



ARTESIA PUMP STATION ADDITIONAL WELL NOS. 7 AND 8

Solicitation No: CO-00416

Job No.: 21-8602

ADDENDUM 5

Date: SEPTEMBER 22, 2021

To Bidder of Record:

This addendum, applicable to work referenced above, is an amendment to the bid proposal, plans and specifications and as such will be a part of and included in the Contract Documents. Acknowledge receipt of this addendum by entering the Addendum number and issue date on the space provided in submitted copies of the bid proposal.

RESPONSES TO QUESTIONS

- 1. Question: Please clarify the following:**
The sequence in Section 01 12 16- 5 Sequencing: Stage II, Stage III and Stage IV indicate an interruption in the drilling sequence that is in Section 33 11 14 1.1 B.; the Sequence of Work in Section B. does not indicate that there will be an interruption in the 16 steps listed.
Response: Stages of work can be performed concurrently. Performing pumping tests on Well Nos. 3, 4, and 5 is not expected to require a break in work between Stages II and IV.
- 2. Question: Section 01 12 16-5 Stage III references pump tests for Wells 3, 4 and 5. There were no specifications provided for this work. Is the contractor responsible for providing a test pump, or is there existing equipment in the wells to utilize for these test? Will the electric Motors on site be available to use for these tests or does contractor need to provide electric motors? Is the contractor to provide engine-driven test pumping equipment with right angle drives for these tests? Please provide specifications or detailed clarification about test pumping Wells 3, 4 and 5.**
Response: Refer to Section 33 11 14 – 3.15. Contractor shall provide test pumping equipment in accordance with Section 33 11 14 3.15.C. Contractor shall provide prime mover of a variable-speed type (example: diesel engine with right angle gear drive; generator driven variable frequency driver). See Changes to the Specifications, item 8.
- 3. Section 01 12 16- 5 Stage VIII reads “Complete drilling of Well 7...” – it appears that the first line of Stage VIII should say “Well 8” instead of “Well 7.” Please clarify.**
Response: It should read Well No. 8. Please see Changes to the Specifications, item 2.
- 4. Question: Section 01 12 16-5 Stage VI reads “to remove existing pumps in 3, 4 and 5.” Elsewhere it has been stated that the pump has already been removed from Well 4. Please clarify - has the pump already been removed from Well 4?**
Response: All three existing well pumps (No. 3, 4, and 5) are currently in the wells.
- 5. Question: Section 01 12 16-5 Stage III, reads “Pump submittals are to be provided as soon as possible, within 60 days of the NTP.” Are these submittals expected before the pump testing of the wells? The pump testing could affect the final design points. Please clarify.**
Response: Provide the pump submittals in accordance with the Sequence of Work. See changes to the specifications, items 2 and 9.

