PORT OF LONGVIEW · EST. 1921 | WASHINGTON'S WORKING PORT

FEBRUARY 17, 2026

INVITATION TO BID

BERTH 5 STORMWATER PUMP STATIONS

PROJECT #: 26-013-MESS

BIDS MUST BE SUBMITTED TO:

PORT OF LONGVIEW
10 INTERNATIONAL WAY
LONGVIEW, WA 98632

DUE: MARCH 5, 2026 NO LATER THAN 02:00 PM (PT)

The Port reserves the right to modify this schedule at the Port's discretion. Notification of changes in the response due date would be posted on the Port website or as otherwise stated herein.

Solicitation Schedule	Date
ITB Issued	February 17, 2026
Questions by Date/Time	February 25, 2026 at 5:00 p.m. (Local Time)
Bid Due Date/Time	March 5, 2026 at 2:00 p.m. (Local Time)
ITB Information	**Contact Information**
ITB Coordinator	Candi Engebo, Procurement Specialist
E-mail Address	cengebo@portoflongview.com
Phone	(360) 425-3305, ext. 219

PORT OF LONGVIEW
INVITATION TO BID (ITB)
BERTH 5 STORMWATER PUMP STATIONS
PROJECT NO: 26-013-MESS

Notice is hereby given that proposals for the Port of Longview Berth 5 Stormwater Pump Stations will be received by the Port of Longview until March 5, 2026 at 2:00 p.m. The complete solicitation is available to view and download on the Port's website at http://www.portoflongview.com/Bids.aspx..

PUBLISHED: FEBRUARY 17, 2026
THE DAILY NEWS
OFFICE OF MINORITY AND WOMEN'S BUSINESS ENTERPRISES
PORT OF LONGVIEW WEBSITE

1. PURPOSE

This solicitation is for the purchase of materials to be installed by others.

2. AWARD

With this solicitation, the Port intends to award one contract to the lowest responsible bidder that provides a responsive bid. **Bidders are required to bid on ALL items.**

3. SPECIFICATIONS

Provide materials for installation by the Port conforming to the requirements in Attachment C, specifications.

4. RIGHT TO CANCEL

The Port reserves the right to cancel or reissue all or part of this Solicitation at any time without obligation or liability.

5. EXPANSION CLAUSE

Expansion of scope of this contract may occur when in the opinion of the Port Procurement Manager the circumstances meet one or more of the following criteria:

a. It could not be separately bid;

b. The change is for a reasonable purpose;

c. The change was not reasonably known to either the Port or Vendors at time of bid or else was mentioned as a possibility in the bid (such as a change in environmental regulation or other law);

d. The change is not significant enough to reasonably regard it as an independent body of work;

e. The change could not have attracted a different field of competition; and

f. And the change does not vary the essential identity or main purpose of the contract.

Agreement to such a contract modification must be mutual. Only the Procurement Manager has the authority to make such agreements on behalf of the Port. No other Port department has the authority to make such written notices. Written formal notices will document all expansions. The Port Procurement Manager shall make this determination, and may make exceptions for immaterial changes, emergency or sole source conditions, or for other situations as required in the opinion of the Port Procurement Manager.

Note that certain changes are not considered an expansion of scope, including an increase in quantities ordered, the exercise of options and alternates in the bid, or ordering of work originally identified within the originating solicitation. Approval of such changes will be by written order issued by the ITB Coordinator.

6. TAXES

All bids shall include an allocation for the appropriate sales and use taxes.

7. NO ADDITIONAL CHARGES

Unless otherwise specified in the Solicitation, no additional charges by the Vendor will be allowed including, but not limited to: handling charges such as packing, wrapping, bags, containers, reels; or the processing fees associated with the use of credit cards. Notwithstanding the foregoing, in the event that market conditions, laws, regulations or other unforeseen factors dictate, at the Procurement Manager's sole discretion, additional charges may be allowed.

8. SUBCONTRACTS AND ASSIGNMENTS

Vendor shall not Subcontract, assign, or otherwise transfer its obligations under this Contract without the prior written consent of the Procurement Manager. Vendor shall provide a minimum of 30 calendar days advance notification of intent to Subcontract, assign, or otherwise transfer its obligations under this Contract. Violation of this condition may be a material breach establishing grounds for Contract termination. The Vendor shall be responsible to ensure that all requirements of the Contract shall flow down to any and all Subcontractors. In no event shall the existence of a Subcontract operate to release or reduce the liability of Vendor to the Port of Longview for any breach in the performance of the Vendor's duties.

9. SPECIFICATIONS BY REFERENCE

Any material specified by reference to the number, symbol or title of a specific standard such as a commercial standard, federal specifications, a trade association standard, or other similar standard, will comply with the requirements in the latest revision thereof, and any amendment or supplement thereof in effect on the date of the ITB, except as limited to type class or grade, or modified in the specification, shall have full force and effect as though printed in specifications.

10. SUBSTITUTIONS

The product, equipment, materials, or methods described or noted within the bidding documents are to establish a standard of quality, function, appearance, and dimension, and shall be deemed to be followed by the words "or equal". A proposed substitute shall have approved equal attributes in all respects and the Port shall be the sole judge of the equality of the product, equipment, materials, or methods offered in the substitution. Substitution requests will only be considered during the bidding period before the date and time when questions are allowed.

11. RIGHT TO REJECT

The Port reserves the right in its sole discretion to reject the Bid of any Vendor that fails to comply with any procedures outlined in this solicitation.

12. COMMUNICATIONS

All Vendor communications concerning this acquisition shall be directed to the ITB Coordinator shown below:

Candi Engebo, Procurement Specialist
(360) 425.3305, ext. 219
cengebo@portoflongview.com

Unless authorized by the ITB Coordinator, no other Port official or Port employee is empowered to speak for the Port with respect to this solicitation. Any Vendor seeking to obtain information, clarification, or interpretations from any other Port official or Port employee other than the ITB Coordinator is advised that such material is used at the Vendor's own risk. The Port will not be bound by any such information, clarification, or interpretation. Following the Bid deadline, Vendors shall continue to direct communications to only the Port ITB Coordinator. The ITB Coordinator will send out information to responding companies as decisions are concluded.

13. QUESTIONS

Vendors are encouraged to submit any questions they may have regarding this procurement. Questions are to be submitted to the ITB Coordinator in writing no later than the date and time on the cover page, in order to allow sufficient time for the Port ITB Coordinator to consider the question before bids are due. Failure to request clarification of any inadequacy, omission, or conflict will not relieve the Vendor of any responsibilities under this Bid or any subsequent contract. It is the responsibility of the Vendor to assure that they received responses to the questions if any are issued.

14. CHANGES TO THE ITB/ADDENDA

A change may be made by the Port if, in the sole judgment of the Port, the change will not compromise the Port's objectives in this acquisition. A change to this ITB will be made by formal written addendum issued by the Port's ITB Coordinator. Addenda issued by the Port shall become part of this ITB specification and will be included as part of the final Contract. Addenda will be posted to the Port's website in the location in which the original solicitation is posted.

15. RECEIVING ADDENDA AND/OR QUESTION AND ANSWERS

The ITB Coordinator will make efforts to provide notice by posting addenda on the Port's website. Vendors are encouraged to register with the ITB Coordinator for the specific solicitation they are bidding on so email notification can be sent when changes are made. Notwithstanding efforts by the Port, it remains the obligation and responsibility of the Vendor to learn of any addenda, responses, or notices issued by the Port. Such efforts by the Port to provide notice or to make it available on the website do not relieve the Vendor from the sole obligation for learning of such material. It is the sole responsibility of the Bidder to monitor the website daily to ensure that all posted Addenda are received, reviewed, and acknowledged on the Bid Form. **ALL ADDENDA WILL BE POSTED TO THE PORT'S WEBSITE WHERE THE ORIGINAL SOLICITATION WAS POSTED.**

Some third-party services independently post Port of Longview bids on their websites. The Port does not guarantee that such services have accurately provided Vendors with all information particularly Addenda or changes to bid date/time.

16. ELECTRONIC SUBMITTAL

Bidders can submit their bid documents electronically to cengebo@portoflongview.com.

Bidders must email their bid documents by the bid opening date and time listed on Solicitation Schedule on the cover page of this solicitation document.

a. Title the email with the bid title, number and company name.
b. Any risks associated with the electronic transmission of the bid submittal are borne by the Bidder.
c. The Port e-mail system will allow documents up to, **but no larger than, 20 megabytes**.
d. The Port intends to send a confirming email in reply, however; a Bidder may also call the ITB Coordinator to confirm receipt of their bid.

17. MAIL, COURIER, DROP-OFF SUBMITTAL

Bidders can also mail or deliver their bid documents by the due date and time to:

Port of Longview
Attn: Purchasing
Solicitation Number and Name
10 International Way
Longview, WA 98632

18. BID OPENING

The Port does not conduct a formal opening when electronic submittals are allowed. Bid results will be available by request from the ITB Coordinator within 48 hours of bid closing during normal business hours.

19. BID AND PRICE SPECIFICATIONS

Vendor shall provide their Offer on forms provided by the Port, indicating unit prices for each item. In the case of difference between the unit price and the extended price, the Port shall use the unit price. The Port may correct the extended price accordingly. Unless specified otherwise on the Bid Form, Vendor shall quote prices F.O.B. Destination, with freight prepaid and allowed. All prices are to be in US Dollars.

20. DO NOT SUBMIT EXTRA COMMENTS, EXPLANATIONS, INFORMATION OR CHANGES

The Port will reject bids that the ITB Coordinator finds to be taking material exception to the Port specifications and Port contract. Therefore, do not add information or explanations on your Bid Form. Do not take exceptions, do not offer alternatives (unless the Port specifically requests), and do not mark any form with changes to specifications or the contract. Do not attach your own boilerplate. Even adding an explanation about your pricing could result in rejection of your bid. This decision will be made in the sole opinion of the ITB Coordinator. If the Bid Form doesn't seem to adequately address your concern or clarification, call the ITB Coordinator for direction.

21. PARTIAL AND MULTIPLE AWARDS

Unless stated to the contrary in the Solicitation, the Port reserves the right to name a partial and/or multiple awards, in the best interest of the Port. Vendors are to prepare pricing and offers given the Port's intention to utilize the right to a partial or multiple awards, in the best interest of the Port. Further, the Port may eliminate an individual line item when calculating award, in order to best meet the needs of the Port, if a particular line item is not routinely available or is a cost that exceeds the Port funds.

22. CONTRACT TERMS AND CONDITIONS

Vendors are to carefully review all specifications, requirements, Terms and Conditions (Attachment B), and insurance requirements. Submittal of a response is agreement to all Terms and Conditions. All specifications, requirements, terms and conditions are mandatory, and all submittals should anticipate full compliance with no exceptions to these Terms and Conditions.

23. INCORPORATION OF ITB AND BID IN CONTRACT

This ITB and the Vendor's response, including all promises, warranties, commitments, and representations made in the successful Bid, shall be binding and incorporated by reference in the Port's contract with the Vendor.

24. EFFECTIVE DATES OF OFFER

Offered prices in Bid Form must remain valid until Port completes award. Should any Vendor object to this condition, the Vendor must provide objection through a question and/or complaint to the ITB Coordinator prior to the bid closing date.

25. COST OF PREPARING BIDS

The Port will not be liable for any costs incurred by the Vendor in the preparation and presentation of Bids submitted in response to this ITB including, but not limited to, costs incurred in connection with the Vendor's participation in demonstrations and the pre-Bid conference, if applicable.

26. VENDOR RESPONSIBILITY TO EXAMINE DOCUMENTS

It is the Vendor responsibility to examine all specifications and conditions thoroughly and comply fully with specifications and all attached terms and conditions. Vendors must comply with all Federal, State, and City laws, ordinances and rules, and meet any and all registration requirements where required for Vendors as set forth in the Washington Revised Statutes. By responding to this Invitation to Bid (ITB), Vendor agrees that he/she has read and understands all documents within this ITB package.

27. VENDOR RESPONSIBILITY TO PROVIDE FULL RESPONSE

It is the Vendor's responsibility to provide a full and complete written response and Bid Form that does not require interpretation or clarification by the ITB Coordinator. The Vendor is to provide all requested materials, forms and information. The Vendor is responsible to ensure the Offer properly and accurately reflects the Vendor specifications and offering. The Port does not accept materials to supplement the bid after the bid deadline; however, this does not limit the right of the Port to consider additional materials that are obtained by the Port such as references or past experience, even if such materials were not specifically submitted by the Vendor, or to seek clarifications from the Vendor as needed by the Port.

28. CHANGES OR CORRECTIONS TO BIDS

Prior to the bid submittal closing date and time established for this ITB, a Vendor may make changes to its bid provided the change is initialed and dated by the Vendor. No change to a bid shall be made after the bid closing date and time. Note that you cannot change, mark-up or cross-out any condition, format, provision or term that appears on the Port's published Bid Form. If you need to change any of your own prices or answers that you write on the Bid Form must be made in pen, initialed, and be clear in intent. Do not use white-out.

29. CLAIM OF ERROR

A Vendor claiming error it its Bid must submit supporting evidence, including cost breakdown sheet, within 24 hours of Bid opening and provide any other supporting documentation requested by the Port. In the event the Vendor demonstrates an error in the Bid to the Port's satisfaction, the Port may allow the Bidder to withdraw its Bid.

30. WITHDRAWAL OF BID

Bid submittals may be withdrawn by written request of the submitter, prior to bid closing. After the closing date and time, the submittal may be withdrawn only with permission by the Port.

31. REJECTION OF BIDS AND RIGHTS OF AWARD

The Port reserves the right to reject any or all Bids at any time with no penalty. The Port also has the right to waive immaterial defects and minor irregularities in any submitted Bid.

32. BID DISPOSITION

All material submitted in response to this ITB shall become the property of the Port upon delivery to the ITB Coordinator.

33. MINORITY & WOMEN'S BUSINESS ENTERPRISES (WMBE)

The Port of Longview encourages participation in all of its contracts by Minority & Women's Business Enterprises (MWBE) firms either self-identified or certified by the Office of Minority & Women's Business Enterprises (OMWBE). While the Port does not give preferential treatment, it does seek equitable representation from the minority and women's business community.

Participation may be either on a direct basis in response to this Solicitation or as a Subcontractor to a Vendor. However, unless required by Federal statutes, regulations, grants, or contract terms referenced in the original Solicitation, no preference will be included in the evaluation of Bids, no minimum level of MWBE participation shall be required as a condition for receiving an award, and Bids will not be evaluated, rejected, or considered Non- Responsive on that basis.

Any affirmative action requirements set forth in Federal regulations or statutes included or referenced in the original Solicitation will apply. Vendors may contact the Office of Minority & Women's Business Enterprises (OMWBE) at http://www.omwbe.wa.gov to obtain information on certified firms for potential sub-contracting arrangements. Nothing in this section is intended to prevent or discourage Vendors from inviting participation from non-MWBE firms, MWBE firms, as well as Small and Emerging Businesses.

