

CITY OF OAKLAND
BID SPECIFICATION FOR THE TIDEWATER SEWAGE PUMP STATION
OAKLAND, CA

In this example, the pump station specification was added to the City's Project Special Provisions that are used for every project that goes out to bid.

The highlights of this specification are:

1. The pump station is specified as a "complete, pre-designed, package pump station".
 - This language ensures that the complete pumping system will not be "broken up" into separate components.
2. "All bids must propose the delivery and installation of a Romtec Utilities pre-designed, package submersible sanitary sewer pump station or equivalent complete system, in full compliance with all specifications and drawings provided and the Scope of Supply and Design Submittal in Attachment 12 of this contract document."
 - This statement ensures that any "or equal" proposals will completely match the pumping system as designed and by Romtec Utilities. The customer (in this case the City of Oakland) will eventually receive the exact pumping system as specified.
3. "Proposals for any equal pump station package must be submitted to the City for approval prior to the bid opening date."
 - This statement allows the City and its reviewing engineer to review any "equal" packages, before award, to determine if they completely match the Romtec Utilities scope of supply and services as shown in the Romtec Utilities Scope of Supply and Design Submittal.

Note: This language is made better by including a deadline, before the bid date (normally 10 or 15 days) for the submission of "equal" packages.
4. The lift station is specified to be "the latest standard product of a manufacturer regularly engaged and having at least 5 years of experience in the production of pre-packaged submersible pump stations".
 - This statement ensures that the lift station will be supplied by an experienced package pump station manufacturer.
5. Finally, the description of the scope of work for this project is excellent. It describes, in great detail, the responsibilities of the contractor and the supplier for the project.

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303-8.1.p Special Manholes. Special manholes shall be constructed in conformance with the applicable requirements of Section 303 and as shown on the Plans.

303-8.1.q Sewer Cleanouts. Cleanout construction shall be as shown on the Plans and Standard Details. The cleanout shall be the same material as the main line sewer unless approved otherwise by the Engineer.

303-8.2 Structure Testing.

303-8.2.a Vacuum Testing. All project manholes shall be vacuum tested. The Contractor shall furnish all materials, equipment and labor for making a vacuum test. Vacuum test procedures and requirements shall be as follows:

1. After completion of the manhole barrels but prior to backfilling and grade ring installation, all manhole openings shall be sealed with plugs and a rubber ring "donut" type plug inserted inside the cone opening.
2. A small vacuum pump shall be attached to a hose connected to the plug and 4 psi of vacuum shall be applied.
3. The vacuum shall be permitted to stabilize at 3.5 psi for one minute; then the test shall begin.
4. The manhole must maintain vacuum such that no greater than 0.5-psi of vacuum shall be lost during the specified test period.

5. The specified test period is as follows:

<u>Manhole Depth (Ft.)</u>	<u>Test Period (Min.)</u>
0-5	4.5
5-10	5.5
10-15	6.0
Greater than 15	6.5

6. Manholes failing the test shall be patched as required and re-tested.
7. A vacuum regulator shall be provided on the vacuum pump such that no pressure greater than 10 psi can be applied to the manhole during the test. All manholes not meeting the leakage test or are unsatisfactory from a visual inspection shall be repaired to the Engineer's satisfaction.

303-8.2.b Hydrostatic Testing. At the Contractor's option and with the Engineer's approval, hydrostatic testing may be substituted for vacuum testing. The test shall consist of plugging all inlets and outlets and filling the manhole with water to a height determined by the Engineer. Leakage in each manhole shall not exceed 0.1 gallon per hour per foot of head above the invert. All manholes that do not meet the leakage test or are unsatisfactory from a visual inspection shall be repaired to the Engineer's satisfaction.

303-8.3 Payment for Manholes and Drop Connections. The unit prices in the Bid shall include full compensation for furnishing all labor, materials, tools and equipment for doing all work, including any rework, involved in, or appurtenant to each item as shown on the Plans or in the Specifications.

