

Deep Well Pump Project Q & A

10/31/2017 Written Questions:

1. Who put existing derrick in? *Hydro Resources*
2. Electrical connection located?
Equipment is at the 4850 level.
3. Is there an existing drive? *Yes*
4. Any spares? *No*
5. Is intent to use existing cable?
No, new cable will need to be installed.
6. What is the longest piece of pipe?
20 footers
7. Are there pictures from previous installation?
The pictures attached to the original documents, show the key processes. We have additional pictures of the same process. Are there items specifically you are interested in?
8. Is head pinned?
No, it is just sitting there
9. Where is discharge?
5,000 level
10. Is this running 3600 RPM?
The pump/motor are 3600 rpm units. They currently are not running at full rpm.
11. Air or water-cooled Motor?
The specifications are calling for a submersible motor, consequently it will be water cooled.
12. What is the size of cable?
The cable size must be determined by the Electrical Code and voltage drop. The specifications do provide a minimum size.
13. What is specifying the cable length?
Cable length is difficult for the SDSTA to predict. First, the pipe will most likely be single random lengths which vary by about 1' in length. The pump and seal assembly is attached to the bottom of the pipeline, and then the motor is attached to the seal. The length of all these added items are dependent upon the purchased equipment. In addition, there must be a portion of cable left

over to connect to a reel that must be located on the opposite side of the shaft as to where the pipe is staged and hoisted in and out of the winze. Also, keep in mind that the NPSHr for a new pump might drive the column length to a longer string if required by the pump. At present time, the lab will not pump below the 5900L. It is the responsibility of the contractor to make certain the pump's NPSHr is satisfied with a 1500' pump string, and advise if a longer string of pipe is required. The contractor's submittals must show these values.

14. How many slice points?

None, don't want any.

15. Pump total per min (pump curve)?

Maximum flow needs to be 1550 gpm. Minimum will be 1350 gpm. The operating heads depend upon the flow as well as the level of the pool water. Two operating points at high flow and then two operating points for low flow are provided here.

High flow/high head = 1031 feet.

High flow/low head = 781 feet.

Low flow/high head = 981 feet.

Low flow/low head = 731'.

16. Is it contractor's responsibility to pull old electrical?

Yes, contractor is responsible. Actually the electric cable is strapped onto the pipe for support. So the electrical cable must be reeled in while the old column is being lifted out.

17. Are you using existing level controls?

No, the SDSTA operates the pump based upon the quantity of water being sent to the Waste Water Treatment Plant on the surface. Any level device is to monitor the pool level.

18. Is this to maintain levels now?

Yes

19. Are you using existing transducers?

This question might be the same as #17.

20. Will we be taking existing pipe up and out?

The pipe that is currently stacked in the drift will be removed by SDSTA personnel. The pipe that will be removed from the current installation will be removed by the contractor along with SDSTA shaft crews for hoisting.

21. Possible real estate dimensions?

The site was visited and the pipe storage locations were pointed out. There is adequate room to store say 1500' of pipe.

22. Pump support structures will they stay?

The pipe support structure will stay unless the weight of the new system is much greater than the structure can handle. Then it would have to be removed. Is this likely? NO.

23. Are there any pump control sensors?

There is a pressure sensor attached to the column to help the SDSTA determine the pool level. This item must be replaced as listed in a previous question. There are no other pump control items.

24. Is it cased or open pit?

Open.

25. Does contractor remove old pipe that comes from the job?

Correct, the contractor will load pipe into the Zimmerman cars and assist the SDSTA lab crew. Then at top, the contractor will stack the pipe or load it into a salvage truck.

26. Is the 2/0 armour jacketed submersible pump cable to be aluminum conductor?

See question #30 below. Stranded copper cable is preferred. Contractor must determine proper cable size and type for new pump.

27. Is there a project budget determined?

Yes, and no we will not distribute it.

28. What type of cable is going to be required?

Please refer to question #30.

29. Can we ask for a breakdown of the cost history for the last few times this motor was replaced?

- a. Wire cost?
- b. Pump cost?
- c. Labor Lost?

Since this was a lease project, the costs are not broken down by items.

