson / Zac Pitchford
Lead Time: 6-8 weeks
FOB: FOB ORIGIN - FFA
Ship Via: BEST WAY
Project Name: Grinder Pump Stations 1,2,3,4

Quote #: 0164263-C
Date: 11/12/2021
Expires: 2/4/2022

Item		Price	Qty	Extend
	PumpTech is Pleased to Quote the Following Pumps and Guide Rail Systems for Northshore Utility District's Grinder Pump Stations	0.00		0.00
HPGX200ED	Hydromatic model HPGX200ED - 2HP - 230V - 3Phase - 5" Impeller	3,629.25	8.00	29,034.00
BERS-0125	Conery Base Elbow Rail System - Ductile Iron Construction - Powder Coated for Corrosion Resistance - Stainless Steel Accessories Standard - Guide Rail Pins Designed to Accept 0.75" or 1.00" Rails - Rated for Pumps Weighing Less than 250 lbs - 2.00" Discharge	542.00	8.00	4,336.00
UGB-STNLS	Conery SS Upper Guide Bracket for Rail Sizes 0.75", 1.00", 1.25"	160.00	8.00	1,280.00
HPG Spacer	Conery HPG Spacer Kit	41.00	8.00	328.00
Guide Pipe	160' of 1" S40 304 ss Welded pipe for Guide Rails (comes in 20' sticks)	2,400.00	1.00	2,400.00
750 CHAIN .187IN 304SS	750 CHAIN .187IN 304SS (3/16IN) 10' of chain per pump	10.00	80.00	800.00
750 SHACKLES .25IN 304SS	750 SHACKLES .25IN 304SS (1/4") 2 shackles per pump	7.62	16.00	121.92

Continued



Sales Quotation

Customer#: 0176685

TO:
 Hans Thoreson
 Gray & Osbourne Inc.
 Attn: Debra Polley
 701 Dexter Avenue North
 Suite 200
 Seattle, WA 98109
 Phone: 206.284.0860

Salesperson: Kirk Jackson / Zac Pitchford
Lead Time: 6-8 weeks
FOB: FOB ORIGIN - FFA
Ship Via: BEST WAY
Project Name: Grinder Pump Stations 1,2,3,4

Quote #: 0164263-C
Date: 11/12/2021
Expires: 2/4/2022

Item		Price	Qty	Extend
PrevWage-Service Tech	Startup and training services, Included is one tech at 2 full days (16hrs) per station. One full day= startup, and 1 full day= training	205.00	64.00	13,120.00
NOTE	PRICING IS FOR EQUIPMENT LISTED ABOVE ONLY. THIS QUOTE DOES NOT INCLUDE START UP OR TRAINING SERVICES	0.00		0.00

SubTotal 51,419.92

The above order is subject to Pumptech, LLC's standard terms and conditions and credit approval which are attached and made part of this agreement. We appreciate your interest in our products and services and if you have any questions on our offerings please do not hesitate to call.
 By signature below, I accept this offering:

Sales Tax: 0.00
Total: 51,419.92

Signed: _____
 Name: _____ Title: _____



FORMATION OF CONTRACT: These standard terms and conditions of sale ("Terms and Conditions") together with the sales covenants, the general specifications, the technical specifications, and any addendum thereto, including any acknowledgement by PUMPTTECH, LLC, comprise the "Proposal" or "Sales Quotation" (collectively the "Quotation"), which upon acceptance by Purchaser become the "Agreement." Subject to prior credit approval by PUMPTTECH, LLC (see "Credit Approval and Payment Terms" section below), Purchaser may accept the Quotation through: (i) delivering a purchase order that incorporates the Quotation by reference and payment of the initial deposit; (ii) other written indication by Purchaser of its acceptance of the Quotation along with payment of the initial deposit; (iii) delivering a purchase order or other written indication by Purchaser of its acceptance of the Quotation and agreement by both parties on a standard progress payment plan that does not require an initial deposit (see "Credit Approval and Payment Terms" section below); or (iv) receipt by Purchaser of PUMPTTECH, LLC's acknowledgement without notice of rejection. The effective date of the Agreement shall be the date that PUMPTTECH, LLC communicates to Purchaser via PUMPTTECH, LLC's acknowledgement, in writing. PUMPTTECH, LLC's obligations under the Quotation or the Agreement shall not commence until the effective date. The scope of work for the Agreement is limited to the equipment, machinery, goods, engineering services (if applicable) and/or related commissioning services (if applicable) specifically set forth in the Agreement ("Equipment"). The scope of work does not include installation or any on-site services unless specifically identified as being included in the price in the Agreement. Any terms and conditions contained in any purchase order, plans and specifications, correspondence, or accompanying payment for delivery of the Equipment, which are different from or in addition to the Terms and Conditions herein, shall not be binding on PUMPTTECH, LLC, whether or not they would materially alter the Agreement, and PUMPTTECH, LLC hereby objects to and rejects the same unless such terms and conditions are delivered to PUMPTTECH, LLC prior to Quotation and referenced in the Quotation.

CREDIT APPROVAL AND PAYMENT TERMS: Credit approval is required by PUMPTTECH, LLC prior to release of order to manufacturer; however, submittal may begin at the time of receipt of purchase order. PUMPTTECH, LLC's payment terms are net thirty (30) days from invoice date. In some circumstances PUMPTTECH, LLC may require progress payments. Progress payments are due and payable upon receipt of invoice. PUMPTTECH, LLC's "Standard Progress Payment Plan" is defined as a payment plan that includes the following terms in the purchase order or the Agreement: 1st: fifteen percent (15%) upon receipt of approved drawings; 2nd: thirty percent (30%) upon order of major components; 3rd: twenty percent (20%) upon receipt of major components at PUMPTTECH, LLC's facility; 4th: thirty percent (30%) upon shipment; and 5th: five percent (5%) on start-up. If not included within the Quotation, all applicable federal, state and local taxes will be added to each invoice. Time is of the essence with respect to all payments. Payments that are outstanding more than ten (10) days from their respective due date shall bear an interest rate of one and one-half percent (1.5%) per month (eighteen percent (18%) annually) until fully paid, including any interest accruing thereon. If PUMPTTECH, LLC chooses to turn any past-due balances over to a collection agency, Purchaser agrees to pay costs of the collection to the extent that is allowed by law for commercial accounts.

CHANGE ORDERS: Changes to the design, specifications, scope of supply, delivery schedule, Equipment demonstration site or date, shipping instructions of the Equipment, or any material term of the Agreement, may only be made upon execution by Purchaser and PUMPTTECH, LLC in writing ("Change Order"). Such Change Order shall state the parties' agreement on (i) change in the specifications, designs, scope of work, delivery schedule or shipping instructions for the Equipment, (ii) an adjustment to the purchase price, and (iii) an adjustment in the date of shipment of the Equipment and/or the period of performance. Both parties agree and acknowledge that unless a Change Order is agreed upon in writing by both parties, the Agreement shall not be modified in any manner. In addition, PUMPTTECH, LLC has the right to suspend performance of its obligations hereunder without liability during the period while the change is being evaluated and negotiated. In the event Purchaser has communicated proposed changes to PUMPTTECH, LLC, PUMPTTECH, LLC, at its sole discretion, shall either: (a) accept the Change Order; (b) reject the Change Order and continue performance under the existing Agreement; or (c) cancel the Agreement. In the event that PUMPTTECH, LLC elects (b) above, Purchaser shall either (i) agree to continued performance by PUMPTTECH, LLC pursuant to the Agreement or (ii) cancel the Agreement. In the event of (b)(ii), Purchaser shall pay PUMPTTECH, LLC for all amounts then due and owing under the Agreement plus all incurred costs not yet billed (e.g., labor and materials) plus fifteen percent (15%) for profit on all incurred costs not yet billed.

SHIPMENT: Estimated shipment from manufacturer can proceed as quoted after receipt of approved submittals and purchase order. Although PUMPTTECH, LLC shall use commercially reasonable efforts to have the Equipment delivered within the time estimated, any quoted shipment time is based on information from suppliers and is not intended to be an exact date or a guarantee. Any late delivery charges due to shipment beyond the estimated schedule will not be accepted.

WARRANTY: The only warranty/guarantee implied or applied to this Agreement are those as put forth by the original manufacturer. New equipment manufactured by PUMPTTECH, LLC are warranted to be free from defects in material and workmanship for a period of one (1) year from the date of shipment (ninety (90) days for repaired equipment) provided that the Purchaser has timely made all payments due under the Agreement and the product is properly installed, serviced, and operated under normal conditions. If within one (1) year of installation PUMPTTECH, LLC receives written notice from Purchaser of defective material or workmanship with respect to Equipment, PUMPTTECH, LLC's sole obligation shall be, at PUMPTTECH INC.'s option, either to (i) repair the Equipment, (ii) replace the Equipment, or (iii) refund the amount paid by Purchaser. PUMPTTECH, LLC shall have no other obligation or liability whatsoever with respect to any defective material(s) or service. Materials to be replaced or items for which services are to be re-performed shall be shipped by Purchaser to, PUMPTTECH, LLC's shop in Bellevue, Washington or to such location as PUMPTTECH, LLC may designate. Purchaser is responsible for prepayment of freight and insurance of such shipment. Purchaser shall provide returned items to PUMPTTECH, LLC in such a state that PUMPTTECH, LLC may inspect the item immediately upon PUMPTTECH, LLC's receipt thereof. If found to be defective, PUMPTTECH, LLC will prepay all freight and insurance costs of the return shipment of the repaired or replaced item. Any repaired or replaced items shall be warranted only for the remaining period of the original warranty. Expedited repairs are subject to expediting fees. Products inspected and proven to be non-defective are subject to service charges and will be returned to Purchaser at Purchaser's expense. THIS AGREEMENT DOES NOT GRANT ANY OTHER WARRANTY OR GUARANTEE OR MAKE ANY REPRESENTATIONS, EITHER EXPRESS OR IMPLIED, INCLUDING WITHOUT LIMITATION, IMPLIED WARRANTIES OF MERCHANTABILITY OR FITNESS FOR ANY PARTICULAR PURPOSE, WHETHER ARISING BY LAW, CUSTOM, CONDUCT OR USAGE OF TRADE. THE RIGHTS AND REMEDIES PROVIDED HEREIN ARE EXCLUSIVE AND IN LIEU OF ANY OTHER RIGHTS OR REMEDIES. THIS WARRANTY SHALL NOT BE VALID IF THE ITEMS THAT ARE THE SUBJECT MATTER OF THIS AGREEMENT HAVE BEEN SUBJECT TO ABUSE, MISUSE, ACCIDENT, ALTERATION, MODIFICATION, NEGLIGENCE, UNAUTHORIZED REPAIR, OR EXPOSURE TO CONDITIONS BEYOND THE APPLICABLE ENVIRONMENT. THIS WARRANTY SHALL ALSO BE VOID IF THE ITEMS ARE ASSIGNED, SOLD OR TRANSFERRED TO AN ENTITY OTHER THAN PURCHASER.