Manholes, including new manholes or replacement of existing manholes, regardless of depth, will be paid for at the unit price bid for each manhole complete in place. Such payment shall include excavation; removal of existing manholes; replacing or installing drop connection manhole; the disposal of excavated material and debris; the removal and disposal of contaminated material not paid by separate item; supplying and placement of backfill material or special backfill material; constructing inverts; furnishing and installing castings; HDPE manufactured or in-placed lining whenever specified in the plans; trench shoring; providing sewer by-pass flow; saw-cutting; reconnection work to existing or new pipe or conduit; restoration of the street surface, including permanent and temporary resurfacing; traffic striping not paid by separate item and all other work necessary to complete the work.

Drop Connection, including new drop connection or replacement of existing drop connection regardless of depth, will be paid for at the unit price bid for each drop connection complete in place.

303-8.4 Payment for Pump Station and Associated Work. All work considered under the work scope for this section shall be paid as one lump sum including items not specifically listed herein but typically and reasonably required in order to complete the intent of this work and construct the intended facility fully and completely. No specific unit of measure will be applied to the lump sum price for the pump station. The lump sum contract price for the "Pre-designed Package Pump Station" shall be full pay for all equipment, labor and materials necessary to provide and install a fully functional pump station. Cost to include, but not limited to, coordination with pump station manufacturer for the design, delivery, shipping costs, necessary equipment to off-load station components and place in open excavations; necessary excavation and foundation preparations for station components; provide, place and compact backfill material for station components; connection of the wet well, valve vault, meter vault and force main pipe; installation of all electrical and

mechanical components and connections including conduits and trenching for conduits (those provided by station manufacturer and those noted to be provided by Contractor), wire, grading of the pump station site area as indicated in the Plans. Green Book and Special Provisions sections referenced herein shall be revised, if needed, by reference, to state that measurement and payment shall be made as one lump sum.

Work shall also consist of, but is not limited to, the following:

- Pump station facility shall be a complete Romtec Utilities Pre- Designed, Package pump station complete system as shown on the plans in Attachment 12 or approved equal including all structural, mechanical, electrical and communication equipment. All bids must propose the delivery and installation of a Romtec Utilities pre-designed, package submersible sanitary sewer pump station or equivalent complete system, in full compliance with all specifications and drawings provided and the Scope of Supply and Design Submittal in Attachment 12 of this contract document.
- **Proposals for any equal pump station package must be submitted to the City for approval prior to the bid opening date. City will review, approve, or reject the submittal for the pre-engineered and pre-manufactured pump station packages, other than the one specified herein by Romtec Utilities, to make sure that it meets the performance specifications, materials and properties outlines under Romtec Utility pump station submittal. City will issue an addendum to bidders if City approved an "equal pump station" prior to the bid opening date.**
- Provide all labor, equipment, materials, transportation, trucking, loading, unloading, construction, installation, connection, training, start-up, warranty and incidentals necessary to provide and construct and install a pre-designed, packaged sewer pump station, valve vault, control panel, pump disconnect panel and electrical junction box conforming to the details, locations, and inverts shown in these contract documents. The pump station must be supplied by a manufacturer regularly engaged in the manufacture of pre-packaged lift stations and have at least five years experience in the manufacture, installation supervision, start-up services and training of projects including lift stations.
- The supplier shall be responsible for all mechanical, structural, electrical, and communication components as detailed in these documents.
- The supplier shall provide complete design and submittal documentation for the system as supplied.
- The suppliers shall provide complete Operation and Maintenance manuals including all warranties related to the system and the components included in this system.
- The supplier shall provide all services for a pump station with all components to be complete part of pre-designed system.
- The equipment supplied under this section shall be manufactured and supplied by Romtec Utilities, 18240 North Bank Road, Roseburg, OR 97470, 541.496.9678, or approved equal. The lift station system shall be a complete pre-designed, packaged, submersible, sewage pump station system. An approved equal system must be provided by a manufacturer of complete lift stations, not individual items provided and/or installed by the contractor.
- Any bidder proposing an "or equal" design must provide their "or equal" manufacturer's complete submittal to include all the items detailed in the Romtec Utilities Scope of Supply and Design Submittal shown in Attachment 12.
- Station components shall be factory tested by the manufacturer prior to delivery.