6. **Question:** Section 01 12 16-5 Stage VIII, reads “Complete Drilling of No 7 (which should be 8)....” is done after the pumps for Wells 3, 4 and 5 are installed and operable, which would require the electrical service being available. What is the timeline for the electrical being completed and installed that was included in the previous bid for the Artesia Pump Station Improvement?
Response: The electrical service timeline is anticipated to be completed by approximately April 2023. Contractor shall coordinate with concurrent project in accordance with Special Condition SC6.
7. **Question:** After reviewing the driller’s logs provided by SAWS and found on TWBD, the lithology between the 4 previously drilled wells (2, 3, 4, and 5) varies significantly. For example, the top of the Austin Chalk is at 616’ on Well 2, 602’ on Well 3, 799’ on Well 4 and 664’ on Well 5. Do you have any information that would indicate there is a fault that runs through that area that would explain the significant differences in the depths of the formations encountered at each well site?
Response: Refer to attached Figure 2-4, “Artesia Pump Station Structural Cross Section Showing Possible Cavernous Zones.” This is the known structural geology of the site developed by Shultz and others, 1999. The expected formation contact depths should be similar to Well #6 (plugged) on the far left-hand side of the drawing.
8. **Question:** The bid form does not have a bid item for any of the well pumping equipment that is required to be purchased, installed and tested for Wells 3, 4, 5, 7 & 8. Please add the appropriate bid item(s) for this work.
Response: Work for this shall be included in bid items 22 and 23 for mechanical and electrical work.
9. **Question:** The bid form does not have a bid item for any of the well pump testing that is described in Section 01 12 16-5 for Wells 3, 4 and 5. Please add the appropriate bid item(s) for this work.
Response: Work for this shall be included in bid item 17, Constant Discharge Pumping Test (24-Hour).
10. **Question:** Are the monitoring wells where the transducers are to be installed flowing (artesian) wells?
Response: “Monitor Well” observation points used during pumping tests may include any of the other available wells (Wells 3, 4, 5, 7, or 8) within the Artesia Pumping Station that may exist at the time of the test.
11. **Question:** Section 43 21 13, 2.1, B, does not have any column sizes or depth settings of the pumps. Please provide column sizes and depth settings of the pumps.
Response: Column sizes are provided in Addendum #3. Pumps are to be set at an elevation of 550 feet.
12. **Question:** Section 01 12 16-5 Requirements 1. States “Shutdown can only take place during off-peak season (November-March).” Does this mean we are not allowed to drill into the Edwards and/or perform any development or pumping tests on any of the wells except during the months of November-March?
Response: Drilling is allowed and necessary outside of the months of November – March.
13. **Question:** Would we be allowed to have 2 drilling rigs on-site and/or complete some or all of the drilling sequence described in Section 33 11 14 1.1 B. for both Wells 7 & 8 at the same time?
Response: Drilling of Wells 7 and 8 can occur at the same time. Contractor must conform to local noise ordinances.
14. **Question:** Where do we discharge the water made during drilling, The creek on the south side of the site if not where to?
Response: Test Drilling discharge shall occur to the drainage swale on the south side of the site as shown on Drawing C-02. The Contractor shall conform to all federal, state, and local rules regarding the management and discharge of stormwater from a construction site. This will include the filing of a Stormwater Pollution Prevention Plan (SWPPP) with TCEQ.
15. **Question:** Where do we get water for drilling, there are two fire hydrant on the SAWS plant site, will one of them be available.
Response: Water can be used from on-site at location approved by Owner in accordance with General Condition 5.24. A separate water meter and approved backflow prevention device is required for water connection.
16. **Question:** During the pulling of Water Well 3 and 4, the power lines appear to be close to the well, will it be possible to de- energize the lines will work is being performed on 3 & 4.
Response: It is not possible to de-energize the lines. If the Contractor wishes to de-energize the lines, work must be coordinated with CPS Energy.

- 17. Question: West from Well Proposed Well Site well 7, there is miscellaneous equipment in front of the fence line where the trees are to be protected that would need to be removed, is this SAWS responsibility for removing the miscellaneous items prior to mobilizing the drilling equipment.**
Response: Contractor shall determine if miscellaneous equipment needs to be moved for proposed work. No miscellaneous equipment movement is anticipated at this time. Miscellaneous equipment in the conflicting area of the proposed work shall be moved at Contractor's expense. Coordinate with Owner if any equipment is anticipated to be removed or moved.
- 18. Question: The abandon electrical equipment from Water Well 6, can this be removed prior to start this contract to allowed for easier access to the jobsite.**
Response: No work at Well 6 is anticipated as part of this project.
- 19. Question: Will the site visit attendees made available?**
Response: Site visit attendees will be made available and are attached.
- 20. Question: Could you please clarify which access point you would like us to use? Will badges be provided for security gates?**
Response: Site access shall be through the Aniol St. entrance. See the General Conditions and Section 01 35 00 for security requirements and information for badging.
- 21. Question: Will a pay item be provided for the Track Dozer specified in section 01 14 13?**
Response: This requirement will be removed from the Specifications. See Changes to Specifications, item 3.
- 22. Question: There is quite a bit of material stored around the trees to protect on the west side of the property. Will additional protection be necessary?**
Response: See Addendum No. 3; additional protective fencing has been depicted on Drawing C-01.
- 23. Question: Who is responsible for staking locations of wellheads?**
Response: Staking locations of Wells 7 and 8 are shown in the drawings and should be confirmed by a Registered Professional Land Surveyor (RPLS) licensed in Texas and hired by the Contractor.
- 24. Question: Item 102: What is meant by "intermediate" demobilization and remobilization?**
Response: The Owner may direct demobilization that occurs after the Notice to Proceed has been given and Work has commenced, but before the end of the Project. See SAWS Item No. 102 for more information.
- 25. Question: Section 28 00 05 – Paragraph 2.1 - Can you clarify which model PTZ camera is required by specification section 280005? The model number provided is a fixed dome camera and the camera features listed in 2.01 B do not match any of the manufacturers available models.**
Response: A revised camera specification is included, please see Changes to the Specifications, item 6.
- 26. Question: Please acknowledge that twenty-four hour per day drilling is allowed at the Artesia Pump Station while drilling Wells #7 & #8.**
Response: Working hours are specified in General Condition 5.18. Contractor may request an exception in writing. Note that all noise ordinances must be followed.
- 27. Question: Has TCEQ approval been obtained for construction of the new wells? If not, when is it anticipated to be received?**
Response: TCEQ approval is anticipated mid-November.
- 28. Question: Are there after hours/holiday/weekend inspection costs that the contractor will have to pay?**
Response: Refer to General Condition 8.3 for Sunday and SAWS Designated Holiday Work in respect to the COI's average salary costs.