LIMITATION OF LIABILITY: PUMPTTECH, LLC's liability on any claim of any kind (excluding bodily injury or death) whether based on contract, warranty, tort (including negligence), strict liability or otherwise, for any loss or damage arising out of, connected with, or resulting from this Agreement, or from the performance or breach thereof, or from all services and Equipment covered by or furnished under this Agreement, shall in no case exceed the price of the specific service or Equipment which gives rise to the claim. PURCHASER UNDERSTANDS AND ACKNOWLEDGES THAT IN NO EVENT WILL PUMPTTECH, LLC BE LIABLE FOR SPECIAL, DIRECT, INDIRECT, INCIDENTAL, PUNITIVE, EXEMPLARY OR CONSEQUENTIAL DAMAGES, HOWEVER CAUSED, INCLUDING, BUT NOT LIMITED TO, THOSE FOR LABOR, EXPENSES, LOSS OF PROFITS OR REVENUE, LOST OPPORTUNITIES, OR SIMILAR DAMAGES OF ANY KIND. INDEMNIFICATION: Purchaser agrees to defend, indemnify and hold harmless PUMPTTECH, LLC and its respective affiliates, officers, directors, employees, shareholders and agents from and against all losses, costs, expenses, damages, suits or liability of any nature incurred in whole or in part as a result of the conduct, negligence, or willful misconduct of Purchaser, its agents, servants, employees or customers or caused by Purchaser's property or property under the responsibility of Purchaser.

DISPUTE RESOLUTION: All claims, disputes or controversies (whether in contract or tort, pursuant to statute or regulation, or otherwise, and whether pre-existing, present or future) arising out of or relating to PUMPTTECH, LLC's services and/or these Terms and Conditions (collectively "Claims") will be resolved, first, by a formal mediation conducted by an experienced mediator mutually agreed upon by PUMPTTECH, LLC and Purchaser, and, if mediation should fail to resolve the Claims, secondly, by reference to and determination by binding arbitration governed by the Federal Arbitration Act and administered by the American Arbitration Association under its rules for resolution of disputes, or under other mutually agreed procedures. The parties agree that any arbitration proceeding shall be presided over by a neutral arbitrator selected by the parties who shall have at least twenty (20) years of experience practicing law related to sales contract disputes. Any such proceedings under mediation or arbitration shall be conducted in Seattle, Washington. This provision shall survive the termination of the Agreement governed by these Terms and Conditions.

CHOICE OF LAW: This Agreement shall be construed in accordance with the laws of the State of Washington.

ATTORNEY FEES: In any litigation, arbitration, or other proceeding by which one party either seeks to enforce its rights under this Agreement (whether in contract, tort, or both) or seeks a declaration of any rights or obligations under this Agreement, the prevailing party shall be awarded its reasonable attorney fees, and costs and expenses incurred.

FINAL AGREEMENT: This Agreement merges all prior discussions, whether written or oral, and is the entire understanding and agreement of the parties; neither party shall be bound by additional or other representations, conditions, or promises except as subsequently set forth in writing and signed by the party to be bound.

(Purchaser's signature)

Printed Name & Title

(Date)



SERVING THE PACIFIC NORTHWEST
PUMP SALES & SERVICE

Installation & Operations Manual

Northshore Utility District

Grinder Pump Stations 1-4

Equipment: Qty (8) Hydromatic HPGX200ED grinder pumps and corresponding rail system equipment.

Engineer: Gray & Osbourne Inc
1130 Rainier Ave S. Ste 300
Seattle, WA 98144
Contact: Hans Thoreson, EIT
Ph: (206) 284-0860 ext 1156

Supplier: PumpTech LLC (ref #164263)
12020 SE 32nd St Ste 2
Bellevue, WA 98005
Contact: Kirk Jackson
Ph: (425) 644-8501

Municipal

Industrial

Packaged Systems



PumpTech LLC

12020 SE 32nd St, Suite 2
Bellevue, WA 98005
Ph: 425-644-8501
Fax: 425-562-9213
bellevue@pumptechnw.com
CONTRACTORS #

PumpTech LLC

209 S Hamilton Rd
Moses Lake, WA 98837
Ph: 509-766-6330
Fax: 509-766-6331
moseslake@pumptechnw.com
WA:

PumpTech LLC

116 W. Kearney St.
Caldwell, ID 83605-2648
Ph: 208-473-1068
Fax: 509-766-6331
boise@pumptechnw.com
ID:

PumpTech LLC

321 S. Sequoia Parkway
Canby, OR 97013
Ph: 503-659-6230
Fax: 503-659-8718
canby@pumptechnw.com
OR:



HYDROMATIC[®]
MODEL HPG(X)200
SUBMERSIBLE SEWAGE
GRINDER PUMP

ALSO AVAILABLE FOR HAZARDOUS LOCATION



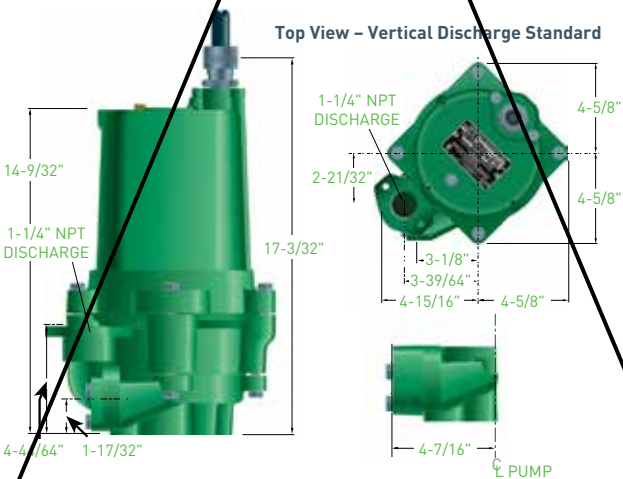
HYDROMATIC® MODEL HPG(X)200

Submersible Sewage Grinder Pump

HPG200 Pumps Characteristics	
Pump / Motor Unit	Submersible-Grinder
Phase	1 Ø 3 Ø
Horsepower	2 2
200V FLA	19.9 9.5
230V FLA	15.6 8.3
460V FLA	N/A 4.6
575V FLA	N/A 3.3
Service Factor	1.2
Motor Type	Oil Cooled Induction Capacitor Start
RPM	3450
Temp. Stator	Maximum Design 266 °F (130 °C)
Operation	Intermittent
Coolant Oil	Oil Flash Pt. 390 °F
Hertz	60 Hz
Thermal Overload	Bimetallic
Temperature	Maximum Water 140 °F
NEMA Design	Type L (1 Ø) Type B (3 Ø)
Insulation	Class F
Discharge Size	1-1/4" NPT
Unit Weight	82 lbs.
Power Cord	Type S00W / S00W-A, Water Resistant, 600V, 60 °C, CSA / UL approved

HPG200 Materials of Construction	
Description	Material of Construction
Motor Housing	Cast Iron ASTM-48
Pump Casing	Cast Iron ASTM-48
Coolant / Lubricant	Dielectric Oil
Shaft	416 Stainless Steel
Mechanical Shaft Seal	Dual: Carbon / Ceramic
Impeller	Valox® (Bronze also available)
Cutters	440C Hardened 55-60 Rockwell C
Upper Bearing	Ball Radial 6203
Lower Bearing	Ball Thrust 6306
Fasteners	316 Stainless Steel

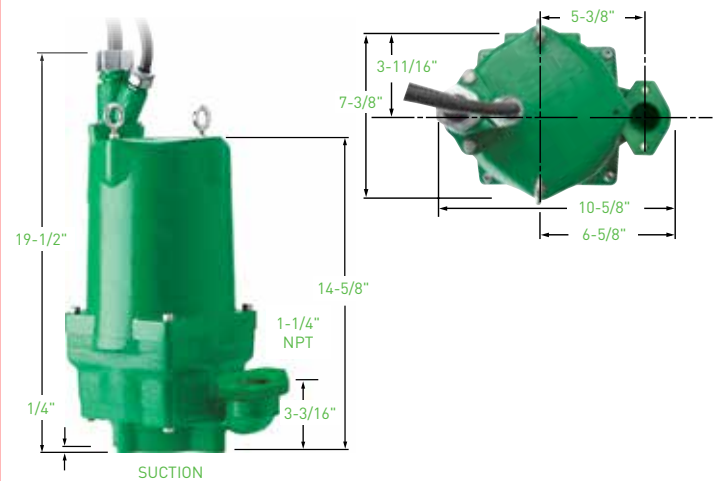
HPG200 Dimensional Data



HPGX200 Pumps Characteristics	
Pump / Motor Unit	Submersible-Grinder
Phase	1 Ø 3 Ø
Horsepower	2 2
208V FLA	16.1 8.2
230V FLA	15.6 7.7
460V FLA	N/A 3.9
575V FLA	N/A 2.9
Motor Type	Oil Cooled Induction
RPM	3450
Temperature	140 °F Ambient
Operation	Intermittent
Hertz	60 Hz
Thermal Overload	Bimetallic
Temperature	Maximum Water 140 °F
NEMA Design	Type L (1 Ø) Type B (3 Ø)
Insulation	Class F
Discharge Size	1-1/4" NPT
Unit Weight	105 lbs.
Power Cord	S00W, W