34. PROPRIETARY OR CONFIDENTIAL INFORMATION

To the extent consistent with Chapter 42.56 RCW, the Public Disclosure Act, Purchasing shall maintain the confidentiality of Vendor's information marked confidential or proprietary. If a request is made to view Vendor's proprietary information, The Port will notify the Vendor of the request and of the date that the records will be released to the requester unless Vendor obtains a court order enjoining that disclosure. If Vendor fails to obtain the court order enjoining disclosure, Purchasing will release the requested information on the date specified.

The Port's sole responsibility shall be limited to maintaining the above data in a secure area and to notify Vendor of any request(s) for disclosure for so long as Purchasing retains Vendor's information in the Purchasing records. Failure to so label such materials or failure to timely respond after notice of request for public disclosure has been given shall be deemed a waiver by Vendor of any claim that such materials are exempt from disclosure.

35. REQUESTING DISCLOSURE OF PUBLIC RECORDS

The Port asks Vendors, Sub-Contractors and their companies to refrain from requesting public disclosure of proposal records until an intention to award is announced. This measure is intended to shelter the solicitation process, particularly during the evaluation and selection process or in the event of a cancellation or re-solicitation. With this preference stated, the Port will continue to be responsive to all requests for disclosure of public records as required by State Law.

36. NO GIFTS AND GRATUITIES

Vendors shall not directly or indirectly offer anything of value (such as retainers, loans, entertainment, favors, gifts, tickets, trips, favors, bonuses, donations, special discounts, work, or meals) to any Port employee, volunteer or official, if it is intended or may appear to a reasonable person to be intended to obtain or give special consideration to the Vendor.

37. NO CONFLICT OF INTEREST

Vendor (including officer, director, trustee, partner or employee) must not have a business interest or a close family or domestic relationship with any Port official, officer or employee who was, is, or will be involved in selection, negotiation, drafting, signing, administration or evaluating Vendor performance. The Port shall make sole determination as to compliance.

38. BID SUBMITTALS

a. Bid Form: This response is mandatory. See Attachment A.

   i. Bids must be signed and submitted on the forms provided by the Port (Attachment A).

   ii. All blanks on the Bid Forms shall be filled in by ink or typed.

   iii. Alterations, erasures, or interlineations within the blanks, if any, shall be in ink and initialed by the signer of the Bid.

   iv. The Bidder shall make no deletions, additional conditions or stipulations on the Bid Form or qualify its Bid in any manner.

b. Bid Price

i. All prices on the Bid Form shall be in U.S. dollars.

ii. Show lump sum and unit prices as indicated on the Bid Form.

iii. For unit price bids, a price shall be submitted for each item of the Work, an extension thereof, and, if requested, the total Contract Sum.

iv. The price on the Bid Form for that item shall include everything necessary for the prosecution and completion of the item in accordance with the Contract Documents including, but not limited to, furnishing all materials, equipment, tools, transportation, plant and other facilities and all management, superintendence, labor and services, and field design, except as may be otherwise provided in the Contract Documents.

v. The quantities shown in the Bid Form and Contract are estimates and are stated only for Bid comparison purposes. The Port does not warrant expressly or by implication that the actual quantities will correspond with those estimates. Payment will be made on the basis of the actual quantities of each item ordered in accordance with the Contract requirements.

vi. Prices shall be expressed in figures only.

39. SUBMITTAL REQUIREMENTS

This checklist is for your convenience only. It does not need to be submitted with your bid. This checklist summarizes each form required to complete and submit your bid package to the Port.

Attachment A – Bid Form	Mandatory

a. **Late Bids.** Vendors have full responsibility to ensure the response arrives at the Port by the deadline. Late bids will be rejected.

b. **Electronic Submittal**
Bids may be received via email by sending to cengebo@portoflongview.com by the Bid due date and time. **It is the sole responsibility to ensure their bid was received by the deadline.**

40. EVALUATION PROCESS

The Port shall select the lowest responsive and responsible Vendor(s), and may consider multiple awards or partial awards to achieve the best overall price to the Port.

Responsiveness and Responsibility: Port Purchasing shall review submittals to determine basic responsiveness (timely submittal, signatures, all required forms submitted, etc.) and responsibility (minimum qualifications, etc.) to determine if the bid is a responsive and responsible bid. An initial review will be made after opening, however additional and more detailed reviews may also be made during evaluation and prior to contract award. The review may be made of all Vendors or only as needed to determine the lowest responsive and responsible Vendor for the purpose of award.

Specifications: Before tabulating pricing, the Port will evaluate Vendor compliance with specifications and bid requirements, and determinations of "or equal" alternates (if specifically requested). If the Port specifically requests "or equal" alternates, the Vendor is to provide sufficient materials to show that the product is equivalent, by attaching comprehensive manufacturer specifications or other appropriate materials. Separately, the ITB Coordinator may also obtain and rely upon a manufacturer line card if the ITB Coordinator needs verification that the product is compliant. In the event the manufacturer specification material differs from the Vendors response or Vendor materials, the Vendor must clearly explain in their bid why the manufacturer specification material would be different than the specifications in the Bid or the ITB Coordinator may rely upon the manufacturer specification materials alone to make the determination.

Pricing: Items on the Bid Form shall be calculated for purposes of award. Item pricing will be multiplied by the number of units required for an item total. Item totals will be totaled for all items for a tabulated total. In the event of an error in math, unit pricing will be considered the correct price and will be used. If any cost item is missing from the Bid Form, the Port reserves the right to reject that Bid or to calculate and compare bids without that cost item considered.

Delivery: Requirements warrant that lead-times may be considered to accommodate the quickest receipt of materials possible. Vendor shall specify on the attached Bid Form the delivery lead time required (in calendar days).

Tie Bids: In the event that the top two Vendors provide the same price, the Port gives preference to local products and local Vendors. When the tied Vendors are out- of- state and there are no local bidders/Vendors, or in the event two local bidders/Vendors are tied, the Procurement Coordinator will use a coin toss to determine the winner. There will be one other Port staff member to witness the coin toss.

41. AWARD AND CONTRACT EXECUTION INSTRUCTIONS

The ITB Coordinator intends to provide written notice of the intent to award in a timely manner and to all Vendors responding to the Solicitation.

42. PROTESTS AND COMPLAINTS

Protests and/or complaints are to be filed with the Procurement Manager. The Port has rules to govern the rights and obligations of interested parties that desire to submit a complaint or protest to this solicitation process. The Port's protest procedures can be found on the Port's website at: http://www.portoflongview.com/206/Contractors-Vendors

Interested parties have the obligation to be aware of and understand these rules, and to seek clarification as necessary from the Port. Note that there are time limits on protests and Vendors have final responsibility to learn of results in sufficient time for such protests to be filed in a timely manner.

43. INSTRUCTIONS TO THE APPARENTLY SUCCESSFUL VENDOR

The Apparently Successful Vendor will receive an Intent to Award notice from the ITB Coordinator after award decisions are made by the Port. The notice will include instructions for final submittals that are due prior to execution of the contract or Purchase Order.

The Vendor will be expected to provide all essential documents within ten (10) business days. This includes attaining a providing proper proof of insurance. If the selected Vendor fails to complete all the final submittals within the allotted ten (10) days, the Port may elect to cancel the intended award and award to the next ranked Vendor or cancel or reissue this solicitation. Cancellation of an award for failure to execute the Contract in the timeframes above may result in Vendor disqualification for future solicitations for this same or similar product/service.

44. FINAL SUBMITTALS PRIOR TO AWARD

The Vendor(s) should anticipate that the Letter will require at least the following. Vendors are encouraged to prepare these documents as soon as possible, to eliminate risks of late compliance.

- Supply Evidence of Insurance (if required)
- Special Licenses (if any)
- Supply a Taxpayer Identification Number and W-9 Form (if not already on file with the Port)

Attachments:

Attachment A – Bid Form
Attachment B – Terms and Conditions
Attachment C – Specifications

Attachment A – Bid Form

THE USE OF THIS FORM IS MANDATORY
NOTE: Any Alteration or Addition to the Bid Form May Invalidate the Bid

BIDDER'S NAME: _____ **DATE:** _____

☐ Individual Proprietor ☐ Partnership ☐ Joint Venture ☐ Limited Liability Company ☐ Corporation

SCHEDULE OF UNIT PRICES

ITEM NO.	ITEMS OF WORK	ESTIMATED QUANTITIES	UNITS	UNIT PRICES $	AMOUNT $
1.	Flyght Stormwater Submersible Pumps as specified	2	EA	$	$
2.	Flyght Wastewater Submersible Pumps as specified	2	EA	$	$
3.	Duplex Control Panel with Flyght Multi-Smart PLC as specified	1	EA	$	$
4.	Pre-packaged Lift Station(s) with Integrated Valve Vault(s) and Piping as specified	1	EA	$	$
				SUBTOTAL:	**$**
				WASHINGTON STATE SALES TAX @ 7.7%:	**$**
				TOTAL:	**$**

1. There are **no Buy American** requirements for this purchase.
2. It is MANDATORY that you provide a Unit Price. If there is an error between the Unit Price and Extended Price, the Port will correct the Extended Price.
3. **The bid prices shall include and cover all duties, handling and transportation charges and all charges incidental to the requested work.** Bidder shall agree to all Port contract Terms and Conditions without exception.
4. Do not mark, write-in or add any exceptions to the specifications, schedule, terms or conditions. Do not attach alternative boilerplate. Any such exceptions can invalidate your Offer and the Port can reject your Bid.
5. If you make an error in typing your prices or any corrections to your Offer Submittal, you may mark it in ink and initial the correction. If it is not marked in ink and or it is not initialed, the Port may reject your bid. Do not use whiteout.
6. Non-Collusion & Debarment Declaration – Vendor (as signed below), certifies that this proposal is genuine and not a sham or collusive proposal, or made in the interests or on behalf of any person not therein named; and that they have not directly or indirectly induced or solicited any Vendor or supplier on the above work to put in a sham proposal or any person or corporation to refrain from submitting a proposal; and that they have not in any manner sought by collusion to secure an advantage over any other Vendor(s) or person(s). Vendor further certifies that, except as noted below, the firm, association or corporation or any person in a controlling capacity associated therewith or any position involving the administration of federal funds; is not currently under suspension, debarment, voluntary exclusion, or determination of eligibility by any federal agency; have not been suspended, debarred, voluntarily excluded or determined ineligible by any federal agency within the past three years; does not have proposed debarment pending; and has not been indicted, convicted or had a civil judgment rendered against said person, firm, association or corporation by a court of competent jurisdiction in any matter involving fraud or official misconduct within the last three years. Exceptions will not necessarily result in denial of award but will be considered in determining bidder responsibility. For any exception noted, indicate above to whom it applies, initiating agency, and dates of action. Providing false information may result in criminal prosecution or administrative sanctions. "A

suspending or debarring official may grant an exception permitting a debarred, suspended, or excluded person to participate in a particular transaction upon a written determination by such official stating the reason(s) for deviating from the Presidential policy established by Executive Order 12459…" (49CFR Part 29 Section 29.215).

Bidder has examined copies of the Bid Documents and of the following Addenda (receipt of which is hereby acknowledged):

IMPORTANT: EACH ADDENDUM MUST BE ACKNOWLEDGED

Date	Number

VENDOR WARRANTS FULL DELIVERY _____ DAYS AFTER RECEIPT OF ORDER.

FULL DELIVERY MUST OCCUR NO LATER THAN AUGUST 6, 2026

By submitting a Bid, VENDOR warrants that prices, terms and conditions will be firm for acceptance for a period of **60 days** from the bid opening date.

I, the undersigned, having carefully examined the Invitation to Bid, propose to furnish materials, equipment, supplies and/or services as set forth herein.

Mailing Address, City, State, Zip Code _____

Telephone Number _____ Fax Number _____

Unified Business Identifier (UBI) No. _____ Federal Tax ID _____

Email Address _____

Full Legal Name of Company _____

Signed by _____

Printed Name _____ Date _____

ATTACHMENT B – TERMS AND CONDITIONS

1. **ACCEPTANCE:** THIS ORDER IS THE PORT OF LONGVIEW'S (PORT) OFFER TO VENDOR. ACCEPTANCE OF THIS ORDER IS EXPRESSLY LIMITED TO THE TERMS AND CONDITIONS STATED HEREIN. ALL ADDITIONAL OR DIFFERENT TERMS PROPOSED BY VENDOR ARE OBJECTED TO AND ARE HEREBY REJECTED, UNLESS OTHERWISE AGREED TO IN WRITING BY THE PORT PROCUREMENT MANAGER. THE TERMS STATED IN THIS PURCHASE ORDER SHALL BECOME A BINDING CONTRACT ON THE TERMS SET FORTH HEREIN WHEN IT IS ACCEPTED BY VENDOR'S RETURN TO THE PORT OF A SIGNED ACKNOWLEDGMENT OR COMMENCEMENT BY VENDOR OF WORK ON, OR SHIPMENT OF, ANY OF THE GOODS OR SERVICES ORDERED HEREBY. VENDOR ACKNOWLEDGES AND AGREES THAT THESE GENERAL PROVISIONS ARE INCORPORATED IN, AND ARE A PART OF, EACH PURCHASE ORDER OR OTHER AGREEMENT RELATING TO THE PROVISION OF GOODS AND/OR RELATED SERVICES BY VENDOR. THESE GENERAL PROVISIONS SUPERCEDE ALL CONFLICTING OR ADDITIONAL TERMS PRE-PRINTED ON ANY ORDER, QUOTE, INVOICE, OR OTHERWISE SET FORTH ON ANY RELEASE, ACKNOWLEDGEMENT, CONFIRMATION, REQUISITION, WORK ORDER, SHIPPING INSTRUCTION, SPECIFICATION AND SIMILAR DOCUMENT OR COMMUNICATION.
2. **QUALITY STANDARDS:** Special brands, when named, are intended to describe the standard of quality, performance, or use desired. Unless clearly stated otherwise. Vendor's proposed "equal" may be considered by the Port, provided that Vendor specifies the brand, model, and provides the necessary descriptive literature sufficient to enable the Port to evaluate the proposed equal. If the Port elects to purchase a brand represented by Vendor to be an equal, the Port's acceptance of the item will be conditioned on the Port's inspection and testing after receipt. If, in the sole judgment of the Port, the item is determined not to be an equal, the item shall be returned at Vendor's expense and the substitution will be disallowed and/or the contract canceled without any liability whatsoever to the Port.
3. **CHANGES:** No alteration by Vendor of the terms, conditions, delivery, price, quality, quantities, or specifications of either the goods or service for this order will be effective without the prior written consent of the Port. Unauthorized substitutions will be made entirely at Vendor's risk and at the Port's option, may be returned without prior authorization at Vendor's expense.

