

Example Detailed Engineering Bid Scope of Work

Please provide a quotation based on the following scope of work by October 20th, 2005. The project is to be completed by October 1st, 2006.

Quotation Terms

Owner is asking for a lump sum quotation for design and construction management. After the packages have been bid, the construction manager will administer the subcontracts for an additional fee (% basis). Please also quote the percentage that will be used for this phase of the project.

Please clearly define the deliverables and assumptions that are included in your design and construction management lump sum. Also, clearly define the aspects that will be covered by the contract administration fee.

Owner will purchase all large process equipment such as pumps, agitators, heating system, sieves, dust collectors, filters, etc.

The construction subcontractors will be responsible for purchasing instrumentation and all specialty items.

Project Description

This project will install a new process line (called Line 10) in a process building currently under construction. Example PID's from a similar system are attached. Most of Line 10 will be located on the third and fourth floors of this building.

The process building under construction will already contain a motor control center room. There will also be piping chases between floors and ventilation. The roof and lighting will need to be reworked due to the Line 10 installation.

To support the Line 10 operation, there will be other related equipment in other areas:

Utilities

A larger generator and automatic switch will replace the current backup generator and switch. This will be used to maintain drum rotation during power outages.

An air compressor with a cooling tower will be installed in the Utility Area.

An electrical substation and associated underground cabling will be installed to provide adequate electrical capacity.

Waste Water Treatment

A large tank (25,000 gallons) will be installed for sulfates decant waste. It will be installed over the current containment pit. This low pH material will be metered to the pH neutralization system via the current regeneration hold tank system.

This project will also upgrade the pH neutralization system.

- The Lime Tanks will be fitted with level detectors and automatic fill valves to prevent overfilling.
- The containment pit will be lined and reworked for emergency pH basin overflow and tanker unloading spills.
- An acid system will also be installed on the pH-polishing tank.
- The Lime Tanks and Lime Tanker Unloading Area will be diked.

Personnel Facilities

The current Maintenance, Production men's, and Production women's locker rooms will be expanded. Also, the Production and Engineering office building will be expanded to accommodate more offices and a break room.

Other Requirements

- Owner currently has a plant wide control system. The control system uses Allen Bradley PLC5's and Intellution Human/Machine Interfaces. The PLC's communicate with Allen Bradley Flex I/O and HMI's using Allen Bradley ControlNet. The HMI's are also connected to each other via Ethernet. Owner has standard drawings and specifications for Allen Bradley Flex I/O panels. These will be available to the design firm. This project will require one new Flex I/O panel on the fourth floor and two Intellution HMI's. The rest of the project will use existing Flex I/O panels and HMI's. No additional PLC's will be required for this project.
- All tanks must have a means of tying off a safety harness lanyard for tank entry.
- All utilities will be tied into existing headers.
- All equipment must be easily accessible. Elevated work platforms must be used when necessary.
- Tanks should be elevated sufficiently for easy access to processing equipment underneath.
- Evaluate and design expansion area for fire protection and proper egress.
- Upgrade lighting in waste treatment and Line 10 process areas.
- Provide +/- 10% estimate for the entire project.

- Develop engineering schedule and complete project schedule in Microsoft Project.
- Provide schedule and cost control for the project.
- Provide equipment and instrument list in Microsoft Excel at the end of the project.
- Provide Electrical, Functional Definition, and PID as-builts no later than four weeks after project completion.
- Provide all other technical data, issue-for-construction drawings, fabrication drawings, and equipment manuals for record purposes at end of project.
- All drawings to be done with Autocad.
- Prepare drawing and specification packages for all construction disciplines.
- Provide bid analysis and equipment fabrication drawing approvals.
- Owner will supply specifications and information regarding the filter and heating system. Engineering contractor to provide specifications for all other equipment and instrumentation.
- The electrical contract will be sole-sourced with Smith Electric. Therefore, it will not be bid.
- Owner will provide preferred vendors for equipment and instrumentation.

Attachments

1. Equipment List
2. Drawing D0 234039 PID Slurry Receivers
3. Drawing D1 23581 PID Filter
4. Drawing D1 235832 PID Heating System
5. Drawing D1 235833 PID Sieve
6. Hand Sketch – PID Sulfate Decant Waste Tank
7. Drawing 01-D-2250 PID Chemical Storage Tank farm
8. Drawing 02-D-2203 PID Waste Treatment (Hand Sketch of Changes)
9. Drawing 06-S-2301 Slab Plan First Floor Expansion
10. Drawing 06-S-2302 Slab Plan 3rd and 4th Floor Expansion
11. Drawing 06-S-2303 Slab Plan Roof Expansion
12. Drawing 05-A-2102 Maintenance Locker Room Plan
13. Drawing 05-A-2104 Office and Production Locker Room Plan.