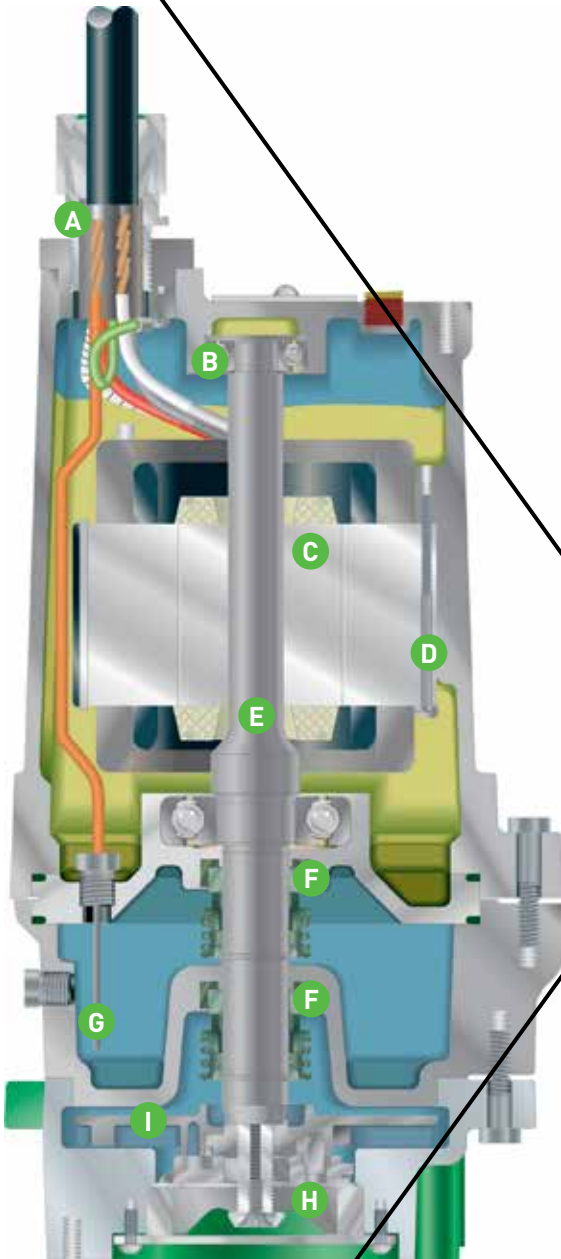
HPGX200 Materials of Construction	
Description	Material of Construction
Motor Housing	Class 30
Pump Casing	Class 30
Coolant / Lubricant	Dielectric Oil
Shaft	416 Stainless Steel
Mechanical Shaft Seal	Seal Faces: Carbon / Ceramic, Seal Body: Stainless Steel, Spring: Stainless Steel, Bellows: Buna-N
Impeller	Semiopen 5-Vane Brass
Cutters	440C Hardened 55-60 Rockwell C
Upper Bearing	(Radial) Single Row-Ball
Lower Bearing	(Thrust) Single Row-Ball and Sleeve
Fasteners	Stainless Steel

HPGX200 Dimensional Data



All dimensions in inches. Metric for international use. Component dimensions may vary ± 1/8 inch. Dimensional data not for construction purpose unless certified. Dimensions and weights are approximate. On/Off level adjustable. We reserve the right to make revisions to our product and their specifications without notice.

HPG200 Pump Features



A. Two Barrier Seals

One epoxy barrier and one compression fitting for maximum protection against wicking and water seepage into the motor housing.

B. Bearings

The heavy-duty ball bearings, upper (radial) and lower (thrust), are continuously lubricated by oil to ensure long service life.

C. Motor

Electrical design combines the advantages of high torque output with optimum running efficiency engineered specifically for grinder operation.

D. Stator Bolts

The stator is secured to the motor housing by means of stator bolts which ensure ease of maintenance if the need ever arises.

E. Shaft

Standard stainless steel shaft in grinder pump.

F. Dual Seals

Dual seals for maximum moisture protection.

G. Moisture Probe

Moisture detection probe.

H. Cutters

Exclusive "Dual Cutter" design cuts solids to smallest particle size thereby greatly reducing clogging, roping, or binding.

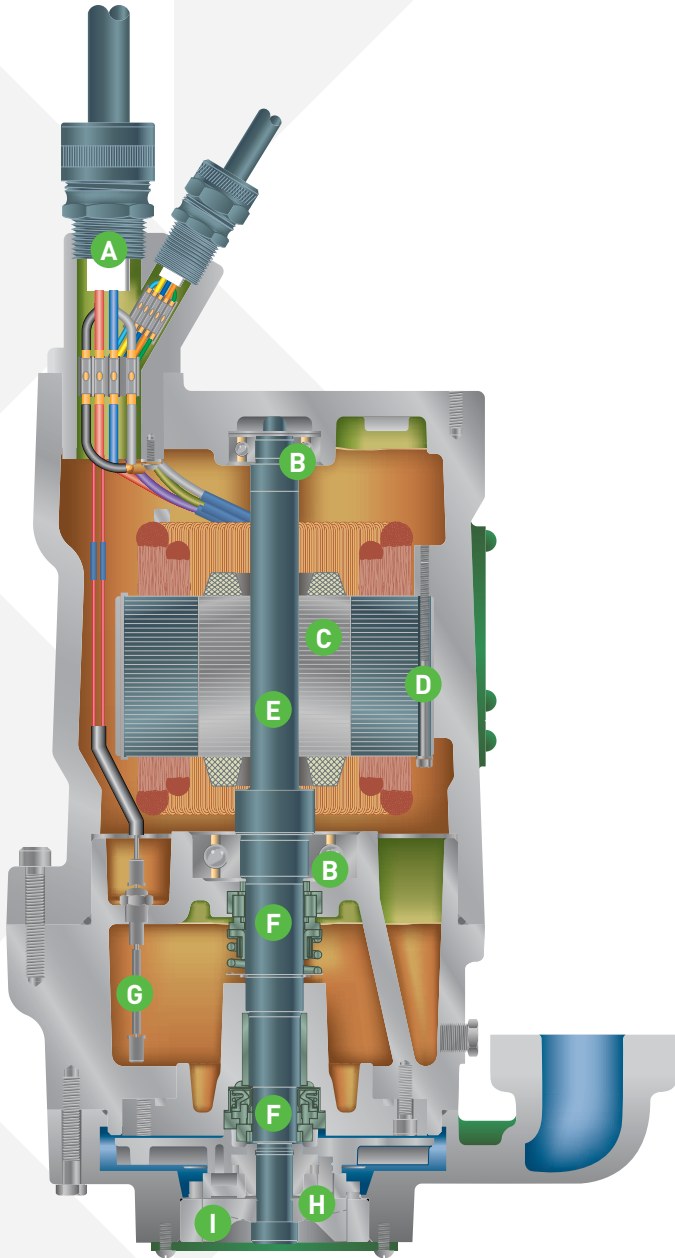
I. Impeller

Engineered non-metallic semi-open impeller molded to a bronze insert for greatest torque driving capabilities. Impeller made of high strength Valox® which provides highest level of corrosion resistance and maximum toughness from impact for a wide variety of slurry pumpage. Pump-out vanes preclude material build-up around shaft and seal. Bronze impeller available.

Applications:

Commercial, Residential, Resort Area

HPGX200 Pump Features



A. Two Barrier Seals

One epoxy barrier and one compression fitting for maximum protection against wicking and water seepage into the motor housing.

B. Three Bearings System

The heavy-duty ball bearings, upper (radial) and lower (thrust), are continuously lubricated by oil to ensure long service life, along with a lower sleeve bearing.

C. Motor

Electrical design combines the advantages of high torque output with optimum running efficiency engineered specifically for grinder operation.

D. Stator Bolts

The stator is secured to the motor housing by means of stator bolts which ensure ease of maintenance if the need ever arises.

E. Shaft

Standard stainless steel shaft in grinder pump.

F. Dual Seals

Dual seals for maximum moisture protection.

G. Two Moisture Probes

Moisture detection probe located in seal chamber.

H. Cutters

Exclusive "Dual Cutter" design cuts solids to smallest particle size thereby greatly reducing clogging, roping, or binding.

I. Impeller

The multivane, semiopen impeller is cast bronze and noncorrosive to provide long life.

Applications:

Municipal, Commercial, Residential, Resort Area



740 EAST 9TH STREET,
ASHLAND, OHIO 44805
WWW.HYDROMATIC.COM

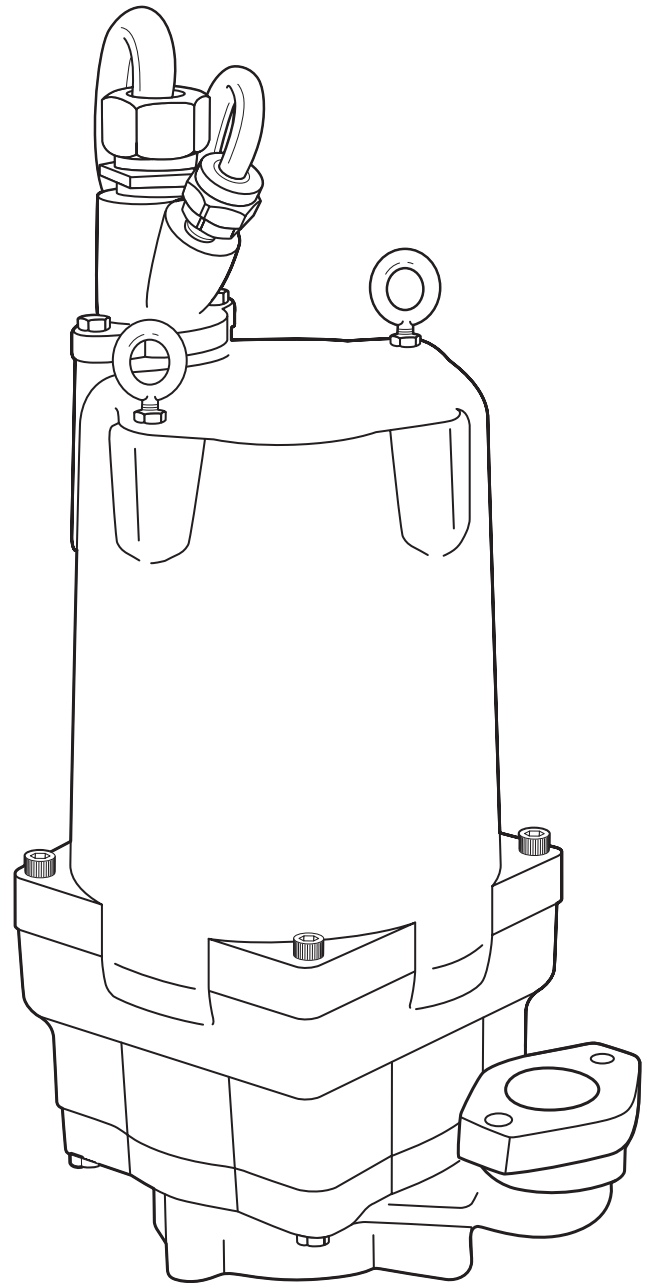
269 TRILLIUM DRIVE, KITCHENER,
ONTARIO, CANADA N2G 4W5
WWW.HYDROMATIC.COM

Valox® is a registered trademark of the General Electric Company.
Hydromatic® is a registered trademark of Pentair Ltd.

Because we are continuously improving our products and services, Pentair reserves the right to change specifications without prior notice.
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HYDROMATIC®



MODEL HPGX200

(Class I, Division 1, Groups C & D): FM

HAZARDOUS LOCATION SUBMERSIBLE GRINDER PUMP

INSTALLATION AND SERVICE MANUAL



NOTE! To the installer: Please make sure you provide this manual to the owner of the equipment or to the responsible party who maintains the system.