   The Port may, at any time, by written notice to Vendor, make changes in any of the following: specifications, designs, drawings, samples, or other descriptions to which the goods or service must conform; methods of shipment or packing; or time or place of delivery. Within fifteen (15) days after the Port gives such notice, Vendor shall notify the Port in writing of any increase or decrease in the cost of, or the time required for performance of, any part of this order caused by any such change. An equitable adjustment, if any, in the price or delivery schedule, or both, shall be agreed upon in a written amendment to this order signed by the Port. Nothing in this paragraph, including any disagreement with the Port as to the equitable adjustment, shall excuse Vendor from proceeding without delay to perform this order as changed.
4. **AUDIT AND ACCESS TO RECORDS:** The Vendor shall maintain books, ledgers, records, documents or other evidence relating to the costs and/or performance of the Agreement ("records") on a generally recognized accounting basis and to such extent and in such detail as will properly reflect and fully support all fees, costs and charges.

   With regard to the records, Vendor shall do and require its employees, agents and subcontractors to do the following:

   a. Make such records open to inspection or audit by representatives of the Port during the term of this Agreement and for a period of not less than three years after the expiration of this Agreement.
   b. Retain such records for a period of not less than three years after the expiration of this Agreement; provided, however, if any litigation, claim, or audit arising out of, in connection with, or related to this Agreement is initiated, such records shall be retained until the later of (i) resolution or completion of litigation, claim or audit; or (ii) six years after the date of termination of this Agreement.
   c. Provide adequate facilities reasonably acceptable to representatives of the Port conducting the audit so that such representatives can perform the audit during normal business hours.
   d. Make a good faith effort to cooperate with representatives of the Port conducting the audit. Cooperation shall include assistance as may be reasonably required in the course of inspection or audit, including access to personnel with knowledge of the contents of the records being inspected or audited so that the information in the records is properly understood by the persons performing the inspection or audit. Cooperation shall also include establishing a specific mutually agreeable timetable for making the records available for inspection by the Port's representatives. If the Vendor cannot make at least some of the relevant records available for inspection within seven (7) days of the Port's written request, cooperation will necessarily entail providing the Port with a reasonable explanation for the delay in production of records.
5. **HANDLING:** No charges will be paid by the Port for handling, which includes, but is not limited to packing, wrapping, bags, containers, reels, etc., unless otherwise specified herein.
6. **DELIVERY:** TIME IS OF THE ESSENCE AND THIS ORDER IS SUBJECT TO CANCELLATION BY THE PORT FOR VENDOR'S FAILURE TO DELIVER ON TIME. For any exception to the delivery date specified in this order, Vendor shall give prior written notification and obtain written approval therefore from the Port. The acceptance by the Port of later performance with or without objection or reservation shall nether waive the Port's right to claim damages for such breach nor constitute a waiver of the requirements for the timely performance of any obligation remaining to be performed by Vendor.
7. **SHIPPING INSTRUCTIONS:** Unless otherwise specified in this order, all goods are to be shipped prepaid, FOB Destination. When shipping addresses specify room number, Vendor shall make such delivery thereto without additional charge. If the Port grants specific

authorization to ship goods FOB Shipping Point, Vendor agrees to prepay all shipping charges, route the goods by cheapest common carrier, and bill the Port as a separate item on the invoice for said charges, less federal transportation tax. It is also agreed that the Port reserves the right, at its sole option, to refuse COD shipments.

8. **IDENTIFICATION:** The purchase order number shall appear on all invoices, packing lists, packages, shipping notices, instruction manuals and other written documents relating to this order. Packing lists shall be enclosed in each and every box or package shipped pursuant to this order, indicating the content therein.
9. **INVOICING:** Invoices are to detail the services performed each month and must identify the Contract number or Purchase Order number on the invoice. Submit invoices electronically to dmartin@portoflongview.com and cengebo@portoflongview.com. The contract number shall be printed on the invoice.
10. **RISK OF LOSS:** Regardless of the FOB Point specified above, Vendor agrees to bear all risk of loss, injury or destruction of goods and services ordered herein which occur prior to full system acceptance by the Port, and such loss, injury, or destruction shall not release Vendor from any obligation hereunder.
11. **FORCE MAJEURE:** Vendor will not be responsible for delays in delivery due to acts of God, fire, strikes, epidemics, war, riot, delay in transportation or railcar transport shortages PROVIDED VENDOR NOTIFIES THE PURCHASING AGENT, IMMEDIATELY IN WRITING OF SUCH PENDING OR ACTUAL DELAY. Normally, in the event of any such delays (acts of God, etc.) the date of delivery will be extended for a period equal to the time lost due to the reason for delay.
12. **REJECTION:** All goods and any services purchased in this order are subject to approval by the Port. Rejection of goods or services, resulting because of nonconformity to the terms, conditions, and specifications of this order, whether held by the Port or returned, will be a Vendor's risk and expense.
13. **PAYMENT:** The Port does not accept requests for early payment, down payment, or partial payment, unless the ITB specifically allows such. A separate invoice is required for each order. Vendor shall invoice only for goods that have been delivered or services that have been performed. Unless otherwise agreed to, payment shall be net 30 days following acceptance of the goods or services, and a correctly completed invoice, which is later. The determination of a correctly completed invoice as at the sole discretion of the Port. All payments to Vendor shall be remitted by mail.
14. **TAXES:** Unless otherwise indicated in this order, the Port agrees to pay all applicable State of Washington sales or use tax. The Port is exempt from Federal excise taxes and an exemption certificate will be furnished upon request. The price for goods and services hereunder shall include all other applicable federal, state and local taxes, except those for which an exemption may be claimed by the Port.
15. **CASH DISCOUNT:** If the Port is entitled to a cash discount, the period for computation of such discount will commence on the date of acceptance of the goods or services, or receipt of a correctly completed invoice, whichever is later. If an adjustment in payment is necessary due to damage to the goods, or non-performance of services, the cash discount period shall commence on the date final approval for payment is authorized by the Port. If a discount is made part of the contract, but the invoice does not reflect the existence of a cash discount, the Port is entitled to a cash discount with the period commencing on the date it is determined by the Port that a cash discount applies.
16. **INSTALLATION:** If this order requires Vendor to install the goods, such installation services shall be performed in a good and workmanlike manner, and the premises shall be left in a clean condition. Vendor agrees to either repair or compensate the Port, at the Port's option, for any damage done to Port property in connection with the installation.
17. **WARRANTIES:** Unless otherwise specified by the Port in writing, all products and services shall be warranted against defects or faulty workmanship and materials by the Vendor for one (1) year following acceptance of the products by the Port. Warranty shall include all costs incurred, including shipping, for repair or replacement except that which is damaged by misuse or abuse. This one-(1) year warranty shall in no way affect normal extended or manufacturer's warranty exceeding this one (1) year period. Vendor warrants that all goods and services furnished under this Agreement are new, conform strictly to the specifications herein, are merchantable, good workmanship, free from defect, comply with all applicable safety and health standards established for such products, all goods are properly packaged, and all appropriate instructions or warnings are supplied. If a defect is found, a component failure occurs, or workmanship is found to cause failure, the Vendor shall replace the product at their own expense, including shipping charges. Any replacement product will be warrantied for one (1) year from the date it is delivered. All implied and expressed warranty provisions of the Uniform Commercial Code are incorporated into this Agreement. The Port of Longview will deal only with the Vendor and not with second or third parties supplying to the Vendor, insofar as guarantees are concerned. Manufacturer's warranties/product liability responsibilities apply in addition to the terms addressed in the contract.
18. **LIENS, CLAIMS, AND ENCUMBRANCES:** Vendor warrants and represents that all goods delivered, or services performed herein are free and clear of all liens, claims, or encumbrances of any kind.
19. **INDEMNIFICATION AND HOLD HARMLESS:**
    a. Vendor shall defend, indemnify, and hold harmless the Port, its Commissioners, officers, employees, and agents (hereafter, collectively, the "Port") from all liability, claims, damages, losses, and expenses (including, but not limited to attorneys' and consultants' fees and other expenses of litigation or arbitration) arising out of or related to the fulfillment of this order (including, without limitation, product liability claims by persons who may subsequently purchase the goods or services from the Port, claims for patent, trademark, copyright, trade or franchising infringement, and from all claims arising from Vendors failure to comply with

paragraphs 26, 27, 28 and 29 of this order); Provided, however, if and to the extent that this order is construed to be relative to the construction, alternation, repair, addition to, subtraction from, improvement to, or maintenance of, any building, road, railroad, excavation, or other structure, project, development, or improvement attached to real estate, including moving or demolition in connection therewith, and therefore subject to Section 4.24.115 of the Revised Code of Washington, it is agreed that where such liability, claim, damage, loss or expense arises from the concurrent negligence of (i) the Port, and (ii) Vendor, its agents, or its employees, it is expressly agreed that Vendor's obligations of indemnity under this paragraph shall be effective only to the extent of Vendor's negligence. Such obligations shall not be construed to negate, abridge, or otherwise reduce any other right or obligation of indemnity which would otherwise exist as to any person or entity described in this paragraph. This paragraph shall not be construed so as to require Vendor to defend, indemnify, or hold harmless the Port from such claims, damages, losses or expenses caused by or resulting from the sole negligence of the Port.

b. In any and all claims against the Port, by any employee of Vendor, its agent, anyone directly or indirectly employed by either of them, or anyone for whose acts any of them may be liable, the indemnification obligation of subparagraph "a" above shall not be limited in any way by any limitation on the amount or type of damages, compensation benefits payable by or for Vendor, or other person under applicable industrial insurance laws (including, but not limited to Title 51 of the Revised Code of Washington), it being clearly agreed and understood by the parties hereto that Vendor expressly waives any immunity Vendor might have had under such laws. By executing the order Vendor acknowledges that the foregoing waiver has been mutually negotiated by the parties.

c. Vendor shall pay all attorneys' fees and expenses incurred by the Port in establishing and enforcing the Port's right under this paragraph, whether or not suit was instituted.

20. **TERMINATION/CANCELLATION:**

a. **TERMINATION FOR CONVENIENCE:** The Port may terminate this order, in whole or in part, for the Port's convenience at any time and for any reason by giving a written termination notice to Vendor and the Port's payment to Vendor of termination charges computed in the following manner: (i) a sum computed and substantiated in accordance with standard accounting practices for those reasonable costs incurred by Vendor prior to the date of termination, for orderly phase out of performance as requested by the Port in order to minimize the costs of the termination; and (ii) a reasonable profit for such work performed; HOWEVER THE PORT SHALL NOT BE LIABLE TO VENDOR FOR ANY ANTICIPATED PROFITS ON THE TERMINATED PORTION OF THE ORDER, OR CLAIMS OF UNABSORBED OVERHEAD OR OTHER FIXED COSTS. IN NO EVENT SHALL THE PORT BECOME LIABLE TO PAY ANY SUM IN EXCESS OF THE PRICE OF THIS ORDER FOR THE TERMINATED GOODS OR SERVICES.

b. **CANCELLATION FOR BREACH:** Except in the case of delay or failure resulting from circumstances beyond the control and without the fault or negligence of Vendor or its Vendors, services, or subcontractors, the Port shall be entitled, by written or oral notice the Vendor, to cancel the whole or any part of this order for breach of any of the terms of this order, and to have all other rights against Vendor by reason of Vendor's breach as provided by law.

c. A breach shall mean any one or more of the following events (i) Vendor fails to make delivery of any of the goods or perform the service by the date required or by such later date as may be agreed to in a written amendment to the order signed by the Port; (ii) Vendor breaches any warranty, or fails to perform or comply with any term or agreement, in the order; (iii) Vendor makes any general assignment for the benefit of creditors; (iv) in the Port's sole opinion, Vendor becomes insolvent or in an unsound financial condition so as to endanger performance hereunder; (v) Vendor becomes the subject of any proceeding under any law relating to bankruptcy, insolvency or reorganization or relief from debtors; or (vi) any receiver, trustee or similar official is appointed for Vendor or any of Vendor property.

d. If it be found that Vendor was not in breach, the rights and obligations of the parties shall be the same as if a Notice of Termination had been issued pursuant to subparagraph 22.a.

21. **REMEDIES:** Any decisions by the Port to pursue any remedy provided for in paragraph 21.a and 21.b herein shall not be construed to bar the Port from the pursuit of any other remedy provided by law or equity in the case of similar, different or subsequent breaches of this order.

22. **WAIVER:** Failure at any time of the Port to enforce any provision of this order shall not constitute a waiver of such provision or prejudice the right of the Port to enforce such provision at any subsequent time. No term or condition of this order shall be held to be waived, modified or deleted except by a written instrument signed by the parties hereto.

23. **PARTIAL INVALIDITY:** If any provision of this order is or becomes void or unenforceable by force or operation of law, all other provisions hereof shall remain valid and enforceable.

24. **COMPLIANCE WITH ALL LAWS:** Vendor shall comply with all applicable federal, state and local laws, statutes, rules, regulations ordinances, and orders.

25. **NON-DISCRIMINATION:** During the performance of providing goods or services related to this order, the Vendor and its subcontractors, if used, shall not discriminate on the basis of race, color, sex, sexual orientation, religion, national origin, creed, marital status, age or the presence of any sensory, mental or physical handicaps in employment or application for employment or in the administration or delivery of services or any other benefits under the Agreement except to the extent permitted by bona fide occupation qualifications.

26. **HAZARDOUS MATERIALS:** If this order covers goods which include hazardous chemicals, Vendor shall, at the time of product delivery, provide the Port with copies of Material Safety Data Sheets ("MSDS") for such chemicals. These sheets shall be in the form then required

by applicable law or regulation (see WAC 296-62-05413). This requirement shall be in addition to whatever other requirements are imposed by law or regulation.