- Site installation instruction to the installing contractor shall be provided by the pump station provider.
- On-site start-up service, operational and maintenance training shall be provided by pump station provider.
- Pump station shall be designed with a concrete wet well structure.
- Pump station shall have two (2) Flygt pumps (or equal) and flotation pump controls.
- Pump station shall be designed to accommodate a minimum flow of 1,200 gallons per minute (GPM).
- Pump station shall be designed to be powered at 240 volts with separate, mobile/trailer generator set adequately sized to fully run the pump station on power solely provided by the generator.
- Internal pump station guide rods, etc. shall be of stainless steel.
- Pump station control panel to match current City of Oakland pump station control panels.
- Program all alarms to dial phone numbers as prescribed by the City.
- Work scope shall include all connections to new sanitary sewer pipes;
- Work scope shall include all connections to all electrical utility and generator facilities with appropriate switch gear as necessary to provide power to the pump station from either the grid or the generator and to automatically switch between grid and generator when a power failure occurs on the grid as well as switching between generator and grid when grid power is re-established.
- Provide temporary sanitary sewer pumps, pipes, and sewer by-pass mechanism and equipment needed for safe and legal transportation and discharge of sanitary sewers during the work while connecting and disconnecting sewer services.
- Maintain sewer laterals from adjacent businesses
- Rehabilitate the exiting receiving manhole with steps as shown in City Standard Detail D-11 and shape the bottom of the manhole
- Provide crushed rock fill material below the pump station foundation for grade control and dewatering purposes.
- Replacement of all existing pavement and base, curb, gutter, and striping.

SECTION 306 - UNDERGROUND CONDUIT CONSTRUCTION

306-1 OPEN TRENCH OPERATIONS.

306-1.1 Trench Excavation.

306-1.1.1 General.

ADD THE FOLLOWING PARAGRAPH TO THE END OF SUBSECTION 306-1.1.1:

Where directed to "pothole" to verify the depths of underground utility crossings, the Contractor shall excavate to locate said underground utility crossings and relay this depth information to the Resident Engineer. Payment for this work shall be provided in the unit price paid for each "pothole investigation" and shall provide full compensation for signs, traffic control, excavating, providing and compacting backfill, providing temporary and permanent resurfacing, etc. and providing all labor, equipment and materials incidental to this work.

REPLACE SUBSECTION 306-1.1.2 WITH THE FOLLOWING:

306-1.1.2 Maximum Length of Open Trench. Except with the Engineer's written permission, the maximum length of open trench at any one time shall be 300 feet (91 meters).

REPLACE SUBSECTION 306-1.1.3 WITH THE FOLLOWING:

7-06 PREPACKAGED SANITARY SEWER PUMP STATION

7-06.1 Description

This work shall include furnishing and installing a 12' I.D. pre-packaged sewage pump station, valve vault, odor control, diesel-fueled generator, ATS and panel, and control and disconnect controls, control panels, reinforced concrete slabs, odor control unit, and electrical service, and other items as shown on the Contract Plans, specified herein, and shown in the product submittal. (See Appendix)

7-06.2 Materials

7-06.2(1) General

The pump station shall be manufactured and supplied as a fully integrated and functional station produced by a single company; (Romtec Utilities, 18240 North Bank Road, Roseburg, Oregon, 97470. Contact: Anisa Bear 541-496-9678). All applicable components of the station shall be UL listed.

The single source manufacturer shall meet or exceed the product specifications as shown in the drawings, described in these specifications, and as shown in the product submittal provided by ROMTEC Utilities (See Appendix), which shall be used as a guide and example of the minimum product specifications that shall be met; and the minimum acceptable detail of the product submittal. The apparent low bidding Contractor shall provide a copy of the single-source prepackaged sewage pump station submittal for staff review prior to formal award of the contract.

The single-source manufacturer shall be responsible for all mechanical, structural, electrical and communication components, as well as on-site supervision of the start-up, training, submittals, operation and maintenance manuals, and all warranties related to the materials, equipment, and the entire pumping system.

The specifics of the pump station are shown in the section drawings prepared by Romtec Utilities. Contractors wishing to supply products different from those specified are required to prepare a complete submittal package, including all mechanical and electrical items, and submit for approval 10 calendar days prior to the bid opening date. Submittals will be reviewed and approved or denied prior to the bid opening. Incomplete submittals will be rejected and returned to the bidder. The City reserves the right to review or reject submittals at their sole discretion subject to the provisions of RCW 70.95A.090 for Pollution Control Facilities. Additionally, for efficiency and convenience, the City of Camas wishes to maintain like components throughout our sewage collection system. Camas has numerous sewage pump stations configured and constructed exactly as the system specified in this project, and we are unlikely to approve an alternate product for this project.