General Information

Attention:

This manual contains important information for the safe use of this product. Read this manual completely before using this product and refer to it often for continued safe product use. **DO NOT THROW AWAY OR LOSE THIS MANUAL.**

Pump Warning

IMPORTANT: Read all directions before replacing any parts.

WARNING: Before handling these pumps and controls, always disconnect the power first.

Do not smoke or use sparkable electrical devices or flames in a septic (gaseous) or possible septic sump.

Application:

These pumps are designed for on-site residential sewage discharge applications with a pH ranging from 6 to 9, specific gravities from 0.9 to 1.1, viscosities ranging from 28 to 35 S.S.U., and temperatures up to 140 degrees Fahrenheit.

Receiving Pump:

Pump should be checked on arrival for possible concealed shipping damage. Any damage should be reported immediately to delivery carrier. Claims for damage must originate at the receiving end. Claims for shipping damage cannot be processed by the factory.

Codes:

All local wiring codes must be observed. Consult the local inspector before installation to avoid delays that can occur due to rejection after job is finished.

CALIFORNIA PROPOSITION 65 WARNING:

▲ WARNING This product and related accessories contain chemicals known to the State of California to cause cancer, birth defects or other reproductive harm.

Pumps Not Operating or in Storage:

Pumps with carbon ceramic seals must have impellers manually rotated (6 revolutions) after setting non-operational for 3 months or longer and prior to electrical start-up.

Seal Failure Probes:

All hazardous location submersible pumps have two factory-installed moisture detectors (seal failure probes). They are in a normally open series circuit in the seal chamber. Under normal operating conditions the circuit remains open. If the lower seal leaks and moisture enters this chamber, the moisture would settle to the bottom of the chamber and will complete the circuit between the moisture detectors.

This circuit must be connected to a sensing unit and signaling device. This is supplied in a Hydromatic® control panel.

NOTE: Failure to install such a device negates all warranties by Hydromatic.

Heat Sensors:

All motors in this family have heat sensors on or embedded in the motor winding to detect excessive heat. This prevents damage to the motor. If the sensor trips due to excessive winding temperature, the starter in the panel breaks power to the pump. Once the sensor resets, the starter is to be reset (automatic for FM) for continued operation of the pump. This circuitry is supplied in a Hydromatic control

panel. The sensors are set to trip at 120 degrees Celsius.

NOTE: Failure to install such circuitry would negate FM approval and all warranties by Hydromatic.

Power Cords:

The power cord and heat sensor seal failure cord are potted into the connection box cap. The cords must not be spliced.

NOTE: Each cable has a green lead. This is the ground wire and must be grounded properly per NEC and/or local codes. During normal maintenance procedures power cords should be inspected for abnormal wear and replaced accordingly.

Overload Heaters:

If the Hydromatic electrical panel is not used, starters with 3-leg overload relay must be supplied on 3-phase pumps. Each leg is to have an identical heater sized in accordance with the nameplate amps on the motor housing. The amp draw on these submersible motors is slightly higher than a corresponding horsepower surface motor, so heaters must be sized by the nameplate rating.

Single-phase pumps with capacitor start have a run and a start winding, each drawing a different current. To adequately protect these windings with the appropriate heaters, consult the factory.

NOTE: Red lead is always the start winding of the single phase pump.

Pump Installation

Installing Pump in Sump:

Before installing pump in sump, lay it on its side and rotate impeller. Impeller may be slightly stuck due to factory test water so

it must be broken loose with a small bar or screwdriver in edge of vanes. The impeller should turn freely. Do not connect the power until after this test.

Clean all trash and sticks from sump and connect pump to piping. A check valve must be installed on each pump.

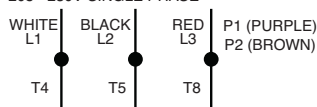
Location:

If pumps are installed in an existing basin or concrete sump, the piping can either be connected permanently or rails and brackets can be furnished for mounting to walls of basin. In either case, be sure the Hydromatic® solids handling ball check valve is used

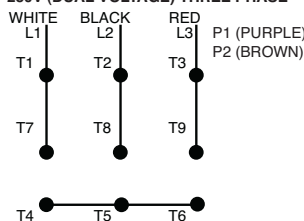
SENSOR LEADS	
COLOR	PURPOSE
Red	Seal Failure
Pink	Seal Failure
White	Heat Sensor
Black	Heat Sensor
Green	Ground

MOTOR LEADS

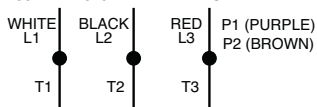
208 - 230V SINGLE PHASE



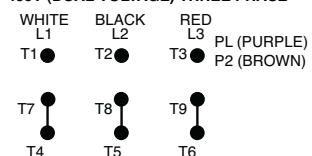
230V (DUAL VOLTAGE) THREE PHASE



200V AND 575V THREE PHASE



460V (DUAL VOLTAGE) THREE PHASE



and that the pumps are submerged in a vertical position. The complete factory-built packaged system is recommended for the most satisfactory and economical installation.

Making Electrical Connections:

All electrical wiring must be in accordance with local code, and only qualified electricians should make the installations. All wires should be checked for shorts to ground with an ohmmeter or Megger after the connections are made. This is important, as one grounded wire can cause considerable trouble.

IMPORTANT: If equipment is not properly wired and protected as recommended, Hydromatic warranty is void.

Caution: The 230 volt 3 phase pump has a dual marked nameplate. Voltage may be rewired by the manufacturer or a Class I Div 1 equipment qualified electrician. Once the voltage is changed, the factory cord tag indicating 230 volt 3 phase must be removed.

For record keeping purposes, we suggest the pump be marked externally with the new voltage and qualified personnel that performed the change. Pumps shipped from the factory as 460 volt 3 phase cannot be rewired to any other voltage.

To Re-wire the pump from 230V to 460V 3 phase:

Only a 230V pump from the factory is considered dual voltage, a cord label clearly states the factory wound voltage.

Remove bolts securing cord assembly then raise the cord cap assembly enough to slip a prying instrument on opposite sides between the cord cap casting and the junction box. Take care to not damage the o-ring or the machined surfaces of the castings. Doing so could void FM agency

certifications. While prying evenly on both sides; separate the cord cap casting from the motor housing, the assembly is airtight and will have a vacuum effect when disassembling. Once separated, the cord cap can be inverted and rotated to the outside of the pump assembly, and a bolt can be re-used to secure the upside down cord cap to the motor housing for ease of rewiring.

Refer to the wiring diagram within this manual for wiring details. Once all electrical connections are finished and secure (a crimped electrical connector is best to prevent issues due to vibration if required), the cord cap should be re-attached reversing the steps above. Ensure the o-ring is in place and perform a hi-pot test for safety once everything is complete.

Heat Sensor and Seal Failure Connections:

If a Hydromatic control panel is used, terminal blocks are provided for heat sensor and seal failure connections. If a control panel is supplied by others, it must allow heat sensor and seal failure terminations.

Installing Sump Level Control Float Controls:

In either simplex, duplex or triplex systems the lower or turn-off control is to be set to maintain a minimum level in the sump. This level shall be no more than 3 1/4" from the top of the motor housing down to the surface of the sewage.

The second, or turn-on control, is set above the lower turn-off control. The exact distance between the two floats must be a compromise between a frequent pumping cycle (10 starts per hr. max.) to control septicity, solids and a slower cycle for energy economy. This distance should be determined by the engineer or consulting engineer, depending on the conditions of the application.

Pump Operations

WARNING: Keep hands and clothing away from cutters and impeller!

1. If pump is 3 phase, the rotation of the impeller must first be checked. Lift pump from sump, lay it down, and quickly turn pump on and then off.

The impeller should turn counterclockwise when viewed from the suction. If rotation is wrong, turn off main breaker and interchange any two line leads to motor to correct rotation.

If pump is single phase, no rotation check is necessary.

2. Run water into sump until motor is covered.
3. Open gate valve in discharge line.
4. Turn pump on. If pump runs and sump liquid does not pump down, stop pump and close discharge gate valve. Then lift pump until sealing flange is open to vent off trapped air. Lower pump, open discharge valve, and start the pump again.
5. If pump is 3 phase, piped in permanently, and still does not operate properly after venting, rotation is wrong and can be reversed by interchanging any two line leads.
6. Level controls should be set in accordance with "Installing Sump Level Control Float Controls".

CAUTION: Be sure ground wire is connected to a good ground. This is important for safety.

Pump Maintenance

As the motors are oil filled, no lubrication or other maintenance is required.

If the heat sensor and seal failure are hooked up properly, no attention is necessary as long as the seal failure indicator light doesn't come on. To ensure continuity of the seal sensor leads, a test light is provided on intrinsically safe Hydromatic® panels as standard equipment.

Pump should be checked every quarter for corrosion and wear.

Servicing Instructions:

Field Service on Hydromatic Hazardous Location Pumps:

If a Hydromatic hazardous location pump is used in a hazardous location, or if the pump is still in warranty, the pump must be returned to the factory for service or repaired at an authorized Hydromatic service center. This will ensure the integrity of the hazardous location rating of the pump and comply with the warranty requirements.

Disconnecting Pump Cords:

If a Hydromatic hazardous location pump is to be removed from its location, the pump cords may be disconnected at the control panel (on sump mounted control panels) and cord assembly taken with pump.

CAUTION: If cord openings from sump to control panel are open, gases from sump could enter panel and an explosive condition could exist. Seal openings!

Replacing Cords:

The power cord and heat sensor/seal failure cord are potted into the connection box cap, forming the cord and cap assembly.

If cords require replacement due to damage or cords being too short, cord and cap assembly must be replaced as a complete assembly from the factory. Check pump for proper rotation before returning to normal service.

Replacing Grinder Parts:

If necessary to replace grinder parts because of wear or to inspect for clogging:

1. Close gate valve at pump discharge.
2. Turn off circuit breaker.
3. Remove pump from sump.
4. Remove machine screws and remove cutter ring retainer. Remove cutter ring.
5. Unscrew cap screws and remove volute case.
6. Radial cutter and axial cutter are now exposed. If checking for clogging, these parts can now be cleaned without removing them from the shaft.
7. If necessary to replace cutters, remove screw, washer, and radial cutter from shaft.

Radial cutter and impeller are screwed onto shaft. The thread is right-hand. Tap radial cutter with plastic hammer if necessary to loosen. Axial cutter lifts off impeller and is held from rotation by pin. Unscrew impeller from shaft in same manner as radial cutter, and remove washer.