27. **PUBLIC DISCLOSURE:** As a public agency, the Port is subject to public disclosure laws. Vendor agrees that pursuant to the Washington State Public Disclosure Act, Chapter 42.56 of the Revised Code of Washington, the Port may be required to disclose information provided by Vendor. The Port shall promptly notify Vendor of any requests for public disclosure of documents and information pursuant to the law. Vendor shall be responsible for and bear the costs of taking legal action to prevent disclosure of such documents and information. In no event shall the Port be liable to Vendor for disclosure of Vendor's documents and information it deems disclosable under the law.
28. **GOVERNING LAW/VENUE:** The laws of the State of Washington shall govern disputes concerning this order and the venue of any action relating hereto shall be in the Superior Court for the County of Cowlitz, State of Washington.
29. **ANTITRUST ASSIGNMENT CLAUSE:** Vendor and the Port recognize that in actual economic practice, overcharges resulting from antitrust violations are in fact usually borne by the Port. Vendor therefore hereby assigns to the Port any and all claims for such overcharges as to goods purchased in connection with this order, except as to overcharges which result from antitrust violations commencing after the price is established under this order and which are not passed on to the Port under an escalation clause.
30. **SUBCONTRACTING/ASSIGNMENT:** Vendor shall not subcontract or assign its obligations under this order without the prior written consent of the Port.
31. **FREIGHT:** Unless otherwise specified, prices are F.O.B. destination, with freight prepaid and included.
32. **PREVAILING WAGES:** If the requirement of Washington State Prevailing Wages indicated as a requirement in the Invitation to Bid, Vendor shall comply with the requirements of RCW 39.12 regarding the payment of prevailing wages, including the requirements to deliver a Statement of Intent to Pay Prevailing Wages and to post notice of such intent **prior to commencement of work**, and to file and Affidavit of Wages Paid after completion of the work. The State of Washington prevailing wage rates applicable for public works projects located in Cowlitz County (or the County in which the work is performed if non-standard prefabricated materials are a portion of the order) and may be found at the following website address of the Department of Labor and Industries: https://lni.wa.gov/licensing-permits/public-works-projects/prevailing-wage-rates/. The applicable effective date for prevailing wages is due the date in which the bid is due. A copy of the applicable prevailing wage rates are also available for viewing at the office at the Owner, located at 10 International Way, Longview, WA 98632. Upon request, the Port will mail a hard copy of the applicable prevailing wages for this project.
33. **CONFLICT AND SEVERABILITY:** In the event of conflict between contract documents and applicable laws, code, ordinances or regulations, the most stringent or legally binding requirement shall govern and be considered a part of this contract to afford the Port of Longview maximum benefits. Any provision of this document found to be prohibited by law shall be ineffective to the extent of such prohibition without invalidating the remainder of the document. In case of conflict between Terms, the Terms in the Port of Longview order shall take precedence.
34. **INSURANCE:** If indicated, vendor shall at a minimum procure Commercial General Liability Insurance to include products liability with a limit of $1,000,000 and name the Port as an additional insured on a primary and non-contributory basis. Failure by the Port to request the Certificate of Insurance documenting this coverage shall not be construed as a waiver of such requirement.
35. **CERTIFICATION REGADING SUSPENSION, DEBARMENT, INELEGIBILITY OR VOLUNTARY EXCLUSION:**
    a. Pursuant to 2 CFR 200.213, the Vendor, by accepting this Purchase Order, certifies that it is not suspended, debarred, proposed for debarment, declared ineligible or otherwise excluded from contracting with the federal government, or from receiving contracts paid for with federal funds. If the Vendor is unable to certify, they must provide an explanation as to why they cannot prior to accepting this agreement. The Vendor shall provide immediate written notice to the Port if at any time the Vendor learns that its certification was erroneous or has become erroneous by reason of changed circumstances, or have received notice that they have been suspended, debarred, proposed for debarment, declared ineligible or otherwise excluded from contracting with the federal government, or from receiving contracts paid for with federal funds. The terms covered transaction, debarred, suspended, ineligible, lower tie covered transaction , participant person, primary covered transaction, principal, proposal, and voluntarily excluded, as used in this clause, have the meaning set out in 2 CFR 180.
    b. The Vendor agrees it shall not knowingly enter into any lower tier covered transaction with a person who is proposed for debarment under the applicable Code of Federal Regulations, debarred, suspended, declared ineligible, or voluntarily excluded from participation in this covered transaction. Pursuant to 2 CFR 180.330, the Vendor is responsible for ensuring that any lower tier covered transaction complies with certification suspension and debarment requirements. The Vendor agrees that it will include this clause without medication in all lower tier covered transactions.
36. **TIME:** The parties expressly agree that time is of the essence of this contract, and that any unexcused delay in the completion of work will cause inconvenience and expense to the Port, its lessees, and other users of its facilities. Any extension of delivery and completion time under this contract must have written approval of the Port of Longview. In the event of delay in completion of the work caused by acts of God, of the public enemy, of the Port of Longview, of another Vendor in the performance of a contract with the owner, or caused by fires, floods, epidemics, quarantine restrictions, strikes, freight embargoes or weather, the sole remedy of the Vendor will be an equitable extension of time allowed for completion.
37. **VENDOR AUTHORITY AND INFRINGEMENT:** Vendor has authorization to sell under this Contract, only those services stated herein and allowed for by the provisions of this Contract. Vendor shall not represent to any Port employees that they have the Contract authority

to sell any other materials, supplies, services, and/or equipment. Further, Vendor may not intentionally infringe on other established Port Contracts.

38. **ENTIRE AGREEMENT:** This order constitutes the entire understanding between the Port and Vendor with respect to the purchase and sale of the goods and any services and supersedes all previous negotiations, commitments and writings with respect thereto.

ATTACHMENT C - SPECIFICATIONS

PART 1 – GENERAL

1.01 RELATED DOCUMENTS – NOT USED

1.02 SUMMARY

A. **Scope –** This section provides material requirements for providing two submersible stormwater pumps and two submersible wastewater pumps complete with motor, controls, guide rail system, valves, and all appurtenances, in conjunction with concrete wet well and valve vault structures, to make two complete pre-packaged systems for pumping of stormwater and wastewater. Pump stations shall be as small as practicable due to limited equipment access, installation location size and adjacent utilities constraints. Furnish complete, tested and operating, pre-packaged pump stations as a substitute for the combined structure pumping facilities shown on the Drawings and as specified herein. Furnish all control devices complete, including as applicable, enclosures, engraved escutcheons or nameplates, gaskets, lenses, lamps and mounting provisions. Materials shall be delivered to the project site. The material will be unloaded by others.

B. **General –** This section provides the material requirements and performance criteria for the production and inspection of the pumps, controls, and structures to be furnished and installed in accordance with the Contract Documents. The Scope of Work covered by this Technical Specification shall include, but is not limited to the design, supply, manufacture, and delivery as specified herein.

Pump Scope of Supply		
Pump Tag	**Description**	**Requirements**
P-B5-SWP1	B5 Stormwater Pump 1	Pump/Motor and Controls*
P-B5-SWP2	B5 Stormwater Pump 2	Pump/Motor and Controls*
P-B5-IWP1	B5 Industrial Wastewater Pump 1	Pump/Motor and Controls*
P-B5-IWP2	B5 Industrial Wastewater Pump 2	Pump/Motor and Controls*

* As part of pre-packaged pump station

1.03 REFERENCES

A. National Electrical Manufacturers Association (NEMA):

1. ICS1 General Standards for Industrial Controls and Systems
2. ICS2 Standards for Industrial Control Devices, Controllers and Assemblies
3. ICS6 Enclosures for Industrial Controls and Systems

1.04 SUBMITTALS

The Manufacturer shall submit the following information:

A. Shop Drawings and Product Data: Submit the following as a single complete initial submittal:

1. Product data fully describing all items proposed for use to demonstrate that the equipment conforms to the Specifications, including drawings, specifications, installation and design details, and catalogue cut-sheets. Include a list of materials of construction for all components.
2. Shop Drawings: Submit signed and sealed structural calculations and detailed drawings for the attachments and anchorage to the structure of the equipment and appurtenances in this Section.
3. System layouts and/or schematics, including connection and installation details of discharge chutes.
4. Elementary and connection wiring diagrams clearly showing external connections to other equipment.
5. Control description and control logic diagram.

B. Manuals: The contractor shall furnish the manufacturer's installation, lubrication, operation and maintenance manuals, bulletins, and spare parts lists.

C. Affidavits: The Contractor shall furnish affidavits from the Manufacturer stating that the pumps have been properly installed and tested, and each is ready for full time operation.

D. Performance Testing: Certified non-witnessed factory performance tests in accordance with Hydraulics Institute Standards are required for each pump. Obtain favorable review from the engineer prior to shipment of the pump.

E. Provide a computer program generated Pump Performance Curve with the System Curve superimposed. For constant speed pumps, show the maximum speed curve superimposed over the system curve for average lift station conditions. See Appendix 1 -- System Curves for system curve data.

PART 2 – PRODUCTS

2.01 GENERAL

A. Pumps and pump controllers shall be manufactured by Xylem Flygt, modified to provide the specified features and to meet the specified operating conditions. No alternate manufactures or substitutes shall be permitted.

B. All control devices shall conform to applicable provisions of NEMA Standards ICS1 and ICS2 and shall be provided by the pump supplier to ensure compatibility.

C. For pump and motor combinations P-B5-SWP1 / P-B5-SWP2 **&** P-B5-IWP1 / P-B5-IWP2, Section 2.02 through Section 2.10 applies. These pumps/motors are part of an integrated solution including a pre-packaged pair of pump stations, control panel, and controls.

D. The pre-packaged pump stations are intended to serve as a substitute for the conventional pump stations and valve vault combinations depicted in the attached drawings, Appendix 2 – Design Drawings Sheets C7 and CD1. All castings must include penetrations for incoming and outgoing pipes as specified and at same elevations. Pump stations shall be as small as practicable due to limited equipment access, installation location, and adjacent utilities constraints.

2.02 SUBMERSIBLE PUMPS

A. Pumps specified herein shall be a heavy duty, submersible, non-clog, centrifugal, quick disconnect sump pump. The pump shall be capable of operating in the range of capacity specified on a continuous basis with no detrimental effects to the pump or motor.

B. Pump Schedule: The pump operating characteristics shall be as follows:

Pump Title	**Stormwater Pumps**
Pump Numbers	P-B5-SWP1**,** P-B5-SWP2
Maximum Flow Rate & TDH	270 gpm @ 15.1 ft TDH
Pump Operating Point	158 gpm @ 31.0 ft TDH
Minimum Pump Flow Rate & TDH	153 gpm @ 31.7 ft TDH
Shutoff Head	51.0 ft
Maximum Synchronous Speed	1,750 rpm
Pump Drive Type	Constant Speed
Nominal Motor Horsepower / Voltage	7.5 hp / 460V
Basis of Design	Flygt Model No. NP3127 SH 3 – Adaptive 446

Pump Title	Wastewater Pumps
Pump Numbers	P-B5-IWP1, P-B5-IWP2
Maximum Flow Rate & TDH	475 gpm @ 27.0 ft TDH
Pump Operating Point	313 gpm @ 64.3 ft TDH
Minimum Pump flow Rate & TDH	306 gpm @ 65.4 ft TDH
Shutoff Head	136.0 ft
Maximum Synchronous Speed	3,510 rpm
Pump Drive Type	Constant Speed
Nominal Motor Horsepower / Voltage	11 hp / 460V
Basis of Design	Flygt Model No. NP3127 SH 3 – Adaptive 249

C. Pump Construction:

1. General: The pumps shall be designed to permit sump-top removal of pumping units from the wet well for inspection or service without disconnecting or disturbing the discharge piping. The pump connection shall be metal to metal or with secondary O-ring seal. The design shall permit the pumps when lowered into place, guided by no less than two guide bars extending from the top of the station to the discharge connections, to be automatically connected to the discharge piping by positively locking the volute in position to prevent any axial or lateral movement. There shall be no need for personnel to enter the wet well when pump inspection or service is required. Pump assembly, including motor, pump and cable accessories must be rated for Class 1, Division 2 hazardous environment, explosion proof, group C & D.

2. Piping, Fittings, and Appurtenances: Each pump shall be furnished with quick-disconnect discharge elbow, Schedule 40 pipe rails, upper guide rail bracket, intermediate guide rail bracket, and rail-guided lifting assembly. Lifting assembly shall include a stainless steel cable connected to a short length of high tensile strength chain attached to the lifting bale of the pump. A lifting eye shall be provided that can be attached to the hook of an external hoist. The lifting eye shall be designed to be guided down the stainless steel cable to the pump where it will engage in the pump lifting chain. The lifting system will then allow the pump to be removed from the wet well in one continuous operation and without the need to reposition the lifting device on the pump lifting chain. Each pump lifting assembly shall be furnished with a stainless steel hook to be installed at the lift station wet well lid. The hook shall be of sufficient size and strength to support and hold the lifting chain allowing for easy access and prevent the chain from falling in the wet well. All guide rail components, lifting assembly, and fasteners shall be type 304 stainless steel.

3. Pump Castings: Major pump components shall be of grey cast iron, ASTM A-48, Class 35B, with smooth surfaces devoid of blowholes or other irregularities. All exposed nuts or bolts shall be of Type 304 stainless steel construction. All metal surfaces coming into contact with the pumpage, other than stainless steel or brass, shall be protected by a factory applied spray coating of acrylic dispersion zinc phosphate primer with a polyester resin paint finish on the exterior of the pump. Castings shall be of cast iron or semi-steel of uniform quality and free from blowholes, porosity, hard spots, shrinkage defects, cracks and other injurious defects. The casings shall be designed to permit replacement of wearing parts. Joints shall be properly sealed with O-rings and shall not leak under a test pressure equal to 50 percent greater than the pump discharge pressure or the total dynamic head, whichever is greater. Passageways shall permit smooth flow and shall be free from sharp turns and projects.

4. Impellers: Impellers shall be of cast iron, cast steel, or an alloy suitable for the service required. The impellers shall be dynamically balanced, semi-open, multi vane, back swept, chopper-style, non-clog design

capable of handling solids, fibrous materials, heavy sludge and other matter normally found in wastewater. The impeller leading edges shall be mechanically self-cleaned automatically upon each rotation. The impeller inlet shall be smooth and free flowing and shall have sufficient clearance to permit objects in the sewage that enter the pump to pass into the discharge pipe. Each impeller shall be accurately fitted and keyed, splined, or threaded on the shaft, and locked in such a manner that lateral movement will be prevented and reverse rotation will no cause loosening. The impeller shall be locked to the shaft, held in place by an impeller bolt. The impeller bolt shall be designed such that the bolt head does not catch and collect rags or debris.

5. Balance: All rotating parts of the equipment shall be in such balance, mechanically and hydraulically, as to operate throughout the required range without excessive end thrust, vibration or noise.

6. Shafts: Shafts shall be steel, single piece units of sufficient size and strength to perform the work required, and provided with alignment bearings.

7. Bearings: The integral pump/motor shaft shall rotate on two bearings. The motor bearings shall be sealed and permanently grease lubricated with high temperature grease. The upper motor bearing shall be a single ball type bearing to handle radial loads. The lower bearing shall be a two row angular contact ball bearing to handle thrust and radial forces. The minimum L^{10} bearing lift shall be 50,000 hours at any unusable portion of the pump curve. Bearings subject to submersion shall be ball bearings manufactured from high-grade bearing alloy. Bearing shall have a minimum B-10 lift of 18,000 hours.

8. Mechanical Seals: Pump shall be equipped with a positively driven dual, tandem mechanical shaft seal consisting of two seal sets, each having an independent spring. The lower primary seal, located between the pump and seal chamber, shall contain one stationary and one positively driven rotating corrosion resistant tungsten-carbide ring. Each seal interface shall be held in place by its own spring system. The seals shall not depend upon direction of rotation for sealing. Mounting of the lower seal on the impeller hub is not acceptable. Each pump shall be provided with a lubricant chamber for the shaft sealing system. The lubricant chamber shall prevent overfilling and the drain and inspection plugs shall have positive anti-leak seals and be easily accessible from the outside. The seal system shall not rely upon the pumped media for lubrication.

9. Cooling System: Each pump shall be cooled by the ambient environment.

10. Electrical Motors: Motors shall be manufactured by the pump manufacturer, submersible, inverter duty rated where necessary, 230 volt or 460 volt, 3 phase, 60 Hz. Electric motor wiring shall be pre-wired with an attached 60-foot long pigtail power supply cord.

11. Provide Mini-CAS unit to monitor pump for over-temperature and leakage. Mini-CAS unit shall have an 11 pin, round base to mate with a standard 11-pin socket. The unit shall have an LED indication for power on, over-temp, and leakage conditions. An over-temp reset push-button shall be provided to allow reset of the unit. The sensor input circuity is to contain both hard wear and software filters to provide noise immunity, as well as sensor input short circuit protection.