- 29. Question: Will water be provided for construction supply and if so where will can we get water? A min 3" tap is needed.**
Response: Water can be used from on-site at location approved by Owner in accordance with General Condition 5.24. A separate water meter and approved backflow prevention device is required for water connection.
- 30. Question: An all-weather/crushed limestone access roads and drilling equipment pads will need to be installed for the well construction. Will this need to be removed and the site restored to original condition once construction is completed?**
Response: Yes, restore the site in accordance with Section 01 14 19 1.05.
- 31. Question: Please clarify if the owner and/or engineer will stake the well locations.**
Response: Staking locations of Wells 7 and 8 are shown in the drawings and should be confirmed by a Registered Professional Land Surveyor (RPLS) licensed in Texas and hired by the Contractor.
- 32. Question: Please clarify how often/phases of work that construction photos are required and if it must be a professional photographer.**
Response: Construction photos are required every 30 days in accordance with Section 01 32 33 1.03.A. A professional photographer is not required.
- 33. Question: Are temporary field offices required and if so what are the specific requirements?**
Response: Temporary field offices are allowable in accordance with Section 01 50 00.
- 34. Question: Are there any noise concerns? As you all know construction of the wells will require 24/7 operations. It would be good to add a bid item for a 32 ft tall temporary acoustical sound wall if needed as there are residents to the West of the location about a 1000 ft away. In our experience, noise can carry further than this and can be an issue.**
Response: Drilling is required to meet applicable noise ordinances in accordance with Section 33 11 13 1.1.B. Sound proofing is allowable if required to meet noise ordinances. Also see Section 01 50 00 for construction noise control.
- 35. Question: Can the bid date please be extended? There are multiple project bidding the same day and before/after. At week would be very helpful in order to have sufficient time to be able to put together everything that is required for the proposal.**
Response: See Addendum #4.
- 36. Question: Due to the existing facilities/limited area on the site there will be area needed for equipment storage and laydown area. Will this be acceptable/are there any limitations on areas that cannot be utilized?**
Response: The laydown area is identified on drawing C-01.
- 37. Question: Will the contractor be required to have a licensed well driller on site around the clock during drilling operations (we would strongly recommend this be required)?**
Response: This is a listed requirement in Section 33 11 13 1.2.A.1.
- 38. Question: Please clarify that the drilling rig must set all casing and that a crane cannot be used to install.**
Response: A crane cannot be used. A drilling rig may be used in the setting of casing.
- 39. Question: What is the anticipated Notice to Proceed date?**
Response: Anticipated NTP is December 17, 2021 as listed in the SIR.
- 40. Question: The well pump spec lists "Goulds by Gicon" as an approved manufacturer. Please revise to "Goulds" as an approved manufacturer. Gicon is a distributor/not a manufacturer who was once a Goulds rep for Ag pumps.**
Response: Pumps by Goulds Water Technology may be provided by other representatives.
- 41. Question: Please clarify what Bid Item 102 (should this be bid item 32?) is for (Intermediate Demobilization and Remobilization)? It is not clear as we only plan to mobilize and demobilize once.**
Response: Bid Item 102 corresponds with SAWS Item No. 102. Intermediate demobilization and remobilization may be requested by Owner during the course of the project.