8. Clean all parts thoroughly before proceeding with assembly. Make sure spring pin is inserted into impeller. Replace case volute and cap screws.
9. Replace cutter ring and cutter ring retainer with machine screws.

10. Plug pump into power and operate for a few seconds only to ensure parts are not rubbing.

Replacing Lower Seal, Impeller or Volute:

The wet end components may be repaired or replaced by an authorized Hydromatic service facility without compromising the hazardous location rating to the pump.

NOTE: Any time the seal is disturbed, it must be replaced.

Pump Troubleshooting

No liquid delivered.

1. Pump air bound
2. Discharge head too high
3. Pump or piping plugged
4. Wrong rotation
5. Speed too low

Insufficient liquid delivered.

1. Discharge head too high
2. Impeller or cutters partially plugged or damaged
3. Wrong rotation
4. Incorrect diameter impeller
5. Speed too low

Insufficient discharge pressure.

1. Wrong rotation
2. Air or gases in liquid
3. Impeller damaged
4. Incorrect impeller diameter
5. Speed too low

Pump overloads motor.

1. Wrong rotation
2. Specific gravity or viscosity of liquid too high
3. Speed too high

4. Head lower than rating, pumping too much liquid
5. Pump clogged
6. Defective bearings
7. Defective impeller

Pump is noisy.

1. Defective bearings
2. No axial clearance between impeller and volute
3. No axial clearance between radial cutter and cutter ring

If the cause of the trouble cannot be determined and corrected, contact the factory or an authorized Hydromatic® service facility.

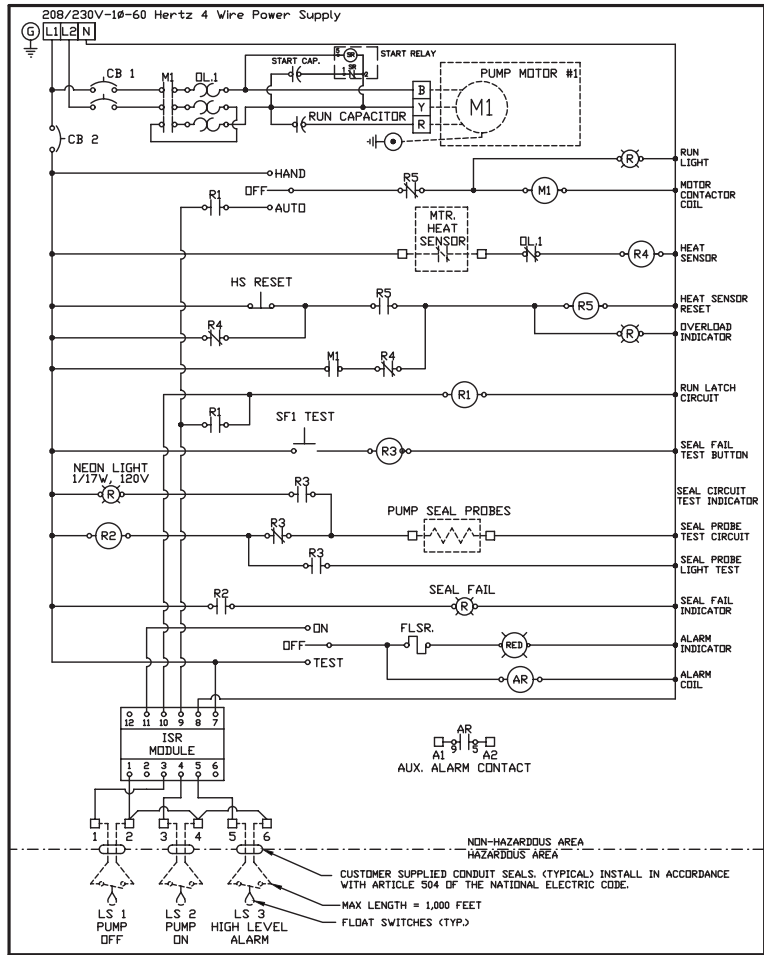
Wiring Diagrams

1 PHASE

BLACK, WHITE, AND RED MOTOR LEADS CAN ONLY BE CONNECTED TO PANEL TERMINAL BLOCKS AS SHOWN ON SCHEMATIC. INCORRECT CONNECTION CAN CAUSE DAMAGE TO PUMP AND/OR PANEL COMPONENTS. THREE PHASE OVERLOAD RELAY MUST BE CLASS 10 TRIP & AMBIENT COMPENSATED & CONNECTED IN THE 'DAISY CHAIN' CIRCUIT AS SHOWN.

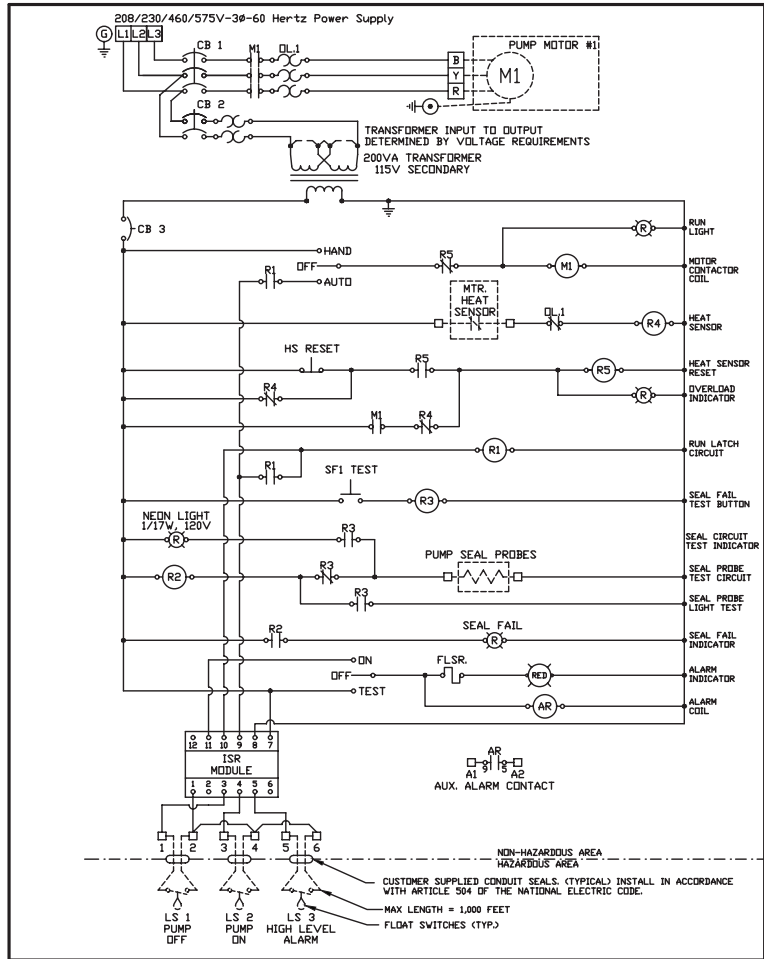
Notes:

- 1) Level Switches Must Be Rated a Minimum of 2 Amps at 120 Volts
- 2) Torque all white field wiring terminals to 20 In.Lbs.
- 3) Field Wiring Must Be 60°C Copper Wire Minimum.
- 4) ----- = Items Not Supplied In Control Panel.
- 5) Pump power, heat sensor, and seal probe cables must pass through approved NEC 501.15 conduit seals.



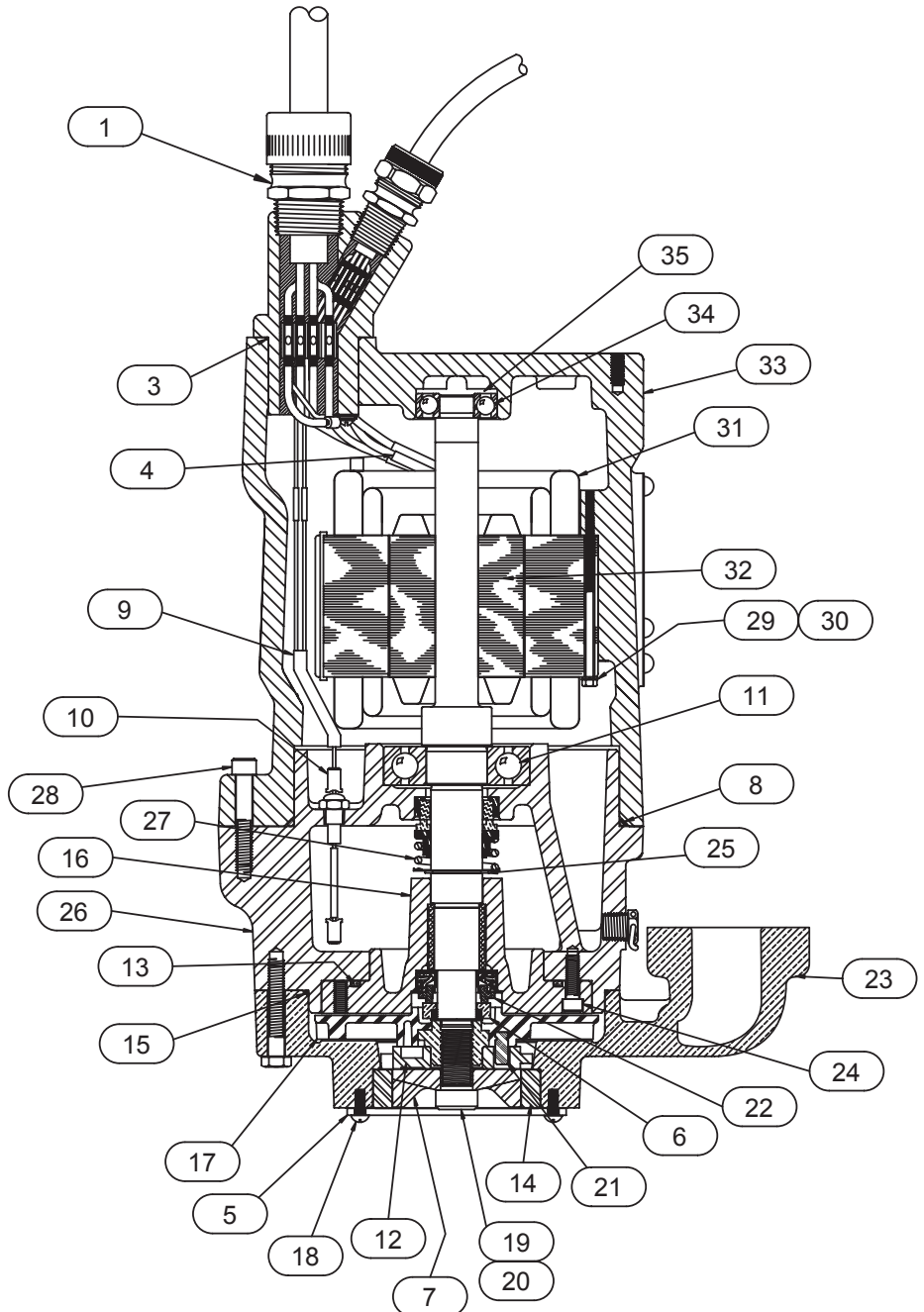
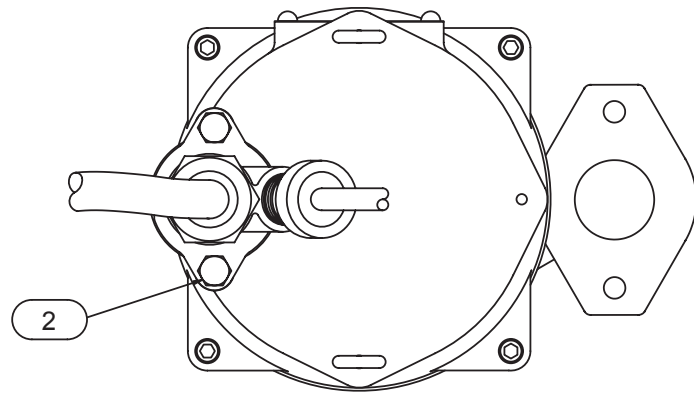
3 PHASE