30. Please provide the complete cat# or cable information

- a. Shielded? ARMORED
- b. Taped shielded? NO
- c. 3-phase? YES
- d. With ground wire? YES
- e. What size of ground wire? Size according to code requirements. Existing is #4
- f. Copper or aluminum? COPPER
- g. Solid or stranded? Stranded is preferred, but not required.
- h. Insulation type and rating? Use appropriate type for application. See below for existing cable specs. Centrline is now made and sold by Baker Hughes. A cable equal to PN76622 is desirable.

Centriline

Centriline Power Cable

Centriline CPN Flat -30°F (-34°C) to 205°F (96°C)

Specifications

PN	kV Rating	Cond. Size Solid	Conductor Diameter	Insulation Diameter	Jacket Dia.	Overall Dimension		Weight
			inch	inch	inch	inch		lb/ft
76127	5	6	0.162	0.348	0.474	0.604	x 1.512	0.89
76128	5	4	0.204	0.390	0.516	0.646	x 1.639	1.10
76418	5	2	0.258	0.444	0.570	0.700	x 1.800	1.40
76417	5	1	0.289	0.476	0.602	0.731	x 1.894	1.59

Centriline CPN Round -30°F (-34°C) to 205°F (96°C)

Specifications

PN	kV Rating	Cond. Size Solid	Conductor Diameter	Insulation Diameter	Jacket Dia.	Overall Dimension		Weight	Armor	Conductor	Ground	Capillary Line
			inch	inch	inch	inch		lb/ft				
76151	5	6	0.162	0.348	0.940	1.090		0.92	Galv	Solid	no	no
76120	5	4	0.204	0.390	1.030	1.180		1.15	Galv	Solid	no	no
76414	5	2	0.258	0.444	1.147	1.297		1.50	Galv	Solid	no	no
76413	5	1	0.289	0.476	1.216	1.366		1.73	Galv	Solid	no	no
76902	5	1/0	0.364	0.512	1.293	1.383		1.85	Monel	Solid	no	no
76352	5	1/0	0.364	0.550	1.375	1.525		2.11	Galv	strtc	no	no
76620	5	1/0	0.364	0.550	1.371	1.521		2.23	Galv	strtc	#4	no
76632	5	1/0	0.364	0.550	1.371	1.481		2.05	Monel	strtc	#4	no
76623	5	1/0	0.364	0.550	1.481	2.006 x 1.631		3.18	Galv	strtc	#4	3/8"
76706	5	2/0	0.412	0.598	1.481	2.235 x 1.735		3.77	Galv	strtc	#4	1/2"
76622	5	2/0	0.412	0.598	1.475	1.625		2.60	Galv	strtc	#4	no

Other Centriline 1/0 & 2/0 Cable

Specifications

PN	Cable Description	Wt/Ft	Diameter	
			Minor	Major
76719	CEEF - 2/0 strtc 5kv 90 185 T-B2 4Grd Gal F	2.57 lbs	0.890"	2.760"
76757	CEEF - 2/0 strtc 5kv 90 185 T-B2 4Grd Gal F phase color	2.57 lbs	0.890"	2.760"

OTE: All finished dimensions are nominal, $\pm 0.040"$ tolerance

Weight is $\pm 8\%$ tolerance

Materials and specifications are subject to change without notice

Stranded conductors will be supplied on request

Flat cable construction has 0.020" thickness, galvanized steel armor

Round cable construction has 0.025" thickness, galvanized steel armor

3KV Cable also available

31. Is the winch and hydraulic system at the top of the derrick (4550L) in working order and available to the contractor to use to remove the existing pump and install the new deep well pump?

The winch system was last used in January of 2017. It was in usable condition then.

32. Does SDSTA own the pipe clamp used to raise/lower the pipe string, and can we use it?

We do not own the "elevators". The contractor will need to supply these items.

33. Can we use sacrificial methods to remove the existing pump? I.e., cut the pipe sections and pump shaft if they don't easily unthread.

The preference is to not cut the pipe. There have been no instances where the pipe did not thread apart, although some were a bit stubborn. Performing hot work in a shaft is risky and large slag or sparks can cause fires as there are pieces of dry timber in the shaft above the waterline.

34. Are the Zimmerman Cars (Appendix B – Picture #2) used to lower the 8" pipe available to use?

- a. How many pairs of pipe-carrying cars are available?