12. Miscellaneous Metals: Bolts, nuts, anchors, washers, and all other types of supports necessary for the installation of the pump and drive unit shall be furnished and shall be of Type 304 stainless steel.

13. Shop Painting: Pump, motor, and accessories shall be factory applied and finish painted in accordance with the manufacturer's standard.

14. Cable Entry Seal: The cable entry seal design shall preclude specific torque requirements to insure a watertight and submersible seal. The cable entry shall consist of dual cylindrical elastomer grommets, flanked by washers, all having a close tolerance fit against the cable outside diameter and the entry inside diameter. The grommets shall be compressed by the cable entry unit, thus providing a strain relief function. The assembly shall provide ease of changing the cable when necessary using the same entry seal. The cable entry junction chamber and motor shall be sealed from each other, which shall isolate the stator housing from foreign materials gaining access through the pump top. Epoxies, silicones, or other secondary sealing systems shall not be considered equal.

D. Access Frame and Cover: Pump manufacturer shall coordinate requirements for guide rails and pump lifting assembly with those of the access frame and cover meeting H20 loading providing with pre-packed pump station structure.

E. Pressure Gauges:

1. Complete installation, unless otherwise shown, shall include ¾-inch plug valve isolation at the main, a diaphragm seal made specifically for solids handling service, a snubber if over 5 psi operating pressure and gauge. Provide a support plate to the nearest flange.

2. Plug Valve: Shall be DeZurik PEC, Val-Matic 5800 or equal. Connections shall be threaded.

3. Diaphragm Seal: Shall be for slurring service with flushing connection. Body shall be stainless or carbon steel. Diaphragm shall be oversized and be removable of Type 316 stainless steel. Complete unit shall be Trerice Series 600, Ashcroft Model 100; or equal.

4. Gauges and Snubbers – 0-30 psi.

5. Installation: All protectors and gauge bourdon tubes shall be evacuated of air, silicone filled at the factory and calibrated.

2.03 CONTROL AND TIMER RELAYS

A. Relays shall be provided as necessary to perform switching functions required of control panels and other control circuits. Relays shall be of the following types (abbreviations in parentheses correspond to labels on the Drawings):

1. Provide machine tool relays for the following applications:

a. All relays driving 120 Vac motor starters up to and including Size 3.

b. All relays driving non-motor loads up to 6 amps (or 720 VA).

2. Provide machine tool type relays with convertible contacts rated 10 Amps continuous with NEMA Rating Designation A600 for AC applications and N600 for DC applications. Coils shall be designed for continuous duty and shall have the voltage rating indicated on the Drawings.

3. Relays shall be the magnetically held type unless designated otherwise on the Drawings. For each relay provide one spare Form C contact over and above the number indicated on the Drawings. In addition, for latching relays, provide coil clearing contacts as necessary.

4. Manufacturer: Square D, Class 8501, Type X; General Electric CR120B; or equal.

B. General Purpose Control (GR) Relays (plug-in):

1. Provide plug-in style 2-, 3-, or 4-pole enclosed relays with integral neon or LED indicators for the following applications:

a. Relay logic (relays driving other relays, including machine tool relays) operating at voltages up to 120 Vac.

b. Control power switching.

c. All relays driving non-motor loads up to 2 amps (240 VA) at 120 Vac.

C. Timing Relays (TR) and (TD): Time Delay Relays (TD): Relay shall be solid-state with multi-range programmable settings. The relays shall include a calibrated front dial and LED indicator and shall be complete with socket. Relays shall be “on delay” or “off delay” type as indicated on the Drawings. Provide an additional form C contact over and above the number indicated on the Drawings. Relay contacts shall be rated 10 Amps, 120 Vac. Relays shall be ATC Type 328; Idec Type RTEL; or equal.

D. General Requirements:

1. Provide relays rated for 1 million operations at 10 Amp, 120 Vac, at power factor of 0.2.

2. Where timing relays or control relays require additional contacts, provide auxiliary control relays, properly sized for the application as described previously in this Section.

2.04 CONTROL PANEL ACCESSORIES

A. Relays, timers, and other internally mounted equipment shall be of the types specified in other Sections of these Specifications.

B. Panel face mounted equipment shall be of the types specified in other Sections of these Specifications. Standards: All control devices shall conform to applicable provisions of NEMA Standards ICS 1 and ICS 2.

C. Pushbuttons, Selector Switches, and Pilot Lights: Shall be heavy-duty oiltight units; each unit shall have an engraved escutcheon plate unless nameplates are indicated on the Drawings or are necessary because length of identification. Pushbuttons and selector switches shall have contacts rated 10 Amps continuous at 300 Vac, Rating Designation A600 in conformance with NEMA ICS 2. Selector switches shall have multiple contact blocks ganged together and shall be expandable for additional contact blocks.

D. Multiposition control switches shall have rotary action, round knurled handle and the number of positions and stages shown on the Drawings. They shall be suitable for panel mounting. Each position shall have a positive detent. Contacts shall have a continuous current rating of 10 Amps at 300 Vac. Switches shall have integral indicator.

E. Colors and Descriptions:

1. Indicating Lamps: Unless otherwise noted on the Drawings, the following color code and inscriptions shall be followed for the lenses of all indicating light:

Indicating Lamp Inscription	Color
ON / START	Green
OFF / STOP	Red
CLOSED	Red
LOW	Amber
FAIL	Amber
HIGH	Amber
OPEN	Green
POWER ON	White

2. Lettering shall be black on white and amber lenses. Lettering shall be white on red and green lenses.

3. Pushbuttons: Follow color-coding for indicating lamp above.

4. All unused or non-inscribed buttons shall be black. Lettering shall be black on white and yellow buttons. Lettering shall be white on black, red, and green buttons.

F. Panel Lights and Receptacles: Panels shall be internally lighted, provided with guards and a toggle switch located convenient to each access door. One duplex GFI type receptacle shall be provided in each panel section. The lights and receptacles shall be wired to outgoing terminal blocks for 120 Vac, 60 Hz, single-phase supply.

G. Nameplates: Unless specified otherwise in the Drawings, nameplates shall be black lamacoid with minimum 3/16-inch-high white letters for major area titles, 5/32-inch for component titles, and 1/8-inch for subtitles, and shall be fastened with a permanent but dissolvable adhesive or by screws.

2.05 CONTROL STATIONS

A. Provide control stations complying with NEMA ICS 6 for manual control functions as follows and as shown on the Drawings: start-stop pushbutton, Local-Off-Remote, forward-reverse-jog-stop, etc. Control stations shall include selector switches, pushbuttons, and indicators as specified in this Section.

B. Enclosures shall be as follows:

1. Dry Locations: NEMA Type 12
2. Corrosive Locations: NEMA Type 4X
3. Wet Locations: NEMA Type 4 or 4X
4. Damp Locations: NEMA Type 4 or 4x

C. Nameplates: Provide an engraved plastic nameplate for each control station and escutcheons or nameplates for devices mounted thereon.

D. Provide pushbuttons, selector switches, indicators, etc., as shown on the Drawings and as required. Provide control devices with NEMA ratings matching that of the control station.

E. Manufacturer: Provide Allen-Bradley; Eaton; or equal.

2.06 ELAPSED TIME METERS (ETM)

A. Elapsed time meters shall be of the synchronous motor-driven type having a minimum of six (6) decimal digits where the least significant digit shall represent tenths (1/10ths) of hours. Unless specified otherwise, they shall not be equipped with a reset button. They shall be for panel mounting with a square bezel approximately 2-1/2 inches on a side. Meter voltage shall be not more than 120 Vac for meters mounted in instrumentation panels. Elapsed time meters shall be Yokogawa Type 240; or equal.

2.07 WASTEWATER PUMP STATION CONTROL PANEL

A. Provide one (1) Wastewater Pump Station Control Panel. Panel shall be NEMA 4. Control Panel shall conform to the requirements of UL 508A – Industrial Control Panels.

B. Control Panel shall include the following:

1. Incoming 30A/3P power circuit breaker with through-the-door operating handle.
2. Control transformer and fuses
3. Power on indication
4. NEMA Size 0 starter with overload for each of two Wastewater Pumps
5. Hand-Off-Auto (HOA) selector switch for each pump
6. Pump Running indication for each pump
7. All 240V/480V terminations shall be guarded
8. Refer to paragraph 2.07.D for control requirements of the pumps.

C. The Control Panel will be fed from a single source of supply at 480V, 3-phase, 3-wire, 60Hz.

D. Pump controller:

1. Provide the Flygt MultiSmart Pump Station Manager. No substitutes will be allowed.
2. The MultiSmart Pump Station Manager shall be configured to operate each of the submersible sumps.
3. Provide MiniCAS II Relay or equal interface to the MultiSmart Pump Station Manager for connection to the submersible pumps for supervision of motor temperature and moisture.

2.08 CONTROL COMPONENTS

A. Level Sensing Probe:

1. Conductance level sensing probe. The probe shall be designed for wastewater wet well applications, unaffected by grease, foam, and turbulence.

2. Named Manufacturer and Model: MultiTrode, Deo-Probe, no equal to match existing.

3. Provide a probe with ten (10) sensor probes without integral pressure transducer located at the base of the probe. Provide probe with 60 feet of cable.

4. Sensors shall be located every 6 inches on the probe over the range indicated on the Drawings for pump control.

5. Highest sensor shall be at a level that indicates overflow from the pump section of the wet well, as shown on the Drawings.

B. Level Sensing Floats:

1. A separate set of floats to provide control redundancy in case of sensing probe failure. Floats shall be single pole mercury switch type, enclosed in chemical resistant polypropylene casing with a firmly bonded electrical cable protruding.

2.09 PRE-PACKAGED CONCRETE STORMWATER PUMP STATION(S)

- **GENERAL**

A. Sewage/Non-Potable Water

1. Pump Stations

a. Extent of packed pump station work required by this Section is indicated on Drawings and Schedules and by requirements of this Section. Appendix 2 shows the conventional pump station and valve vault configuration that will be substituted for the pre-packaged pump stations described in this section.

(1) Under this Section the Contractor shall furnish two smaller pre-packaged, pre-assembled pump station(s) complete with submersible pumps, precast concrete pump chamber with integral valve vault structure, slide rail pump removal system, discharge piping with required supports and fittings, discharge check and plug valves, access hatches, valve vault access ladder, liquid level controls, duplex pump control panel, internal wiring and other required appurtenances. Pump stations shall be as small as practicable due to limited equipment access and installation location size and adjacent utilities constraints.

(2) The pre-packaged pump stations shall be manufactured and pre-assembled off site to ensure product quality and consistency. The pre-package pump stations manufacturer or their distributors shall provide sole-source responsibility to the owner through the warranty period.

B. References

Where applicable, the latest editions of the following standards shall form a part of this specification to the extent referenced. The publications are referenced to in the text of this guide specification by the basic designation only.

AMERICAN ASSOCIATION OF STATE HIGHWAY AND TRANSPORTATION OFFICIALS (AASHTO)

ACI INTERNATIONAL (ACI)

ACI 211.1	Standard Practice for Selecting Proportions for Normal, Heavyweight, and Mass Concrete
ACI 211.2	Standard Practice for Selecting Proportions for Structural Lightweight Concrete
ACI 304R	Guide for Measuring, Mixing, Transporting, and Placing Concrete
ACI 305R	Hot Weather Concreting
ACI 306R	Cold Weather Concreting
ACI 309R	Consolidation of Concrete
ACI 318	Building Code Requirements for Structural Concrete
ACI 350	Code Requirements for Environmental Engineering Concrete Structures and Commentary
ACI 517.2R	Accelerated Curing of Concrete at Atmospheric Pressure

AMERICAN NATIONAL STANDARDS INSTITUTE (ASTM)

ASTM A 36	Specification for Carbon Structural Steel
ASTM A 82	Specification for Steel Wire, Plain, for Concrete Reinforcement
ASTM A 615	Specification for Deformed and Plain Billet-Steel Bars for Concrete Reinforcement
ASTM C 31	Standard Practice for Making and Curing Concrete Test Specimens in the Field
ASTM C 33	Specification for Concrete Aggregates
ASTM C 39	Test Method for Compressive Strength of Cylindrical Concrete Specimens
ASTM C 40	Test Method for Organic Impurities in Fine Aggregates for Concrete
ASTM C 70	Standard Test Method for Surface Moisture in Fine Aggregate
ASTM C 117	Standard Test Method for Materials Finer than 75 μm (no. 200) Sieve in Mineral Aggregates by Washing
ASTM C 123	Standard Test Method for Lightweight Particles in Aggregate
ASTM C 136	Test Method for Sieve Analysis of Fine and Coarse Aggregates
ASTM C 138	Test Method for Density (Unit Weight), Yield, and Air Content (Gravimetric) of Concrete
ASTM C 150	Specifications for Portland Cement
ASTM C 172	Standard Practice for Sampling Freshly Mixed Concrete
ASTM C 192	Practice for Making and Curing Concrete Test Specimens in the Laboratory
ASTM C 231	Test Method for Air Content of Freshly Mixed Concrete by the Pressure Method
ASTM C 260	Specification for Air-Entraining Admixtures for Concrete
ASTM C 494	Standard Specification for Chemical Admixtures for Concrete
ASTM C 566	Test Method for Total Evaporable Moisture Content of Aggregate by Drying
ASTM C 595	Specification for Blended Hydraulic Cements
ASTM C 617	Standard Practice for Capping Cylindrical Concrete Specimens
ASTM C 618	Specification for Coal Fly Ash and Raw or Calcined Natural Pozzolan for Use as a Mineral Admixture in Concrete
ASTM C 805	Test Method for Rebound Number of Hardened Concrete
ASTM C 857	Practice for Minimum Structural Design Loading for Underground Precast Concrete Utility Structures
ASTM C 858	Specification for Underground Precast Concrete Utility Structures
ASTM C 890	Practice for Minimum Structural Design Loading for Monolithic or Sectional Precast Concrete Water and Wastewater Structures
ASTM C 891	Practice for Installation of Underground Precast Concrete Utility Structures
ASTM C 913	Specification for Precast Concrete Water and Wastewater Structures
ASTM C 920	Specification for Elastomeric Joint Sealants
ASTM C 990	Specification for Joints for Concrete Pipe, Manholes, and Precast Box Sections Using Preformed Flexible Joint Sealants
ASTM C 1037	Practice for Inspection of Underground Precast Concrete Utility Structures
ASTM C 1064	Standard Test Method for Temperature of Freshly Mixed Concrete
ASTM C 1107	Standard Specification for Packaged Dry, Hydraulic-Cement Grout (Nonshrink)
ASTM C 1231	Standard Practice for Use of Unbonded Caps in Determination of Compressive Strength of Hardened Concrete Cylinders
ASTM C 1240	Standard Specification for Use of Silica Fume for Use as a Mineral Admixture in Hydraulic-Cement Concrete, Mortar, and Grout
ASTM C 1260	Standard Test Method for Potential Alkali Reactivity of Aggregates (Mortar-Bar Method)
ASTM C 1293	Standard Test Method for Determination of Length Change of Concrete due to Alkali-Silica Reaction
ASTM C 1602	Standard Specification for Mixing Water Used in the Production of Hydraulic Cement Concrete
ASTM C 1611	Standard Test Method for Slump flow of Self-Consolidating Concrete

CONCRETE REINFORCING STEEL INSTITUTE (CRSI)

Manual of Standard Practice

Placing Reinforcing Bars

NATIONAL PRECAST CONCRETE ASSOCIATION (NPCA)

NPCA QC Manual Quality Control Manual for Precast Concrete Plants

C. General Requirements

Precast concrete units shall be designed and fabricated by an experienced and acceptable precast concrete manufacturer. The manufacturer shall have been regularly and continuously engaged in the manufacture of precast concrete units similar to that indicated in the project specifications or drawings for at least ten (10) years with annual sales of more than $20 million. In addition, the manufacturer shall employ a professional engineer registered in the state where the product is to be installed.