- Notes:
- 1) Level Switches Must Be Rated a Minimum of 2 Amps at 120 Volts
 - 2) Torque all white field wiring terminals to 20 In.Lbs.
 - 3) Field Wiring Must Be 60°C Copper Wire Minimum.
 - 4) ----- = Items Not Supplied In Control Panel.
 - 5) Pump power, heat sensor, and seal probe cables must pass through approved NEC 501.15 conduit seals.



HPGX200 Parts List

Ref. No.	Part No.	Part Description	Qty.
1	152750325	35' Cord Assembly - 14-4	1
	152750305	35' Cord Assembly - 12-4	1
	152750315	35' Cord Assembly - 10-4	1
2	19100A029	Screw - Cap	2
3	05876A244	O-Ring	S 1
4	108980001	Connector	2
5	077630001	Cutter Retaining Ring	1
6	049180001	Lower Seal Seat	S 1
7	054050012	Radial Cutter	1
8	05876A120	O-Ring	S 1
9	109000015	Seal Sensor Assy.	1
10	109010011	Seal Failure Probe	2
11	000650271	Lower Bearing	1
12	055060022	Axial Cutter	1
13	05876A103	O-Ring	S 1
14	055050002	Cutter Ring	1
15	008340231	O-Ring	S 1
16	054040075	Seal Plate Assy.	1
17	070333022	Impeller - 5.00" Diameter	1
	070333032	Impeller - 4.75" Diameter	1
	070333042	Impeller - 4.50" Diameter	1
	070333052	Impeller - 4.25" Diameter	1
	070333062	Impeller - 4.00" Diameter	1
	070333072	Impeller - 3.75" Diameter	1
18	000190011	Machine Screw - (Rd Hd)	3
19	055700051	Impeller Washer	1
20	148850001	Impeller Screw	1
21	054190011	Roll Pin	1
22	049170001	Lower Seal - (Rotating)	S 1
23	109570002	Volute	1
24	105-014034-263	Screw - Socket	4
25	009750021	Snap Ring	1
26	109561002	Seal Housing	1
27	003000001	Upper Seal	S 1
28	001780061	Screw - Socket	4
29	001450101	Machine Screw	4
30	05454A009	Lock Washer	4
31	21573C102	Stator - 2 hp, 230/460/3/60	1
	21573C101	Stator - 2 hp, 200/3/60	1
	21573C103	Stator - 2 hp, 575/3/60	1
	21573C100	Stator - 2 hp, 230/1/60	1
	21573C104	Stator - 2 hp, 200/1/60	1
32	108231015	Rotor & Shaft Assy. - 2 hp, 3φ	1
	108321015	Rotor & Shaft Assy. - 2 hp, 1φ	1
33	134940042	Motor Housing	1
34	000650011	Upper Bearing	1
35	000640011	Wave Spring	1
	517005007	Seal Kit	
	131880001	Shim - Cutter	As Req'd.
	006280391	Shim - Impeller	As Req'd.



Notes: S — Parts in Seal Kit.

STANDARD LIMITED WARRANTY

Pentair Hydromatic® warrants its products against defects in material and workmanship for a period of 12 months from the date of shipment from Pentair Hydromatic or 18 months from the manufacturing date, whichever occurs first – provided that such products are used in compliance with the requirements of the Pentair Hydromatic catalog and technical manuals for use in pumping raw sewage, municipal wastewater or similar, abrasive-free, noncorrosive liquids.

During the warranty period and subject to the conditions set forth, Pentair Hydromatic, at its discretion, will repair or replace to the original user, the parts that prove defective in materials and workmanship. Pentair Hydromatic reserves the right to change or improve its products or any portions thereof without being obligated to provide such a change or improvement for prior sold and/or shipped units.

Start-up reports and electrical schematics may be required to support warranty claims. Submit at the time of start up through the Pentair Hydromatic website: <http://forms.pentairliterature.com/startupform/startupform.asp?type=h>. Warranty is effective only if Pentair Hydromatic authorized control panels are used. All seal fail and heat sensing devices must be hooked up, functional and monitored or this warranty will be void. Pentair Hydromatic will cover only the lower seal and labor thereof for all dual seal pumps. Under no circumstance will Pentair Hydromatic be responsible for the cost of field labor, travel expenses, rented equipment, removal/reinstallation costs or freight expenses to and from the factory or an authorized Pentair Hydromatic service facility.

This limited warranty will not apply: (a) to defects or malfunctions resulting from failure to properly install, operate or maintain the unit in accordance with the printed instructions provided; (b) to failures resulting from abuse, accident or negligence; (c) to normal maintenance services and parts used in connection with such service; (d) to units that are not installed in accordance with applicable local codes, ordinances and good trade practices; (e) if the unit is moved from its original installation location; (f) if unit is used for purposes other than for what it is designed and manufactured; (g) to any unit that has been repaired or altered by anyone other than Pentair Hydromatic or an authorized Pentair Hydromatic service provider; (h) to any unit that has been repaired using non factory specified/OEM parts.

Warranty Exclusions: PENTAIR HYDROMATIC MAKES NO EXPRESS OR IMPLIED WARRANTIES THAT EXTEND BEYOND THE DESCRIPTION ON THE FACE HEREOF. PENTAIR HYDROMATIC SPECIFICALLY DISCLAIMS THE IMPLIED WARRANTIES OF MERCHANTABILITY AND FITNESS FOR ANY PARTICULAR PURPOSE.

Liability Limitation: IN NO EVENT SHALL PENTAIR HYDROMATIC BE LIABLE OR RESPONSIBLE FOR CONSEQUENTIAL, INCIDENTAL OR SPECIAL DAMAGES RESULTING FROM OR RELATED IN ANY MANNER TO ANY PENTAIR HYDROMATIC PRODUCT OR PARTS THEREOF. PERSONAL INJURY AND/OR PROPERTY DAMAGE MAY RESULT FROM IMPROPER INSTALLATION. PENTAIR HYDROMATIC DISCLAIMS ALL LIABILITY, INCLUDING LIABILITY UNDER THIS WARRANTY, FOR IMPROPER INSTALLATION. PENTAIR HYDROMATIC RECOMMENDS INSTALLATION BY PROFESSIONALS.

Some states do not permit some or all of the above warranty limitations or the exclusion or limitation of incidental or consequential damages and therefore such limitations may not apply to you. No warranties or representations at any time made by any representatives of Pentair Hydromatic shall vary or expand the provision hereof.