42. **Question:** When drilling the well and it becomes artesian as it will during drilling of the Edwards what is the estimated flow rate? Please clarify that the contractor will need to control the well by killing the well during each connection drilling the pilot hole, each connection reaming the pilot hole, developing, during construction of the piping/mechanical, and installation of the permanent pump (all kill mud to be hauled off the site).

Response: The Contractor is required to provide as a submittal a plan for the management of artesian head in the wells during drilling, to include planning for the management of all drilling fluids during use and disposal. An estimated flow rate is 2,000 gpm; conditions may change significantly based on the current level in the aquifer and it is the Contractor's responsibility as part of the plan for management of the head to control the flow rate based on site conditions at the time.

43. **Question:** Page#9 item 6 of the well spec states "The water must be sediment free and of freshwater quality" is this just covering the discharge for testing the well once completed? Then on Page#14 item G "Cuttings and Fluid Disposal: It is the intent of the project to dispose of all water on site. Fluids and solids that cannot be acceptably disposed of on site will require hauling off site. The CONTRACTOR shall be responsible for providing and maintaining all necessary tank trucks, dump trucks, pipe, pumps, and equipment necessary to pump and haul excess pad drainage, drilling fluid, drill cuttings, and pumped water to a predetermined disposal site in accordance with Federal, State, and local regulations, or subcontract with a firm capable of providing these services when necessary." It will be necessary to discharge water produced during drilling reverse circulation of the Edwards. Since we are going into the storm drainage will we be required to meet SARA or other guidelines for discharge? Also, please clarify where the water is to be discharged (our understanding is to the drain to the SW of the location that will require about 2000 ft of discharge line, road crossings, lift pumps, etc.).

Response: The Contractor shall conform to all federal, state, and local rules regarding the management and discharge of stormwater from a construction site. This will include the filing of a Stormwater Pollution Prevention Plan (SWPPP) with TCEQ. The location of the discharge is shown on drawings C-02.

44. **Question:** Page 16 Item F "Site Security: The CONTRACTOR shall provide site security to prohibit unauthorized intrusions. Fencing shall be erected to completely enclose the work area (150' x 200') at a distance of at least 50' from the borehole" Will this really be required? The plant location appears to be fully fenced. If this will be required will any laydown area used need fencing as well. Just want to make sure as fencing an area that is inside of an existing fence does not make sense and will cause logistical challenges during construction.

Response: Site security personnel are required per Section 01 35 00. Additional fencing is not required if pump station area is fully enclosed, note that there is concurrent construction which requires modifications to the fencing, and work shall be coordinated with that project per Special Condition SC6.

45. **Question:** Will the Security by Securitas be required for this site? If so, will it be required to be 24/7 even if we have fencing secured around the entire site during all construction? We need to know as Securitas has overtime rates that apply for anything after 40 hours per week. Also, if this is required could a bid item be added as an allowance item?

Response: Universal Protection Services, LP d/b/a Allied Universal Security Services, or an Owner-approved equal is required per Section 01 35 00. Security is not required 24/7 if site is left secure and closed. Security will be required if the access point is open. See changes to the specifications, item 5.

46. **Question:** Due to the many issues that occurred during construction of another well at Mission Pump Station related to existing wells with deteriorated/leaking casing and formation faulting. There needs to be some unit price bid items for matters such as rig time, additional kill mud, cement plugs and allowance items for unforeseen events. It is our understanding several wells at this location have holes in the casing. It is likely that this could cause flow into the formations above the Edwards which would require well control/BOP to be installed and utilized during the upper pilot hole, reaming of the upper hole, installation of casing and cementing of the casing. Loss circulation also occurred due to unforeseen faults at the location where mud weight above 9.2 lbs would cause loss circulation and mud weight below 9.1 lbs would cause the well to flow. If any of these issues occur this will cause substantial delays and be extremely costly. Please clarify how the additional cost and time will be addressed.