D. Submittals

1. Preconstruction Submittals

    a. Upon request by the customer, submit quality control procedures established by the precast manufacturer's Quality Control Manual

2. General

    a. Submit four (4) copies of complete project submittals for the Engineer's review and approval. The submittal shall be assembled in a permanent binder, complete with index and cover, clearly identifying the Project Title, Customer, Project Engineer and submittal date. The submittal shall be compiled in a logical and organized manner.

    b. Partial or incomplete submittals will not be reviewed, but instead will be returned as "Incomplete – Revise and Resubmit".

    c. Product Data: Submit manufacturer's specific technical product data, including installation and start up instructions, furnished specialties and accessories, and pump characteristic performance curves with selection points clearly indicated. Provide structural calculations stamped by a Professional Engineer registered in the State the project is being installed.

3. Drawings

    a. Submit manufacturer's assembly-type shop drawings indicating dimensions mechanical & electrical components, complete bill of materials, structural layout & reinforcing per calculations and structural weights. Structural reinforcing drawings shall be stamped by a Professional Engineer registered in the State the project is being installed.

    b. The drawings for precast concrete units shall be furnished by the precast concrete producer for approval. These drawings shall show the design loads and standards have been met. Installation and construction information shall be included on shop drawings upon request. It is the responsibility of the project's engineer-of-record to verify that the design assumptions are suitable for the proposed application.

    c. For custom made precast concrete units, in addition to the requirements in D.2.a, the drawing for the submittal shall show locations and dimensions to all penetrations and special embed items. Product dimensions and thicknesses shall be shown, and the drawing shall be to a common architectural scale with the precast producer's information in the title block.

4. Precast Concrete Unit Data

    a. Anchorage, Lifting Inserts and Devices

        (1) For anchors, lifting inserts and other devices, the precast concrete producer shall provide product data sheets and proper installation instructions upon request.

    b. Accessory Items

        (1) For items including, but not limited to sealants, gaskets, pipe entry connectors, steps, racks, and other items installed before or after delivery, the precast concrete producer shall include proper installation instructions and relevant product data upon request.

5. Design Data

    a. The precast concrete producer shall supply submittals showing design loading and material specifications for supplied products. At a minimum, the following shall be shown on the submittals:

        (1) Live load used in design

(2) Vertical and lateral earth loads used in design

(3) Depth of soil fill on the structure

(4) Water table depth used in calculations

b. Upon request, the precast concrete producer shall supply precast concrete unit design calculations and concrete mix design proportions and appropriate mix design test data. Structural design calculations shall be sealed by a licensed professional engineer in the state of this project.

6. Test Reports

a. Upon request, the precast concrete producer shall supply copies of material certifications and/or laboratory test reports, including mill tests and all other test data, for Portland cement, blended cement, pozzolans, ground granulated blast-furnace slag, silica fume, aggregate, admixtures, and curing compound proposed for use on this project.

b. Upon request, the precast concrete producer shall submit copies of test reports showing that the mix has been successfully tested to produce concrete with the properties specified and will be suitable for the project conditions. Such tests may include compressive strength, plastic air content, temperature of freshly mixed concrete, and slump of freshly mixed concrete. Special tests for precast concrete items shall be clearly detailed in the specifications.

c. Upon request, the precast concrete producer shall supply copies of in-plant QA/QC inspection reports.

E. Design

All components of the pre-package submersible pump station with integral valve vault shall be designed for all stresses that may occur during continuous operation, and for any additional stresses that may occur during fabrication or erection. Workmanship shall be high quality in all respects. All equipment shall be constructed of materials that will maintain their functional integrity during continuous handling, and in contact with the liquids and atmosphere, likely to be encountered in this application. The following items shall be accounted for in the precast unit design.

1. Precast Concrete Unit Design

a. Design standard precast concrete units to withstand design load conditions in accordance with ACI 350. Design must also consider stresses induced during handling, shipping, and installation in order to avoid product cracking or other handling damage. Design loads for precast concrete units shall be indicated on the shop drawings, and designed by a licensed professional engineer.

b. The structural design shall take into account discontinuities in the structure produced by openings.

c. The Precast Pump Station with Integral Valve vault shall be designed to support its own weight as well as the minimum superimposed loads tabulated below. All additional equipment shall be accounted for in the design of the elements.

(1) Pump Station with Integral Valve Vault

i. Top Slab
ii. Live Load & Impact Load – AASHTO HS20
iii. Floor Slab (valve vault & base)
iv. Live Load – 200 psf
v. Exterior Walls
vi. All exterior walls below finished grade shall be designed for an equivalent fluid pressure of 81.6 psf caused by saturated earth pressure. The top of the pressure diagram is assumed to originate at finished grade. In addition to the soil pressure, a Live Load Traffic Surcharge shall be applied according to the AASHTO Specification.

d. The structures shall be designed to prevent flotation without the benefit of skin friction and the weight of mechanical equipment when the ground water level is at finished ground surface. The factor of safety against uplift calculated as a ratio of the total resisting force (excluding skin friction and the

weight of the equipment) to the total hydrostatic uplift force shall be at least 1.15. The net uplift force shall be transferred to the anti-buoyancy collar.

2. Joints and Sealants

   a. Joints and sealants between adjacent units shall be of the type and configuration indicated on the shop drawings meeting specified design and performance requirements.

3. Concrete Mix Design

   a. Concrete type

      (1) For non machine cast products, the concrete shall be self-consolidating concrete which produces minimal bugholes and does not segregate.

   b. Concrete Proportions

      (1) Selection of proportions for concrete shall be based on current self-consolidating concrete mix design techniques. At a minimum, ACI 211.1 shall be used.

      (2) Upon request the precast concrete producer shall submit a mix design for each strength and type of concrete that will be used. Submitted mix designs shall include the quantity, type, brand and applicable data sheets for all design constituents as well as documentation indicating conformance with applicable reference specifications.

   c. Durability and Performance Requirements

      (1) Concrete Compressive Strength

         i. Precast concrete units shall have a 28-day compressive strength of 5000 psi for SCC.

      (2) Water-Cementitious Ratio

         i. Concrete that will be exposed to freezing and thawing shall contain air and shall have a water-cementitious ratio of 0.45 or less. Concrete which will not be exposed to freezing, but which is required to be leak resistant, shall have a water-cementitious ratio of 0.48 or less. For corrosion protection, reinforced concrete exposed to deicer salts, brackish water or seawater shall have a water-cementitious ratio of 0.40 or less.

      (3) Air Content

         i. The air content of concrete that will be exposed to freezing conditions shall be within the limits given below.

Nominal Maximum Aggregate size (in)	Air Content %	
	Severe Exposure	Moderate Exposure
3/8	6.0 to 9.0	4.5 to 7.5
1/2	5.5 to 8.5	4.0 to 7.0
3/4	4.5 to 7.5	3.5 to 6.5
1	4.5 to 7.5	3.0 to 6.0
1-1/2	4.5 to 7.5	3.0 to 6.0
• For specified compressive strengths greater than 5000 psi, air content may be reduced 1%		

F. Quality Assurance

The precast concrete producer shall demonstrate adherence to the standards set forth in the Plant Quality Control Manual. The precast concrete producer shall meet the requirements written in subparagraph 1. The Precast Concrete Pump Station Manufacturer shall have a minimum of ten (10) years successful experience in the design and the assembly of factory-built, prefabricated, pre-assembled Pump Stations. In addition, the Manufacturer shall have made no less than ten (10) Pump Stations similar to the one on this project. Evidence shall be submitted to verify these requirements are met prior to being deemed an acceptable manufacturer.

1. Qualifications, Quality Control and Inspection

    a. The precast producer shall maintain a permanent quality control department.

    b. The precast concrete producer shall have a quality control program which is audited for compliance annually by persons outside that plant's employee structure.

    c. Upon request, the precast concrete producer shall supply a copy of their quality control manual.

2. Quality Control

    a. The precast concrete producer shall show that the following quality control tests are performed as required and in accordance with the ASTM International standards indicated.

        (1) Concrete Testing

            i. Slump: a slump test shall be performed at least once per day per mix design used. Slump tests shall be performed in accordance with ASTM C 1611 for self-consolidating concrete.
            ii. Temperature: The temperature of fresh concrete shall be measured each time a slump, air content, or compressive strength tests are made. Temperature shall be measured in accordance with ASTM C 1064.
            iii. Compressive Strength: At least four compressive strength specimens shall be made each day for each mix design unless otherwise specified. In accordance with ASTM C 31, C 39, C 192.
            iv. Air Content: Tests for air content shall be performed if the mix design specifies air entrainment. The air content will be measured in accordance with ASTM C 231. The Air Content shall be measured once per day per mix design.
            v. Density (Unit Weight): Tests for Density (Unit Weight) shall be performed monthly for each mix design used at a minimum. Tests shall be in accordance with ASTM C 138.

        (2) Aggregate Testing

            i. A full set of aggregate tests shall be performed on each aggregate at least annually by an independent testing agency or an in house test lab. These tests will include gradations (ASTM C136), Soundness (ASTM C 88), Organic Impurities (ASTM C 40), Sand Equivalent for fine aggregates only (ASTM D 2419).
            ii. Potential reactivity shall be performed once per each aggregate source, and when aggregate sources change (ASTM C 1260 or C 1293).
            iii. Monthly, at a minimum, gradations shall be performed per ASTM C 33.
            iv. Aggregate Moisture tests: Moisture tests on aggregates shall be performed in accordance with ASTM C 70 or ASTM C 566. Fine aggregate moisture content tests shall be performed at least once per day if there are no moisture meters, otherwise it shall be performed once per month. Alternatively the speedy moisture test is acceptable (ASTM D 4944).

        (3) Preplacement Check

            i. All products shall be inspected for accuracy prior to placing concrete. Checks shall include, but not be limited to, form condition and cleanliness, form dimensions, joints, release agent, block outs, inserts and locations, lifting devices, reinforcing steel size, spacing, clearances and proper placement.
            ii. Preplacement checks shall be documented and initialed by the inspector. A drawing with verifications of the above criteria can be used as documentation.

        (4) Postplacement Check

i. All products shall be inspected for accuracy after the concrete forms have been removed. Checks shall include, but not be limited to, dimensional checks, finishing, insert locations, squareness, honeycombing, cracking, marking, coatings, racking, hole size and location. Postplacement checks may require a corrective action report.
ii. Postplacement checks shall be documented and initialed by the inspector. A drawing with verifications of the above criteria can be used as documentation.

b. Copies of the test results and inspections above shall be available upon request.

3. Outside Inspection

a. The customer or customer's agent (specifier) may place an inspector in the plant when the units covered by this specification are being manufactured. The precast concrete producer shall give notice of three days prior to the time the precast concrete units will be available for plant inspection.

4. All equipment and materials furnished in the pump station shall be new and free of defects. All equipment shall be the manufacturer's latest and proven design.

5. All electrical materials, devices, and equipment shall be UL listed wherever applicable.

6. All equipment and installations shall meet the National Electric Code.

G. Delivery, Storage, and Handling

1. Handling

a. Precast concrete units shall be handled and transported in a manner to minimize damage. Lifting devices or holes shall be consistent with industry standards. Lifting shall be accomplished with methods or devices intended for this purpose as indicated on the shop drawings. Upon request, the precast concrete producer shall provide documentation on acceptable handling methods for the product.

2. Storage

a. Precast concrete units shall be stored in a manner that will minimize potential damage.

3. Delivery

a. Precast concrete units shall be delivered to the site **no later than August 6, 2026.**. Upon delivery to the jobsite, all precast concrete units shall be inspected by the customer's agent for quality and final acceptance.

4. Final Acceptance

a. Upon final acceptance, the customer's agent acknowledges and understands the appropriate methods for handling the accepted precast concrete unit(s). Upon acceptance by the customer or customer's agent, the precast concrete manufacturer is not responsible for replacing damaged product resulting from improper handling practices on the job site.

H. Single Source Responsibility

1. To ensure that all equipment required for the installation of the pre-package pump station is properly coordinated and will function as a unit in accordance with the intent of these specifications, the Contractor shall obtain all the equipment specified under this section, from a single supplier with whom the responsibility for the proper function of all equipment, regardless of manufacturer, as an integrated and coordinated system shall be vested. This requirement is to establish unit responsibility for all the equipment with the equipment supplier. The use of the word responsibility relating to the equipment supplier is in no way intended to relieve the Contractor's ultimate responsibility for equipment coordination, installation, operation, and guarantee.

2. Factory pre-assembly: During fabrication and before shipment, all equipment shall be fully factory installed to verify all proper clearances. All installed equipment, unless crossing structural joints, shall remain in the precast structure during travel to the jobsite and final re-assembly.

3. When contracted to do so, the manufacturer can furnish the services of an experienced service technician to check the installation, and provide with the Owner, a certificate indicating that the pre-packaged submersible pump has been installed in accordance with the manufacturer's recommendations.

- **PRODUCTS**

A. Manufacturers

1. Acceptable Manufacturer: Oldcastle Precast Inc. or other qualified vendor per this specification.
    a. This specification is based on the precast concrete OneLift™ pump station product line manufactured and pre-assembled by Oldcastle Precast of Avon, CT (OneLift Model RC509). The OneLift™ is choses as the basis of design for; quality manufacturing, compact size, single structure differential settlement elimination, ease and speed of installation, and overall project timeline savings.
2. Substitutions may be considered based on design, applicability, and compliance with standards identified in this section.
    a. Alternative systems based upon a built-in-place, field erected pump station utilizing separate precast structures, or cast-in-place concrete shall not be accepted.