HYDROMATIC®

1101 MYERS PARKWAY
ASHLAND, OHIO 44805
PH: 855-274-8947

490 PINEBUSH ROAD, UNIT 4
CAMBRIDGE, ONTARIO, CANADA N1T 0A5
PH: 800-363-7867

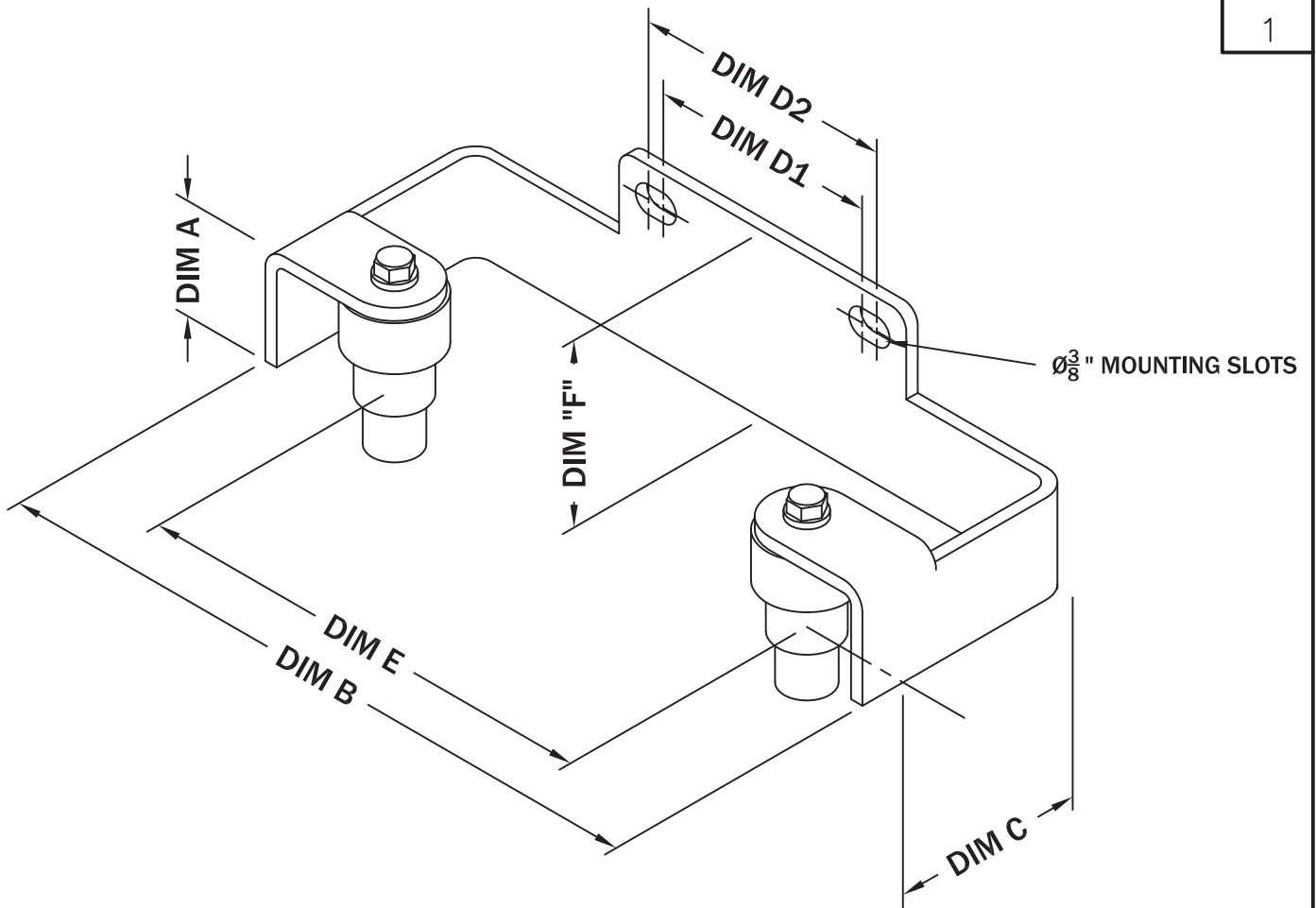
WWW.HYDROMATIC.COM

Warranty Rev. 12/13

NOTE: BRACKET CAN BE USED FOR $\frac{3}{4}$ " , 1" , $1\frac{1}{4}$ " GUIDE RAILS.

GUIDE BRACKET

PAGE
1



MODEL NO.	DIA. "A"	DIM "B"	DIM "C"	DIM "D1 + D2"	DIM "E"	DIM "F"
UGB-STNLS	1 3/4"	10 1/8"	2 11/16"	2 7/8"-3 7/8"	7"	2 3/4"

ALL INFORMATION CONTAINED IN THIS DRAWING IS CONFIDENTIAL AND PROPRIETARY TO CONERY MFG, INC.



CHANGES	TOLERANCES	DRAWN BY	DATE	SPECIFICATION SHEET DIMENSIONAL DATA	
F	DECIMALS .XXX = ±.005 .XX = ±.010 FRACTIONAL X/X = ±.1/64 ANGLES X' = ±1/2'	D. MIDDLETON	03/22/04	SCALE:	PART NO.
E		MATERIAL SPECIFICATION: 300 SERIES SST		NONE	GUIDE BRACKET
D					
C					
B					
A					

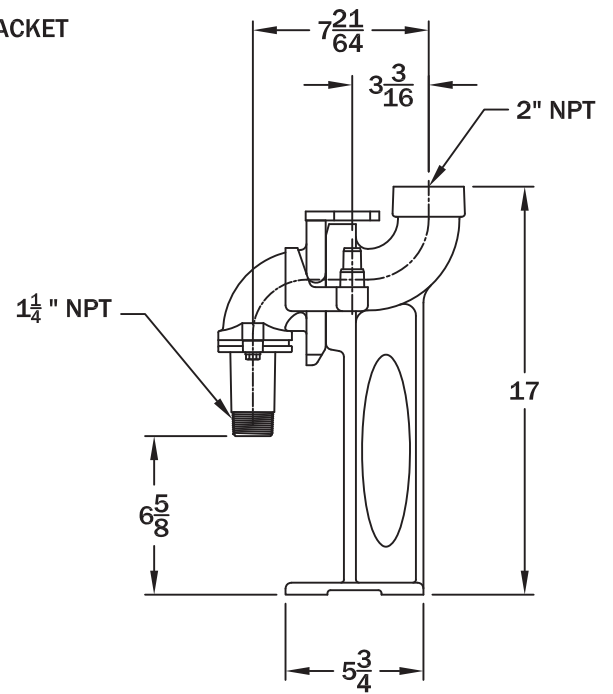
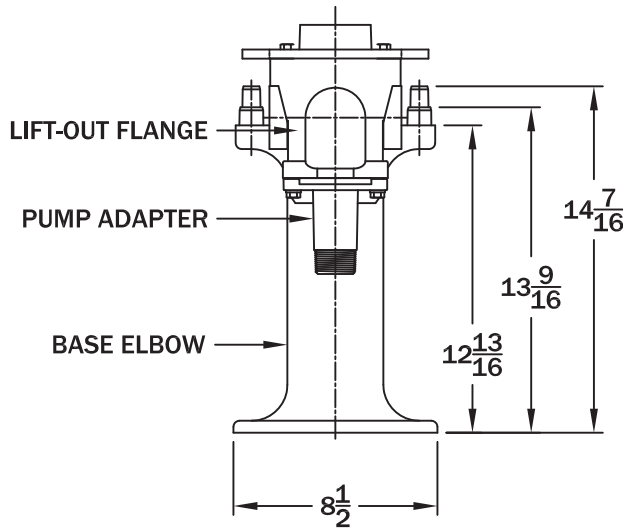
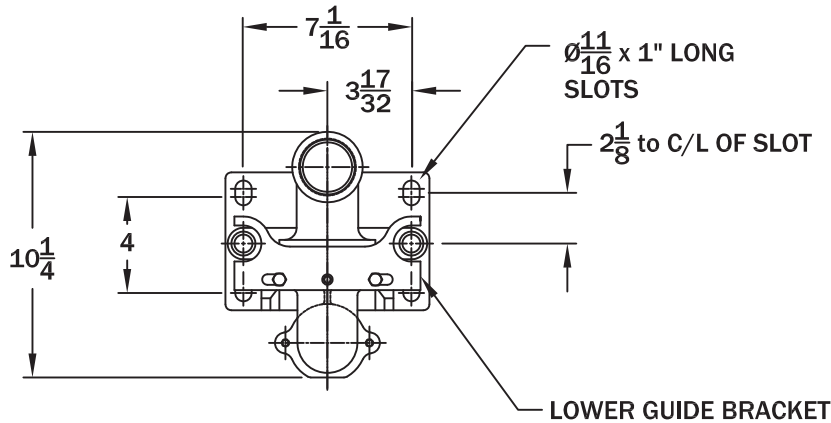
NOTE: ALL DIMENSIONS ARE IN INCHES.

MATERIALS OF CONSTRUCTION:

- PUMP ADAPTER: 304 SST
- BASE ELBOW: CAST DUCTILE IRON
- LIFT-OUT FLANGE: CAST DUCTILE IRON
- LOWER GUIDE BRACKET: 304 SST
- ALL FASTENERS ARE 304 SERIES SST
- USABLE RAIL SIZES: $\frac{3}{4}$ " & 1"
- MAXIMUM WEIGHT ALLOWANCE: 250 lbs