Response: The Contractor is required to provide as a submittal a plan for the management of artesian head in the wells during drilling, to include planning for the management of all drilling fluids during use and disposal. Based on Contractor's experience include costs to accommodate anticipated complexity in price proposal under existing line items.

- 47. Question: The conductor casing is shown to be at a depth of 80 ft. With the risk of well control/BOP needed for the issues noted in the above question during the drilling of the upper hole this depth is not sufficient. It would be suggested to install at least approx. 240 ft of conductor casing in order to safely/securely install well control/BOPs.**

Response: The Contractor is required to provide as a submittal a plan for the management of artesian head in the wells during drilling, to include planning for the management of all drilling fluids during use and disposal. Conductor casing depth shall be 240'. Contractor may propose the use of a cellar. See changes to specifications, items 1, 7, and 8; and changes to the drawings, item 1.

- 48. Question: Please provide the BD (base dimensions) information for the motors that are by others for the existing wells. This will be needed to ensure the discharge heads are sized/quoted correctly.**

Response: The base dimensions of the motors will be provided when available as part of the Artesia Pump Station Improvements Project. Coordinate with contractor in accordance with Special Condition SC6.

- 49. Question: The table in the pump spec indicates the inner pump column pipe diameters to be 29", 26" and 22". This does not look correct. Please clarify the correct column pipe diameter.**

Response: See Addendum No. 3. Well casing diameters and pump column diameters are clarified.

- 50. Question: What bid item should be utilized for the new well pumps? There is no bid item for any of the pumps for Wells 3, 4 & 5 (or new Wells 7 & 8).**

Response: Use bid item 23.

- 51. Question: The pump spec doesn't give a stated testing tolerance to use for the performance test (HI isn't even referenced). What standard should be used and should it be HI 1U or 1B? Achieving a 83% efficiency will not be possible for either an 1800 or the 1200 RPM selections.**

Response: Performance tests shall be in accordance with ANSI/HI 14.6 Grade 1B. Minimum efficiency for Wells 3, 4, and 5 at design point 1 shall be 80%. Minimum efficiency for Wells 7 & 8 shall not change. ANSI/HI 14.6 requirements are applicable to these pumps. See Changes to the Specifications, item 9.

- 52. Question: What is the reason for a 1200 RPM pumps for wells 7 & 8 and not the existing wells (which are 1800 RPM)? Please clarify if this is correct.**

Response: This is correct. The rotational speeds listed are maximums; we anticipate 1,800 RPM motors will be necessary for the smaller bowl sizes.

- 53. Question: Are the existing pumps in 3, 4 & 5 operable. There does not appear to be any details on any testing requirements for the existing wells. The spec states to replace existing pumps for Wells 3, 4 & 5 but it does not specify if it is a complete assembly or just the bowl assemblies. Please clarify if any testing is to occur prior to ordering the pumping equipment for Wells 3, 5 & 6. If so, will this be utilizing the existing pumps, contractor supplied temporary test pumps? Also, please clarify if we are to provide the pump bowl only or complete pump assembly less the motor (pump, column assembly, and discharge head).**

Response: Existing pumps in Wells 3, 4, and 5 are in various states of operability. Perform constant rate tests in accordance with Section 33 11 14 3.15. A complete assembly is required, less the motor. Pump submittals may be provided before the constant rate testing has occurred. Temporary test pumps and motors shall be supplied; permanent pumps may be used if on-site by the time constant rate testing occurs. See Changes to the Specifications, items 2 and 9.

- 54. Question: We would suggest adding a bid item to account for additional killing of the existing wells for install the permanent pumps or testing.**

Response: The Contractor is required to provide as a submittal a plan for the management of artesian head in the wells during drilling, to include planning for the management of all drilling fluids during use and disposal. Based on Contractor's experience include costs to accommodate anticipated complexity in price proposal under existing line items.

55. Question: The bid form states a total of 5 constant rate tests. Will this be performed to the same spec as the new wells? Is this to be with test pumps or permanent pumps?

Response: Yes, perform to Section 33 11 14 3.15. Wells 3, 4, 5, 7, and 8 will require test pumps to match the proposed design points as listed in Section 43 21 13, or if the permanent pumps are on site, they may be used.