B. Products

1. Precast Concrete Pump Station Sections with Valve Vault
    a. The Pump Station with Integral Valve Vault shall be composed of precast reinforced concrete units, rectangular in shape with rounded corners. The precast structures shall be monolithically cast, and have minimum interior dimensions of 5' wide by 9' long with 2.5' radius corners (RC509), or 6' wide by 11' long with 2' radius corners (RC611). The precast base section will be supplied with an extended buoyancy collar to withstand upward buoyant forces with ground water at grade. Overall structure heights shall be as shown on the contract drawings, and range from 10'-10" to 24'-10", in product-standard 2', 3' and 4' increments.
    b. Exterior Walls shall be a minimum of 6 inches thick, integral valve vault common wall and floor shall be a minimum or 4 inches thick, station floor and buoyancy footing shall be a minimum of 8 inches thick, and the roof slab with hatches shall be a minimum of 12 inches thick.
    c. The Integral Valve Vault shall be located in the pump station structure as shown on the contract drawing, to conserve site space and to eliminate the possibility of differential settlement. Conventional means, utilizing two (2) separate structures for the pump station and the valve vault **will not be accepted as an equal**.
    d. The Precast Structures shall be comprised of product-standard: base, riser sections, integral valve vault, optional vault riser shims as required, and station cover.
    e. The Pump Station Manufacturer shall have a production facility in which all work associated with structural fabrication, mechanical/electrical pre-assembling and product final inspection of the pump station will be performed. The building shall keep the pump station components protected from the elements and kept at an ambient temperature of at least 45 degrees Fahrenheit. No concrete shall be batched and placed when the ambient temperature is below 50 degrees Fahrenheit.
    f. All wall penetrations shall be formed utilizing hole-formers or cored drilled holes for manhole boots, and galvanized threaded couplings with waterstops for electrical connection.
    g. All cast wall openings for ductile iron, PVC or galvanized steel pipe shall incorporate adjustable rubber manhole boots for a watertight seal.
    h. All Precast components shall be fabricated on steel forms with machined rings to form accurate bell and spigot joint surfaces to ensure watertight joints.
    i. The Horizontal joints between precast sections shall be sealed with a vulcanized butyl rubber joint material conforming to AASHTO M-198. The joint material shall be "Conseal CS-102" as manufactured by Concrete Sealants, or approved equal.

j. All surfaces of the precast structures shall be smooth, even, and free from roughness, irregularities and other defects. The surfaces shall be suitable for receiving exterior treatments as specified elsewhere herein.

k. (optional) An antimicrobial concrete additive shall be used to protect the structure against deterioration from harsh H2S environments. The product shall be an EPA-registered liquid, integral concrete admixture for the prevention of microbial-induced corrosion (MIC) typically found in concrete tanks, pipes, manholes, and other structures/elements in sewage and drainage systems. The admixture shall molecularly bond to cement hydration products and ruptures the cell membrane of harmful bacteria and other microorganisms on contact through an electro-physical mechanism. The admixture shall create a concrete surface that is not conducive to the growth of harmful microorganisms. Dose rate of additive shall be per manufacturers' recommendations, but should not be less than 1-gallon per cubic yard of concrete mix. All concrete used for the structural components and non-structural components (including fill concrete, common interior wall and floor of integral valve vault) shall include the admixture as described above.

(1) The "Integral Antimicrobial Admixture" shall be MasterLife AMA 100, as manufactured by BASF Corporation, Cleveland, OH, or engineer approved equal.

l. (optional) A Crystalline Waterproofing Additive shall be used. The system shall cause the concrete to become sealed against the penetration of liquids from any direction, and shall protect the concrete, surface to surface, from deterioration due to acidic environmental conditions.

(1) Dose rate of additive shall be per manufacturers' recommendations. All concrete used for the structural components and non-structural components (including fill concrete, common interior wall and floor of integral valve vault) shall attain a minimum 38-day compressive strength of 5,000 psi.

(2) The Waterproofing Additive shall be Xypex Admix C-500, as manufactured by XYPEX Chemical Corporation, Richmond, B.C., Canada, or approved equal.

m. (optional) An exterior damp-proofing coating shall be factory applied to the below grade vertical surfaces of the structure. Damp-proofing material shall be cold-applied solvent based asphalt mastic brush or roller applied at a rate of 1-gal per 25SF. Damp-proofing material shall meet ASTM# D-4471 Type 1 and Federal Spec# SS-A-694d(AF). Damp-proofing shall be Karnak 83AF or approved equal.

2. Pump Removal Rail System

a. The pump station shall be supplied with a stainless steel guide rail pump removal system, to facilitate emergency and routine maintenance in removing and re-installing the submersible pumps from the top of the station. The guide rail system will include lower guide brackets incorporated in the pump base elbow, 316-stainless upper guide brackets, 316-stainless intermediate guide brackets as may be required per the pump manufacture, and 304-stainless steel Sch40 guide rails of size and quantity as dictated by the select pump manufacturer and model.

b. Guide rail components shall be assembled and installed plumb to the pump station structure, and shall allow for pump removal and re-installation without interfering with the access hatch or frame. All assembly hardware shall be 315-stainless steel.

3. Hazardous Location Compliance

a. The wet well and the area within 2 feet of the wet well has been classified as a Class 1, Division 1, A Hazardous Location as defined by the National Electrical Code. All electric wiring and motors located within the subject area shall be in strict compliance with these standards. The shop drawings carry the manufacture's certification that all equipment located in the subject area meets the requirements of NEC Class 1, Division 1 Criteria and the Underwriter's Laboratory (UL).

4. Pump Station Access Frame and cover

a. Furnish and install (1) aluminum pump access hatch, (30" x 48" for RC509, 36" x 54" for RC611) nominal interior dimension, flush with precast cover, (300psf, H20 AASHTO) load rating with 316-stainless steel hardware. Cover will be minimum ¼" diamond plate with stainless steel slam lock and weather plug, lift handle which sits flush with cover, recessed pad lock clip (pad lock by others), hold open arm to lock cover in 90-degree position, heavy duty stainless hinges. Frame to be angle style with continuous 1 ½" anchor flange and full slab-height skirt to show no exposed concrete when hatch is open, exterior surfaces in contact with concrete to receive one coat bituminous paint.

b. Pump access hatch to be supplied with integral safety grating system. The safety grate shall be made of 6061-T6 aluminum and designed per the "Specifications for Aluminum Structures". The grating shall be designed to withstand 300psf, H20 AASHTO) loading. Each grate shall be supplied with a heavy duty, stainless steel pneu-spring for ease of operation when opening. Each grate shall be provided with a permanent hinging system; which will lock the grate in the 90-degree position once opened. Grate shall be coated with an OSHA type safety orange color, base coat is a thermosetting epoxy powder coat finish with a minimum thickness of 2-4 mils. The top coat is a mar-resistant, TGIC polyester powder coating with a minimum thickness of 2-4 mils. Each coat shall be baked at 350-375 degrees F until cured.

c. Access hatches to be manufactured by EJ, East Jordan, MI, or approved equal.

5. Valve Vault Access Frame and Cover

a. Furnish and install (1) aluminum valve vault access hatch, 30" x 36" nominal interior dimension single door, flush with precast cover, (300psf, H20 AASHTO) load rating with 316 stainless steel hardware. Cover will be minimum ¼" diamond plate with stainless steel slam lock and weather plug, lift handle which sits flush with cover, recessed pad lock clip (pad lock by others), hold open arm to lock cover in 90-degree position, heavy duty stainless hinges. Frame to be channel style with 1 ½" NPT drain port in the bottom of the channel, continuous 1 ½" anchor flange and full slab-height skirt to show no exposed concrete when hatch is open, exterior surfaces in contact with concrete to receive one coat bituminous paint. Hatch will be supplied with a heavy duty, stainless steel pneu-spring, for ease of operation when opening cover.

b. Access hatches to be manufactured by EJ, East Jordan, MI, or approved equal.

6. Aluminum Vault Ladder

a. The valve vault shall be supplied with an aluminum (6061-T6) wall-mount access ladder. The ladder shall be fastened to the concrete with 316 stainless expansion bolts and shall meet OSHA standard 1910.27 requirements.

b. The ladder rails & supports shall be all welded aluminum construction. Rails and wall

034100-15 supports shall be solid 3/8" x 2 ½" flat stock, and rungs shall have a 1-1/4" diameter with serrated surface extruded into the rung for slip resistance. The minimum design live load shall be a single concentrated load of 200 lbs.

c. Rung spacing shall be uniform and not exceed 12", the minimum clear length of rungs shall be 15-1/4", and the distance from the center line of the rung to the nearest permanent object shall not be less than 7".

d. The aluminum ladder shall be manufactured by EJ, East Jordan, MI, or approved equal.

7. Ladder Extension (Optional)

a. The ladder extension assembly shall be constructed of aluminum and stainless steel. The aluminum housing shall mount to the ladder by means of grade 316 stainless steel channel clamps secured to the ladder rungs with grade 316 stainless steel "U" bolts. The aluminum telescoping post shall extend 42" above the top of the housing and lock into position with a grade 316 stainless steel pin.

b. The safety extension post shall be manufactured by EJ, East Jordan, MI, or approved equal.

8. Polyvinyl Chloride (PVC) Piping and Fittings

    a. All PVC pressure piping and fittings for water and wastewater treatment are to be Sch80. Corrosion resistant pressure pipe, IPS sizes, for use at temperatures up to and including 140°F. Pressure rating (120 psi to 1230 psi) varies with schedule, pipe size, and temperature.

    b. The material used in the manufacture of the pipe and fittings shall be domestically produced rigid polyvinyl chloride (PVC) compound, Type 1 Grade 1, with a Cell Classification of 12454 as defined in ASTM D1784, trade name designation H707 PVC. This compound shall be gray in color, and shall be approved by NSF International for use with potable and non-potable water (NSF Std 61). All sizes of PVC Schedule 80 pipe and fittings shall be manufactured in strict accordance to the requirements of ASTM D1785 for physical dimensions and tolerances, and all performance test requirements of ASTM D1785.

9. Polyvinyl Chloride (PVC) Ball Valves (Standard 2" & 3" PVC)

    a. All ball valves shall be of the flanged model with one-piece capsule and shall open counterclockwise. The valves shall be rated for 250psi at 73°F.

    b. The ball valve shall be of full-port design to minimize flow restriction to the lowest possible pressure drop. Full flange face gaskets having a 50 to 70 urometer A hardness shall be sued.

    c. Ball valve bodies shall be constructed of PVC, with Teflon seats and Viton seals.

    d. PVC ball valves shall be manufactured by Haward, NIbco Inc., or approved equal.

10. Polyvinyl Chloride (PVC) Check Valves (Standard 2" & 3" PVC)

    a. All check valves shall be of the flanged model with on-piece capsule. The valves shall be rated for 150psi at 73°F.

    b. Free oscillation of ball in guide ribs facilitates full port flow with minimum of turbulence and chatter. Full flange face gaskets have a to 0 70 durometer A hardness shall be used.

    c. Check valve bodies and ball should be constructed of PVC, with EPDM seals.

    d. PVD check valves shall be manufactured by Hayward, Nibco Inc., or approved equal.

11. Ductile Iron Pipe and Fittings

    a. All ductile iron pipe shall be designed in accordance with ANSI A21.50, and shall be manufactured in accordance with ANSI A21.51. Pipe for use with grooved end couplings shall have grooved ends in accordance with AWA C606.

    b. Pipe Thickness class shall be Class 53 for use with threaded flanges, unless specified otherwise on the product drawings.

    c. Flanged joints shall conform with ANSI A21.15, utilizing long-hub flanges which shall be screwed on tight by the foundry before they are faced and drilled.

    d. Fittings shall conform to the requirements or ANSI A21.10 and shall be of a pressure classification at least equal to that of the pipe with which they are used. Flanged fittings shall be faced and drilled in accordance with ANSI A21.10.

    e. All ductile iron piping and fittings shall be double-thick cement mortar lining and bituminous seal coat (black) on the inside and a bituminous seal coat on the outside, all in accordance with ANSI/AWWA A21.4/C104.

12. DI Pipe & Fitting Coating – Coal Tar Epoxy Black Exterior Coating (Optional)

    a. All ductile iron piping and fittings shall be double-thick cement mortar lining and bituminous seal coat on the inside accordance with ANSI/AWWA A21.4/C104. Exterior pipe and fitting surfaces shall receive a compatible prime coating for coal tar epoxy top coat. Exterior top coat shall be Polyamide Epoxy coal tar high-build application which conforms to AWWA C210 performance requirements. Application rate shall be sufficient for 16DMT.

b. Coal tar epoxy coating shall be Tnemec Series 46H-413, or approved equal.

13. Flange Type Couplings

    a. Flange couplings shall be mounted on each pump base elbows to ensure proper pressure seal while providing a minimum of assembly flexibility. The flange couplings shall be fusion bond epoxy coated and supplied with 304-stianless assembly and mounting hardware for harsh and wet environments. The pipe gasket and O-ring seal shall be Nitrile (Buna N) NFS 61 Listed.

    b. To ensure the correct fitting of pipe and couplings, all flange couplings shall be furnished by the pipe supplier and shall be of the pressure rating of at least that of the pipeline in which they are to be installed.

    c. The flange couplings shall be Smith-Blair Inc., Model 912 or approved equal.

14. Grooved Couplings

    a. Grooved couplings shall be supplied where shown on the product drawings and shall conform to AWWA C606. The couplings are designed for use on radius cut grooved pipe with minimum wall thickness of ANSI/AWWA C151/A21.51. Class 53 DIP, or a transition coupling may be required for connection of grooved end IPS steel pipe to grooved end AWWA ductile iron pipe.

    b. The housing coating shall be coal tar epoxy, the gasket shall be Nitrile (red color code), and bolting hardware of 304-stainless steel.

    c. The grooved coupling shall be Victaulic style 31/307, or approved equal.

15. Pipe Supports

    a. Piping shall be supported in the valve vault by means of adjustable steel (galvanized, stainless) floor supports stands which cradles the pipe/valve flanges. The support stands shall be floor mounted with 316-stainless expansion bolting hardware. Where piping enters and exits the vault structure; aluminum wall supports angles with 304-stainless U-bolts and 316-stainless U-bolts and bolting hardware.

        (1) Common pipe support assembly at mid length shall be required when the vertical discharge pipe lengths exceed 10’-0”.

        (2) Common pipe support assemblies at equal spacing shall be required when the vertical discharge pipe lengths exceed 14’-0”.

16. Wall Penetrations

    a. Where wall penetrations are called for on the plants; mechanical piping shall utilize cast or cored openings with flexible manhole boots. Flexible rubber boots shall consist of EPDM polymer compounds meeting ASTM C923 material performance requirements. Expansion banding and strap shall be 304-stainless material and the connection between boot and structure shall utilize an expansion wedge system with 304-stainless wedge and hardware components.

    b. Electrical conduit penetrations will utilize galvanized electrical couplings assemblies with 2” wide minimum waterstop embedded in the structure at casting, or cored openings with mechanical rubber seals to fill the annular spacing between electrical conduit and precast wall structure. Mechanical seals shall be Link Seal by Thunderline Corp. or approved equal and shall utilize 304-stainless assembly hardware. Mechanical seals shall be employed when pump control panel or exterior junction box option is factory mounted to the station.