BERS-0125

PAGE
1



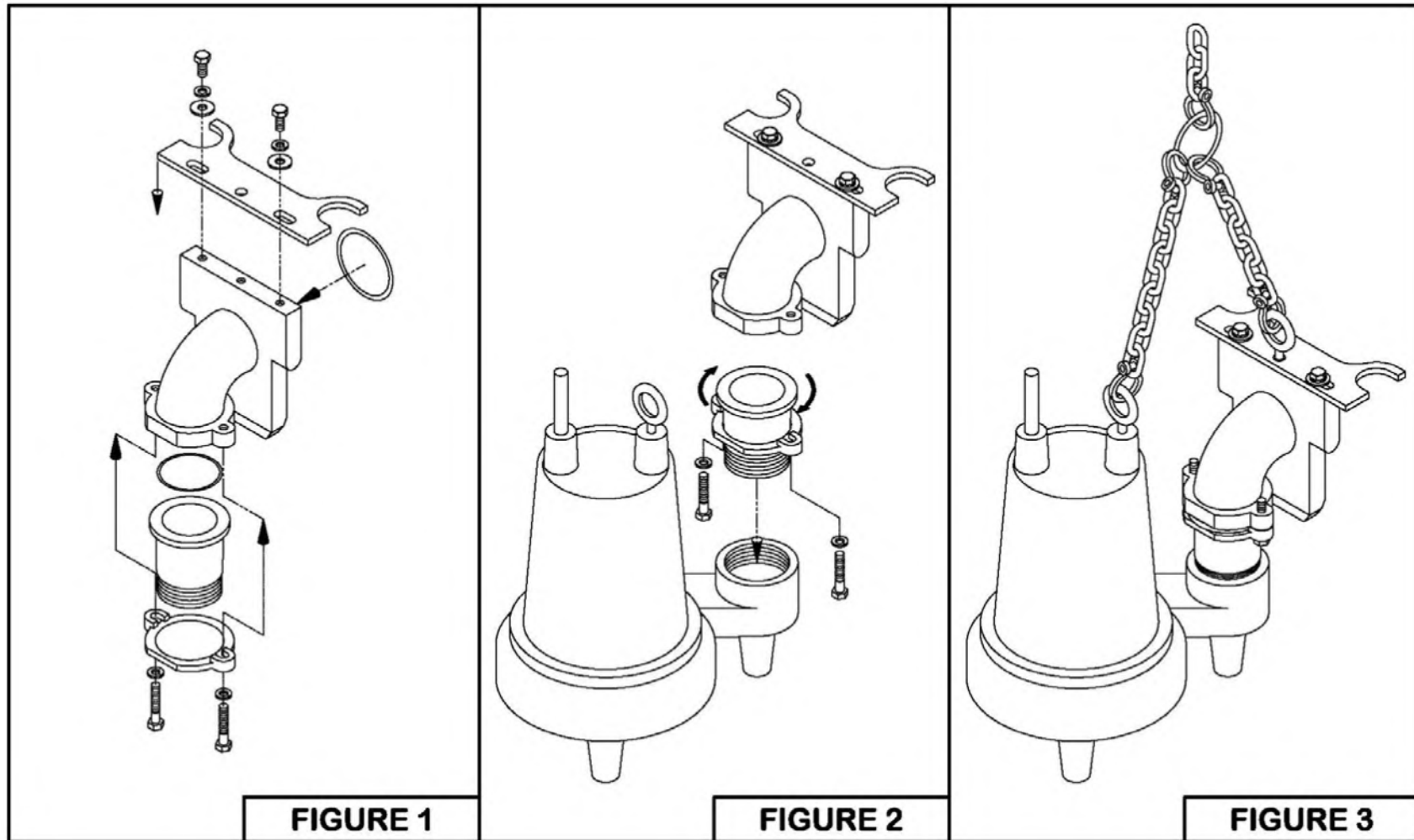
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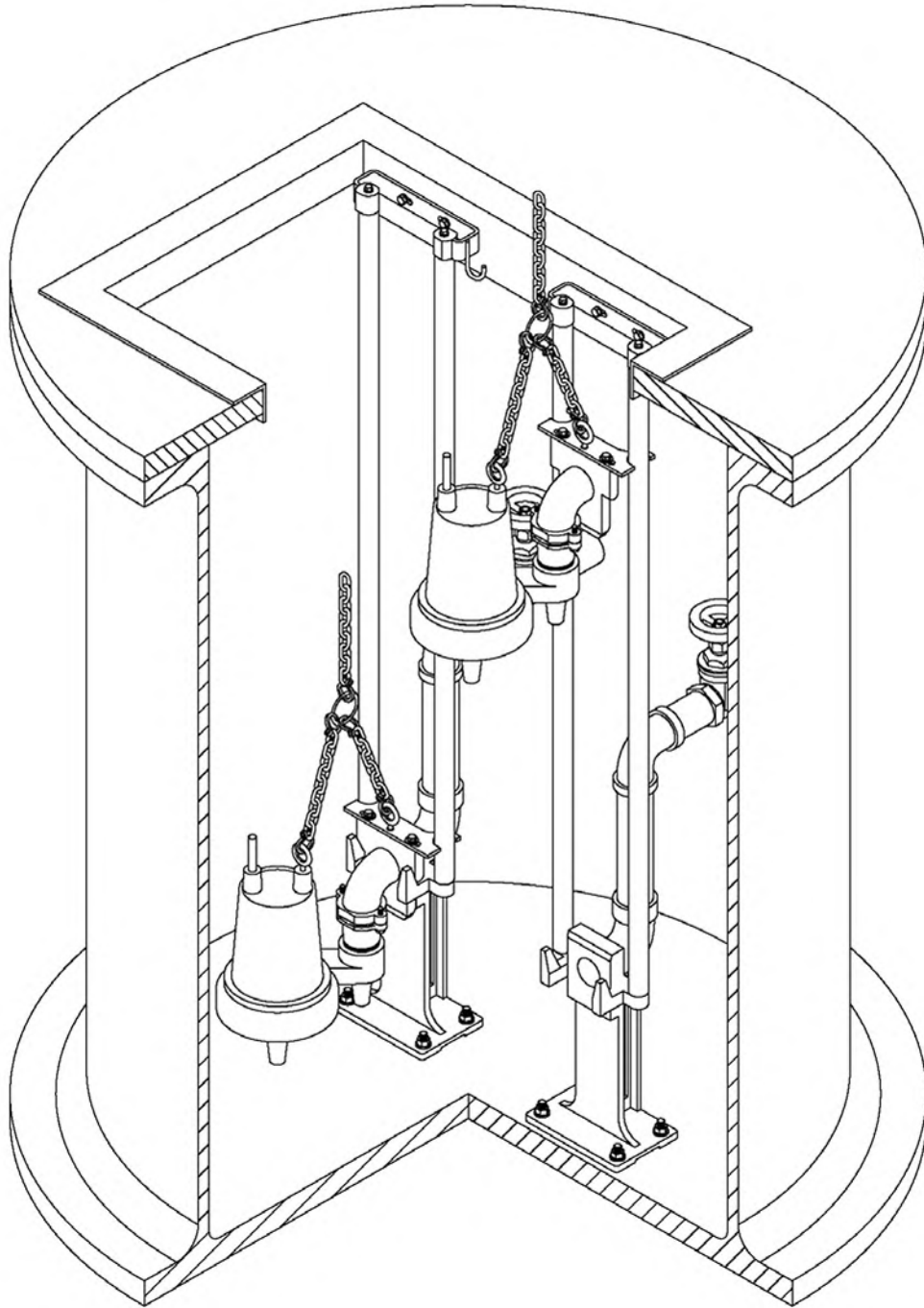
CHANGES	TOLERANCES	DRAWN BY	DATE
F	DECIMALS	D. MIDDLETON	03/05/04
E	.xxx = ±.005	MATERIAL SPECIFICATION: AS NOTED	
D	.xx = ±.010		
C	FRACTIONAL		
B	x/x = ±.1/64		
A	ANGLES		
	x' = ±1/2'		

SPECIFICATION SHEET
DIMENSIONAL DATA

SCALE:	PART NO.
1/8	1 1/4" LIFT OUT DIM



Pull Out Flange Assembly Instructions: Figure 1 shows all of the parts included with the pull-out flange assembly. This is the removable portion of the FreefloTM base elbow rail system assembly, and it is this assembly that will attach to the discharge of the pump (see figure 2). The threaded pump adapter flange will thread into the pump discharge as shown. The pump adapter flange is secured by tightening the two (2) long cap screws provided. This allows the pump to be oriented as necessary before lowering into the basin or collection tank. After attaching the pull out flange assembly to the pump, the lifting chain or cable assembly should be attached (see figure 3). This should be adequately sized to handle the weight of the pump and the pull out flange assembly as well as be long enough to allow for easy access for pulling the pump (continued on reverse side of this page).



Base Elbow Installation Instruction: There are two main components to the Freeflo™ base elbow rail system, the stationary base and the pull out flange assembly. The stationary base will be secured to the bottom of the basin or collection tank. The base elbow should be positioned per the job specifications and the pump manufacturer's recommendations to allow for proper alignment with the access hatch for removal and installation of the pump or pumps. The base elbow is designed to be secured with four (4) studs, lock-washers, and nuts. It is important to make sure the elbow is secured to the basin or collection tank bottom to prevent it from moving or vibrating. After the elbow is installed the remaining items can be installed (i.e. piping, valve, guide rails, rail supports, etc.) into the tank. After this is done simply attach the pull out flange assembly to the pump, and lower the pump into the tank as shown above.

APPENDIX C

QUALITY CONTROLS CORPORATION



5015 208th St. SW, Suite 1-B
Phone (425) 778-8280

Lynnwood, Washington 98036
www.qualitycontrolscorp.com

Quotation

December 20, 2021 Quote Number: Q4036

To: Northshore Utility District

Project: Northshore Utility Grinder Lift Station Control Panel Upgrades

Reference: Onsite review and coordination meetings

Bid Date: December 10, 2021 Bid Close: NA

Terms: Net 30

FOB: Lynnwood, WA

Freight: Prepaid and allowed

This quote is valid for 60 days

QCC is pleased to provide quotation for the above referenced project. Quality Controls Corp. (QCC) provides services and materials, FOB Lynnwood, WA, complete, ready for installation and field termination by others. QCC's quoted price does not include tax or the cost to bond this project.

Please call me with any technical questions or if you have any questions concerning the pricing on this quotation.

Sincerely,

A handwritten signature in black ink that reads 'James T. Cross'.

James Cross

5015 – 208th Street S.W. Unit 1B Lynnwood, Washington 98036
Phone: 425.778.8280 Fax: 425.778.4541
Email: JamesC@Quality-Controls.com

Clarifications and Exclusions

1. QCC provides the following unless specifically excluded on our bill of material:
 - Equipment shipped FOB factory with freight allowed, tailgate, destination.
 - Instruction manuals as required.
 - All necessary field start-up and calibration of the equipment we supply.
2. QCC does **NOT** provide the following unless specifically included in our bill of material:
 - Pipe, tubing, valves or fittings between the instrument and the process.
 - Conduit, wire or cable not integral to instrument or control panels supplied by QCC.
 - Mounting brackets, stanchions, supports or mounting pads not an integral part of the instrument.
 - Labor to install the equipment.
 - The Cost, (if due to local union regulations), to have local craftsman make adjustments or wiring modifications to our equipment during start-up and calibration.
 - Any material or services not in our quoted sections.

Pricing

Total Price for the Scope of Work Detailed Below:

\$ 84,700.00

Scope of Work

1. QCC supplies the following control panels for installation and field termination by others:
 - **Qty 4 x Grinder Station Control Panels**, UL listed complete, including the following major components:
 - i. NEMA 4X Stainless enclosure- Wall mount, powder-coated forest green.
 - ii. Dead front panel with disconnect and pilot devices
 - a. Pilot Devices:
 - a. Qty 2 x Pump Hand-Off-Auto selector switches
 - b. Qty 2 x Pump Running Indicator, press-to-test
 - c. Qty 2 x Pump Fault Indicator, press-to-test
 - d. Qty 2 x Elapsed runtime indicators
 - e. Qty 2 x Pump Seal Fail indicators, press-to-test
 - iii. Qty 1 x Low profile alarm strobe, LED NEMA 4X
 - iv. Qty 1 x Main disconnect- 240VAC 3ph, 3-pole with through dead front operator
 - v. Qty 1 x Control power protection breaker- 120VAC, 1-pole, 15A
 - vi. Qty 1 x Uninterruptible power supply, 24VDC powered, integral DC power supply, includes batter.
 - vii. Qty 2 x Motor Starters- 2HP, 240VAC 3ph, IEC full voltage non-reversing motor starter, 120VAC coil, running aux contacts, overload aux contacts.
 - viii. Qty 3 x Intrinsically safe relays
 - ix. Qty 1 x Enclosure heater, 200W, thermostat controlled.
 - x. Qty 1 x Wireless I/O Radio, Point-to-multipoint node, 900mhz spread spectrum, Discrete IO configurable.
 - xi. Qty 1 x Antenna assembly – panel bulkhead mounted, NEMA 4x
 - **Qty 1x Pump Station 15 Wireless IO MTU assembly**, UL listed complete, including the following major components:
 - i. Back panel- assembled with the following components for installation in existing enclosure
 - ii. Qty 1 x Control power protection breaker- 120VAC, 1-pole, 15A
 - iii. Qty 1 x 24VDC Power supply, 5A
 - iv. Qty 1 x Wireless IO Radio Master Gateway, 900mhz spread spectrum, Configurable IO.
 - v. Qty 1 x Antenna assembly- High gain omni antenna, mounting hardware for 2” mast mounting. Include antenna cable and TVSS.

All control panels supplied by QCC will be UL listed and contain all required components and sub-assemblies.

2. QCC supplies the following field instruments for installation and field termination by others:
 - Qty 12 x Float type level switches –
Polypropylene casing, NONC direct acting float switch. 20 feet integral cable, suspension type with internal weight.

3. QCC provides all required configuration and programming required for a fully functional SCADA and telemetry system. Includes programming of Pump Station PLC and OIT, radio configuration, and SCADA application updates.
4. QCC supplies field start-up, instrument calibration, and training as required for all equipment included in this scope of work.
5. QCC provides Bill of Materials and Operation and Maintenance manuals for all equipment included in this scope of work.