56. Question: Can the all the pumps be ordered at the start of the project? Due to extremely long lead times this would be recommended. If so, can materials on hand be paid as they are stored prior to install if needed?

Response: Pump submittals may be provided at the start of the project. Submittals must be approved before pumps are ordered. See changes to the specifications, items 2 and 9.

57. Question: The access to the site during construction will need to be through the east entrance. There are also two double gates near the east entrance that will be needed to be utilized in order to move oversized drilling equipment into and out of the site. Please confirm that this access can be utilized.

Response: Site access shall be through Aniol St. Oversized drilling equipment may be moved through other entrances; coordinate with owner in accordance with Section 01 12 16. Note that use of the manual double gates will require Contractor to obtain agreement with the adjacent property owner for property access. Note that there is anticipated to be concurrent construction per Special Condition SC6.

58. I reviewed the Addendum #3 that was posted on September 15th. I noticed in Item #8, that a sentence was added to Paragraph 3.1 of Section 43 21 13 – Vertical Lineshaft Well Pumps. The sentence implies that a Licensed Well Driller is required to install the pump systems at the Artesia Pump Station. Per Texas Department of License & Regulation Rules only Licensed Pump Installers are required to install any type of water well pump in the State of Texas. Both endorsement are not required by the State of Texas to install lineshaft turbine pumps.

Response: A Licensed Well Driller is not required, only a Licensed Pump Installer is required. See changes to the specifications, item 9.

CHANGES TO THE SPECIFICATIONS

1. Price Proposal – Delete in its entirety the Price Proposal and **replace** with the attached. Respondents shall use this version when submitting a proposal for this project. Failure to do so may result in the bid being found non-responsive.

2. 01 12 16 – Work Sequence

Paragraph 1.04 - Sequencing: **Delete** “Well No. 7” from Stage VIII and **replace** with “Well No. 8.”

Paragraph 1.04 - Sequencing: **Delete** “order pumps” from Stage III and **replace** with “provide pump submittals for all pumps.”

Paragraph 1.04 – Sequencing: **Delete** “order pump and motor” from Stages IV and VIII.

Paragraph 1.04 – Sequencing: **Add** “Order pumps for wells 3, 4, and 5; and pumps and motors for wells 7 and 8 after submittals are approved” at the end of Stage III.

Paragraph 1.04 – Sequencing: **Add** “existing piping” to the end of Stage IV.

3. 01 14 13 – Access to Site

Paragraph 1.05 – Track Dozer: **Delete** paragraph in its entirety.

4. 01 29 00 – Payment Procedures: Delete in its entirety and **replace** with the attached.

5. 01 35 00 – Security Procedures

Paragraph 1.3.4.a – **Delete** “Securitas Security Services USA, Inc.” and **replace** with “Universal Protection Services, LP d/b/a Allied Universal Security Services”.

6. 28 00 05 – Network Cameras: **Delete** in its entirety and **replace** with the attached.

7. 33 11 13 – Well Drilling and Testing, General

Paragraph 1.2.C – **Delete** “80” and **replace** with “240”.

8. 33 13 14 – Artesia Pump Station Wells No. 7 and No. 8 Construction

Paragraph 1.1.A – **Add** “For well pump testing for Well Nos. 3, 4, and 5, refer to this Specification and comply with the requirements herein.”

Paragraph 1.2 – **Add** the following:

“J. Contractor shall submit plan for 24-hour Pump Test.”

Paragraph 3.1 – **Add** the following:

“D. Water used in any drilling operation shall be of safe sanitary quality. Water using in the mixing of drilling fluids or mud shall contain a chlorine residual of at least 0.5 milligrams per liter (mg/L). The slush pit shall be constructed and maintained so as to minimize contamination of the drilling mud. No temporary toilet facilities shall be maintained within 150 feet of the well being constructed unless they are of a sealed, leakproof type.”

Paragraph 3.1 – **Add** the following:

“E. Well construction materials containing more than 0.25% lead are prohibited in accordance with TCEQ.”

Paragraph 3.2.A – **Delete** “80” and **replace** with “240.”