17. Check Valves Outside L & W (Standard)

    a. The check valve shall have a heavy-duty body of ASTM A126 Class B cast iron with integral flanges faced and drilled to ANSI B16.1 Class 125 for horizontal installation as listed in the schedule or shown on plans. Valve clapper shall swing completely clear of the waterway when valve is full open, permitting a full flow through the valve equal to the nominal pipe diameter. Check valves shall comply with AWWA Standard C-508 latest revision. The valve shall have a bolted and gasketed cover to allow for clapper access without removing the flanged valve from line.

b. Pressure ratings: Class 125 flanged valve body shall be rated for a shell pressure of 250 PSI.

c. The check valve shall be supplied with adjustable outside lever and weight.

d. Manufacturer-paint all interior and exterior ferrous surfaces with fusion bonded epoxy coating, AWWA C550 Manufacturer standard color only applies.

e. Manufactured valve shall be Matco-Norco, Mod. 120WC or approved equal.

18. Air-Cushioned Swing Check Valve (Optional)

a. The valve shall have a heavy-duty body of ASTM A126 Class B cast iron with integral flanges faced and drilled to ANSI B16.1 Class 125 for horizontal installation as listed in the schedule or shown on plans. Valve body shall be full waterway type, designed to provide a net flow area of not less than the nominal pipe size area when swung open no more than 25 degrees. Valve shall have a replaceable bronze body seat.

b. Pressure ratings: Class 125 flanged valve body shall be rated for a shell pressure of 250 PSI.

c. Valve disc shall be faced with a renewable, resilient seat ring retained by stainless steel screws.

d. Disc arm shall be high strength ASTM A536 ductile iron or steel, suspended from and keyed to an 18-8 stainless steel shaft which is completely above the waterway and supported at each end by heavy bronze bushings. Shaft shall rotate freely without the need for external lubrication.

e. Shaft shall be sealed where it passes through the body by means of a stuffing box and adjustable packing gland. O-ring type shaft seals are not acceptable.

f. Valve shall be supplied with an outside lever and adjustable counterweight to initiate valve closure. Final closure shall be dampened by means of a single, external, bronze air-cushion chamber directly mounted to the valve body on machined pads. The amount of air-cushioning shall be easily adjustable. Pre-charged air chambers and/or commercial air cylinders which pivot or are attached with fabricated brackets, are not acceptable.

g. Manufacturer-paint all exterior ferrous surfaces with (1) coat of 2-part epoxy primer and (10) finish coat of 2-part epoxy, or (2) coats of self-priming 2-part epoxy. Manufacturer standard color only applies.

h. Manufactured valve shall be GA Industries Figure 250-D or approved equal.

19. Plug Valve (Standard)

a. Plug valves shall be of the non-lubricated, quarter-turn, eccentric type with flanged ends and lever operated, in full conformance with the latest revision of the AWWA C517 Standard.

b. Valves sizes 3” to 6” shall have a minimum 175 PSI pressure rating. Plug Valves shall be round ported for reduced pumping costs and improved flow characteristics. The valves shall have the following minimum full open coefficients (Cv): 3”=569, 4”=982, 6”=1997.

c. Flange diameter, thickness, and drilling shall conform to ASNI B16.1 Class 125.

d. Valve shaft seals shall be of the self-adjusting U-cup design for reduced maintenance and replaceable without removing the cover from the valve.

e. Valves shall have bodies and covers of ductile iron per ASTM A536 for superior strength. Valve sizes 3” and larger shall have body seats of 95% welded nickel applied directly to the body and machined to a smooth finish. Sprayed, plated or removable seats are not acceptable. Valves shall have plugs made from ductile iron per ASTM A536 with a vulcanized synthetic rubber seat facing tested per ASTM D429 for all sizes.

f. Valves shall be provided with stainless steel thrust bearings on the upper and lower plug shaft to eliminate plug-to-body contact and ensure long lasting plug-to-seat alignment. Grit seals shall be provided on the upper and lower bearing journals to minimize the entrance of grit into the shaft seal and bearing areas.

g. Valves shall be coated internally and externally with 6-8 mils NSF approved two part epoxy paint for corrosion protection.

h. Valves shall be Golden Anderson Figure 517 “ECO-Centric” or approved equal.

20. Gaskets, Bolts, Nuts

a. For flange joints, gaskets shall be a minimum of 1/8” thick full faced gaskets. Gaskets shall be of composition suitable for exposure to fluids within the pipe. Gaskets shall meet AWWA C110, C111, and C115 performance standards.

b. Flange joints shall be bolt-assemble utilizing the full faced gasket. Bolting hardware, number and size, shall conform to the same ANSI standards as the flange. Bolts and nuts shall be 316-stainless steel, heavy hex Grade B conforming to ASTM A493/494.

21. Interior Junction Boxes for Pumps and Level Control Devices.

a. The pump station shall be supplied with interior junction boxes for pump power/control and float conductor connections. The pump power/control junction boxes shall be rated NEMA 7 explosion-proof, and shall require one junction box for each pump. The float junction box shall be rated NEMA 4X and constructed of durable polypropylene for intrinsically safe float operation, where barrier relays are suppled in the pump control panel. The interior junction boxes shall be positioned together and accessible from the hatchway at grade. Interior conduits and fittings shall be utilized for passage of pump power/control and level control conductors to the junction boxes.

b. Pump and level control SJO jacketed cables shall be properly supported withing the pump station via stainless strain reliefs (Kellums Grip) or other methods, so that cable weight is not transferred to the junction boxes.

c. Interior conduits and fittings between the wall-embedded electrical couplings and the interior junction boxes will be RGS construction and will be factory mounted. Interior conduit support assembly shall be a fabricated type 304 stainless steel Unistrut frame with all type 316 stainless steel fasteners. All final conductor connection in the junction boxes and final float positioning shall be completed on site by the site electrician.

d. Where submersible or ultrasonic type level control transducer device is used instead of, or in conjunction with, level control/emergency floats, the transduce cable shall have a dedicated conduit entrance to the station with dedicated conduit and cord bushing. The transducer shall run un-cut to the pump control panel and not require an interior junction box. The weight of the SJO jacketed cable and transducer shall be supported within the pump station via stainless strain relief (Kellums Grip) or other methods, so that cable weight is not transferred to conduit bushing. All final transducer positioning and connection to pump control panel shall be completed on site by the site electrician.

e. Conduit seal fittings shall be supplied outside of the pump station and prior to the control panel on site by site electrician.

22. Gauge Assembly (Optional)

a. A discharge gauge assembly shall be supplied on each pump discharge pipe line as they enter the valve vault for monitoring system performance. The assembly shall be equipped with a 1/2” process connection, 1/2" isolation ball valve, stainless diaphragm seal, 4-1/2” pressure gauge and an aluminum wall support with stainless connection hardware. Discharge pressure range shall be 0-30psi.

b. All gauge and diaphragm seal assemblies shall be of a 1 piece welded design with a full scale accuracy of $\pm$1.0%. The gauge shall have a P.E.T. resin case, 4.5” diameter, glycerin fill fluid, with a 316 stainless steel movement, bourdon tube and connection welded to a 1 pc 316ss diaphragm seal. The fill fluid shall be DC200 silicone. Threaded connections between the gauge and the diaphragm seal will not be accepted. The diaphragm seal shall be all 316 stainless steel including diaphragm and have a 1/2" NPT male 316ss lower connection. The assembly shall be factory assembled and calibrated.

c. The gauge assembly shall be connected to each discharge line by means of dedicated welded and threaded boss, or by means of pipe saddle with 1/2" outlet. Drilling and taping discharge piping; utilizing only the pipe wall thickness for threading, will not be acceptable.

d. The gauge and seal assembly shall be X$-81 by Ametek, PTR50 by Winters, or approved equal.

C. Materials

Except as otherwise specified, material shall conform to the following section.

1. Materials

Cement	ASTM C 150 (Type I, II, III, or V) ASTM C 595 (for Blended Cements)
Silica Fume	ASTM C 1240
Fly Ash and Pozzolans	ASTM C 618
Ground Granulated Blast-Furnace Slag	ASTM C 989
Water	ASTM C 1602 (the use of reclaimed/recycled water shall be permitted)
Aggregates	ASTM C 33 (and aggregate specifications)
Air Entraining Admixtures	ASTM C 260
Accelerating, Retarding, Water Reducing Admixtures	ASTM C 494
Corrosion Inhibitors	ASTM C 1582
Reinforcing Bars	ASTM A 615 or ASTM A 706
Plain, Welded Wire Reinforcement	ASTM A 185
Deformed, Welded Wire Reinforcement	ASTM A 497
Epoxy Coated Reinforcing Bars	ASTM A 775
Epoxy Coated Welded Wire Reinforcement	ASTM A 884
Hot-Dipped Galvanizing for Inserts	ASTM A 152
Rubber Gaskets for Circular Pipe	ASTM A 443
External Sealing Bands for Pipe	ASTM C 877
Preformed Flexible Joint Sealants for Concrete Pipe, Manholes, and Manufactured Box Sections	ASTM C 990
Elastomeric Joint Sealants	ASTM C 920
Pipe Entry Connectors	ASTM C 923, ASTM C 1478
Non shrink Grout	ASTM C 1107

D. Manufacture

Manufacture shall conform to the producer's acceptable quality control manual.

1. Forms

a. Forms for manufacturing precast concrete units shall be of the type and design consistent with industry standards and practices. They should be capable of consistently providing uniform products and dimensions. Forms shall be constructed so that the forces and vibrations to which the forms will be subjected cause no damage to the precast concrete unit.

b. Forms shall be cleaned of concrete build-up after each use.

c. Form release agents shall be applied according to the manufacturer's recommendations and shall not be allowed to build up on the form casting surface.

2. Reinforcement

a. Cages of reinforcement shall be fabricated by tying the bars, wires or welded wire reinforcement. The tolerances for concrete cover shall be 3/8 in. or as specified in the design. Welding shall be allowed only for ASTM A 706 rebar.

b. Positive means shall be taken to assure that the reinforcement does not move significantly during the casting operations.

3. Embedded Items

a. Embedded items shall be positioned at locations specified in the design documents. Inserts and other embeds shall be held rigidly in place so that they do not move significantly during casting operations.

4. Concrete

a. Concrete Mixing

(1) Mixing operations shall produce batch-to-batch uniformity of strength, consistency and appearance.

(2) Batching weight and volume measurement devices shall be annually calibrated by an independent testing laboratory or more frequently if batching irregularities or concrete inconsistencies are observed.

b. Concrete placing

(1) Concrete shall be placed in a manner in which it flows and consolidates without segregation or air entrapment. The freefall of concrete shall be kept to a minimum.

(2) Cold Weather Concreting

i. Recommendations for cold weather concreting are given in detail in ACI 306 R. Adequate equipment shall be provided for heating concrete materials and protecting during freezing or near-freezing temperatures. All concrete materials, reinforcement, and forms shall be free from frost. In cold weather, the temperature of the concrete at the time of placement shall not be below 45 degrees F. Concrete that freezes before it reaches a compressive strength of 500 psi shall be discarded.

(3) Hot Weather Concreting

i. Recommendations for hot weather concreting are given in detail in ACI 305 R. During hot weather excessive concrete temperatures and water evaporation shall be minimized. The temperature of concrete at the time of placing shall not exceed 95 degrees F.

c. Concrete Curing

(1) Curing Operations shall commence immediately following the initial set of the concrete and completion of surface finishing.

(2) Curing by moisture retention

i. Precast products shall be protected from drafts and wind to prevent plastic shrinkage cracking.
ii. Moisture shall be prevented from excessively evaporating from exposed surfaces until adequate strength for stripping the precast concrete unit from the form is reached.

(4) Curing with Heat and Moisture

i. Concrete shall not be subjected to steam or hot air until after the concrete has attained its initial set. If hot air is used, precautions shall be taken to prevent moisture loss from the concrete. The temperature of the concrete shall not be permitted to exceed 150 degrees F. The temperature gain shall not exceed 40 degrees F per hour.

d. Surface Finish

(1) The surface finish shall be as specified on the contract documents and/or approved shop drawings.

e. Stripping Precast Concrete Units from Forms

Precast concrete units shall not be removed from the forms until the concrete reaches the compressive strength for stripping required by design. Stripping strengths shall be routinely measured to ensure product has attained sufficient strength for safe handling.

f. Patching and Repair

(1) Repairing Minor Defects

i. Defects that will not impair the functional use or expected life of the precast concrete unit may be repaired by any method that does not impair the product.

ii. Repairing Honeycombed Areas
When honeycombed areas are to be repaired, all loose material shall be removed and the areas cut back into essentially horizontal or vertical planes to a depth at which coarse aggregate particles break under chipping rather than being dislodged. Proprietary repair materials shall be used in accordance with the manufacturer's instructions. Otherwise, the area shall be saturated with water Immediately prior to repair, the area shall be saturated with water. Immediately prior to repair the area should be damp, but free of excess water. A cement-sand grout or an approved bonding agent shall be applied to the chipped surfaces, followed immediately by consolidating an appropriate repair materials into the cavity.

iii. Repairing Major defects
Defects in precast concrete products which impair the functional use or the expected life of products shall be evaluated by qualified personnel to determine if repairs are feasible, and, if so, to establish the repair procedure.

a. Shipping Precast Concrete Units

(1) Precast concrete units shall not be shipped until they have reached at least 70% of their specified 28-day design strength, unless damage will not result, impairing the performance of the product.

E. Warranty

1. The manufacturer of the lift station shall guarantee for one (1) year from the date of installation, or 15-moths from the date of factory completion (whichever occurs first), that the structure and all equipment will be free from defects in design, material and workmanship.

2. Warranties and guarantees by the suppliers of various components in lieu of single source responsibility by the manufacturer will not be accepted. The manufacturer shall be solely responsible for the warranty of the station and all components.

3. In the event a component fails to perform as specified or is proved defective in service during the warranty period, the manufacturer shall provide a replacement part without cost to the Owner. The Contractor shall further provide, without cost to the Owner such labor as may be required to replace, repair or modify major components such as the station structure, pumps, pump motors sewage piping manifold, etc.

- **EXECUTION**

A. Spare Parts

1. Spare parts shall be provided in accordance with manufacturer's standard package, and shall be optional for the pump station.

B. O & M Manuals

1. Four (4) sets of Operations and Maintenance Manuals shall be furnished for the pump station. The manuals shall contain instructions that are comprehensive, and sufficiently detailed for the intended use.

2. The Operation and Maintenance Manuals shall be assembled in a permanent binder, complete with index and cover clearly identifying the pump station name. The manuals shall be complied in a logical and organized manner.
3. The Manuals shall contain specific pump station instructions which will enable personnel to operate and maintain the pump station and all equipment associated with each individual system installed within the station.
4. Manuals that are a compilation of generalized manufacturer's literature that are not solely applicable to the particular pumping station will not be accepted.
5. The Manuals shall contain, but not be limited to:
    a. Pump service and maintenance instructions, as detailed in the pump specification section.
    b. Duplex pump control panel programming and maintenance instruction and wiring diagrams, as detailed in the control panel specification section
    c. All pump station equipment service and maintenance instructions for equipment supplied in the package pump station product
    d. AS-BUILT fabrication and assembly drawings
    e. Start-up and training reports
    f. Product warranties
    g. Product contact information and project reference information