Alternate product fabricators shall demonstrate that they have produced and delivered at least ten other functioning pump stations of similar type and size, can meet all of the requirements of this section, and provide references to the Project Manager together with any submittals provided.

7-06.2(2) Submittals

7-06.2(2)A Shop Drawings and Submittals

Within 3 days of the contract award, the Contractor shall submit 4 copies of the drawings and specifications for the prepackaged sanitary pump station, controls, valve vault, generator, and any other items that will be provided as part of the package pump station. The drawings shall be of sufficient detail for the Engineer to review for conformity to the Contract. The drawings shall also include elevations on the same datum point as the Contract Plans.

Engine-generator submittals shall include the following information:

1. Factory published specification sheet indicating standard and optional accessories, ratings, etc.
2. Manufacturer's catalog cut sheets of all auxiliary components such as battery charger, control panel, enclosure, etc.
3. Dimensional elevation and layout drawings of the generator set, enclosure and transfer switchgear and related accessories.
4. Weights of all equipment.
5. Concrete pad recommendation, layout and stub-up locations of electrical and fuel system conduits and piping.
6. Interconnect wiring diagram of complete emergency system, including generator, switchgear, day tank, remote pumps, battery charger, remote alarm indications.
7. Engine mechanical data, including heat rejection, exhaust gas flows, combustion air and ventilation air flows, fuel consumption, etc.
8. Generator electrical data including temperature and insulation data, cooling requirements, excitation ratings, voltage regulation, voltage regulator, efficiencies, waveform distortion and telephone influence factor.
9. Generator resistances, reactances and time constants.
10. Generator locked rotor motor starting curves.
11. Control panel schematics.
12. Automatic load transfer switch(es).
13. Manufacturer's and dealer's written warranty.

7-06.2(2)B O&M Manuals

The Contractor shall prepare and submit four (4) copies of the O&M manuals for all components incorporated into the pump station. Separate sections shall include, but not be limited to the following:

- Pumps
- Controls
- Odor Control Unit
- Generator
- Valves

O&M manuals shall include specifics on frequency of routine maintenance, step-by-step instructions for specific tasks, including diagrams, and drawings that specify part #'s, contacts and so forth. Special tools required for specific tasks shall be included and identified also. The submittal shall be reviewed by the City and the Contractor shall provide four (4) copies of the approved manual.

7-06.2(3) Equipment and Materials

7-06.2(3)A Wetwell and Valve Vault

The precast concrete wetwell shall be constructed of Class 4000 commercial concrete conforming to ASTM 478 standard specifications for precast reinforced concrete manhole sections. The wall thickness shall be a minimum of 11 inches and shall include steel reinforcement conforming to ASTM A-706. The pump discharge elbows, a prefabricated fiberglass non-porous self-cleaning basin, and associated anchors shall be pre-installed in the base at the manufacturer's facility to provide a complete and integrated installation. The pump discharge bases shall be poured into the wetwell base section at the time of fabrication to provide a complete and integrated installation. The minimum inside diameter shall be 12 feet. The barrel sections of the wetwell shall be linked with a single offset joint with R-3 rubber gasket meeting ASTM C361, 425, and 433. All hardware and piping inside the wetwell shall be stainless steel.

The precast top slab shall be H20 rated. A cable trench as supplied by the pump station supplier that connects the wetwell to the pump disconnect panel shall be installed as shown on the plans.

The access hatch shall have a minimum inside opening as shown on the Contract Drawings and shall be H20 rated for indirect traffic, and have lift assistance springs to limit the opening forces to 15 lbs. The hatch shall also include a OSHA compliant Safe-Hatch for fall protection as manufactured by ITT Flygt. The hatch shall be able to accommodate Flygt pump guide brackets and lifting chain, a Multi-Trode sensor mounting bracket, and the precast cable trench.

The wetwell shall be supplied from Romtec without an interior coating. Raven 405 lining system shall be applied by a factory authorized applicator in accordance with Section 7-06.3(1)A in the Special Provisions.

The valve vault shall be of size and type as shown on the drawings, or approved equal. Vaults shall be of the solid wall type to allow core and Kor-n-Seal connections as shown.