- i. If more than one set of pipe-carrying Zimmerman cars, is there enough room at the headframe to rig two pairs of Zimmerman cars at one time?

There are at least two sets of cars. They are available for use by the contractor and the SDSTA shall assist in loading to make sure all is properly setup.

35. With regards to lowering Zimmerman cars/pipe loads down the shaft, will the cage be available to make repetitive trips up/down?

Arrangements must be made in advance to schedule such activities.

36. 2/each 8" flow meters are listed under Appendix A which I don't recall seeing on the site visit?

- a. Where are these flow meters?
b. Are the meters in use?
c. Will they be reused?
d. Does this contract require anything related to these meters?

The meter is situated at the 5000L and is incorporated into the discharge pipeline. Only SDSTA crew members will be allowed at the 5000L at present time.

37. Is existing pump data (Make/Model Number) available?

- a. Are there pumping conditions available...Gallons/minute @ total dynamic head?

See question #15.

38. What is the budget for this project?

The budget will not be made public.

39. Is the current lease available for review?

The existing lease will not be made public.

40. Where will the spare set of equipment, the pump, motor, and seal be stored?

During the period of time beginning with delivery of the equipment to the contractor's facility, through to the installation of the first set of equipment, it will be stored and maintained at the contractor's facility. When installation requires the delivery, both sets of equipment will be delivered to the SDSTA. The actual location at the SDSTA has not yet been determined.

41. Does this project fall under Davis Bacon Requirements?

If labor costs comprise 15% or more of the project budget, Service Contract Act requirements will apply. Since this project is for installation of equipment and not construction Davis Bacon requirements will NOT apply.

42. 7.0 – “Only companies represented at the pre-proposal conference will be eligible to submit proposals. Contractors’ subcontractors are encouraged, but not required, to attend.” – Who are the approved pump contractors that are eligible to bid this project?

It is mandatory that contractors’ attend the site visit to submit a proposal. Subcontractors are encouraged to attend the site visit but it is not required of them. Anyone attending the site visit is eligible to submit a proposal.

43. Appendix A – Since this is not a new application and there is an existing system in place. Here are a few questions pertaining to Appendix A.

- a. What are the specifics on the existing flow meters? Flow meters are located at the 5000L and are in the discharge line.
- b. What is the current length of the power cable that was supplied?
- c. What is the horsepower rating of the three 480V variable frequency drives? 1500Hp

44. 1.3.4.1.d - Since this is not a new application and there is an existing system in place, could you please supply the information pertaining to the pump that is currently installed? The information we are seeking includes but is not limited to in the description under 1.3.4.1.d. In addition, could dimensions and dry weight?

It is important to keep the diameter of the pump/motor assembly less than 12". This is to prevent the assembly from catching the shaft set steel as it descends or pulled back out. The current pump is a Centrilt 8 stage pump.

45. 2.2.2 – Based upon the 480V variable frequency drives listed in Appendix A, is the pump motor required to be 4160V or will 480V be acceptable?

Other questions then arise. If left at 480V will an isolation transformer be required to cut down on harmonics? Next is the relative size of the cable and its cost increase. Then 480V is not acceptable.

46. Under Plan View of #6 Winze – The skip in the #6 Winze appears to have approximate opening of 5'3" x 5'7". What is the maximum OD allowed for the pump and motor?

The maximum diameter of the pump and motor must be kept less than 12", otherwise the pump and motor flanges or edges will catch on the edges of the set steel and potentially hang up.

47. Recent pump removal – When was last time the pump was removed for inspection and evaluation?
The system was pulled out about 1 year ago. The motor had failed.
48. Recent pump removal – What was the reason for removal and inspection/evaluation?
See #47.
49. Recent pump removal – What specific pump/motor items were inspected at the last removal?
The motor was replaced. The pump assembly looked to be in good condition.
50. Recent pump removal – What are the detailed findings of the inspection/evaluation?
The motor inspection is not available.
51. Recent pump removal – Were there any failures and if so what item(s) failed?
In years past, the pump has failed. Reda pumps were used at one time and were built in a nickel iron alloy. These failed after one year's run time. The RFP in section 2.3 discusses some causes of failures. It is extremely important to not propose an iron based pump.
52. General pump/motor question – Is the pump motor oil cooled or product cooled?
The motor is cooled by product flowing over the exterior of the motor.