Paragraph 3.9.D – **Delete** paragraph in its entirety and **replace** with the following:

“Cementing Procedures: The well shall remain undisturbed for at least 24 hours after cementing once casing is complete. After cementing, the CONTRACTOR shall conduct a temperature log and shall tag the top of cement with the tremie pipe (at 24 hours following completion of pressure pumping). If there is a substantial difference between the theoretical and actual grout volumes, a gamma log shall be run to confirm the top of cement at the CONTRACTOR’s expense. Cementing by the Positive Displacement – Exterior Method shall be continuous after cementing begins. If there is a loss of circulation or there are no returns at the surface, the ENGINEER shall be informed immediately of remedial procedures that will be used to re-establish circulation and complete the cementing program according to the well design and technical specification.”

Paragraph 3.15.C – Pumping Equipment: **Delete** “The Contractor shall provide/operate a pump and prime mover that this capable of discharging at least 7,000 gpm with a minimum 120-foot lift. The prime mover shall be a variable speed type.” and **replace** with “The Contractor shall (a) provide a pump if permanent pumps are not on site or (b) operate a pump approved for this project, and provide and operate a prime mover, that together are capable of discharging at least 7,000 gpm with a minimum 120-foot lift. Contractor shall provide prime mover of a variable-speed type (example: diesel engine with right angle gear drive; generator driven variable frequency driver).”

9. 43 21 13 – Vertical Lineshaft Well Pumps

Paragraph 1.1.B – Coordination:

Delete the following:

“2. Well pumps shall not be ordered by CONTRACTOR until test records have been provided in accordance with Section 33 11 13, Well Drill Test.

3. Testing for wells 3, 4, and 5 shall take place as early in the project as possible, to allow the pumps to be ordered.”

Add the following:

“2. Well pumps may be ordered after the submittals are approved by the Engineer and Owner; however, DO NOT TRIM THE IMPELLER OR PERFORM SHOP TESTS IN ACCORDANCE WITH

SECTION 2.8 UNTIL PUMPING TEST UNDER SECTION 33 11 14 IS COMPLETE AND HAS BEEN REVIEWED BY ENGINEER AND OWNER.

3. It is the Contractor's responsibility to drill the wells in an appropriate timeframe and in accordance with the Sequence of Work, Section 01 11 14, for the shop tests in Section 2.8 to be performed in a timely manner. No additional compensation will be provided for pumps being held at the manufacturer or shop locations."

Paragraph 1.2 – References: **Add** the following:

12. ANSI/HI 14.6

Paragraph 2.1.B.1 – Table:

Delete "83" minimum bowl efficiency for Well Nos. 3, 4, and 5, and **replace** with "80".

Delete "18" bowl O.D. maximum from Well Nos. 3, 4, and 5, and **replace** with "18.5".

Paragraph 3.1.F: **Delete** "Water Well Driller".

Paragraph 3.3.D – Start-Up and Field Testing – **Add** the following:

"Performance tests shall be in accordance with ANSI/HI 14.6 Grade 1B."

- 10.** Special Conditions – **Add** "SC7. Special Pump Requirements: Well pumps may be ordered after the submittals are approved by the Engineer and Owner; however, do not trim the impeller or perform shop tests in accordance with Section 43 11 14 2.8, until 24-hour constant-discharge pumping test performed under Section 33 11 14 is complete and has been reviewed by engineer and owner."

CHANGES TO THE DRAWINGS

1. Drawing M-05

42" O.D. Casing Surface Conductor – **delete** 80' and **replace** with 240'.

Add Note 1: It is the driller's responsibility as part of their means and methods if less surface conductor casing is needed for construction purposes.

Add Note 2: Dimensions of surface conductor casing are not shown to scale.

CLARIFICATIONS

1. For Changes to the Specifications, item 9, paragraph 3.1.F, reference Addendum #3.
2. For the Price Proposal, the conductor casing and drilling of pilot borehole quantities have been updated to match the changes in specifications for conductor casing length; and a line item specifically for well mudding has been added.
3. For Section 01 29 00 – Payment Procedures, a measurement and payment section has been added for well mudding.

This Addendum is forty-seven (47) pages in its entirety.

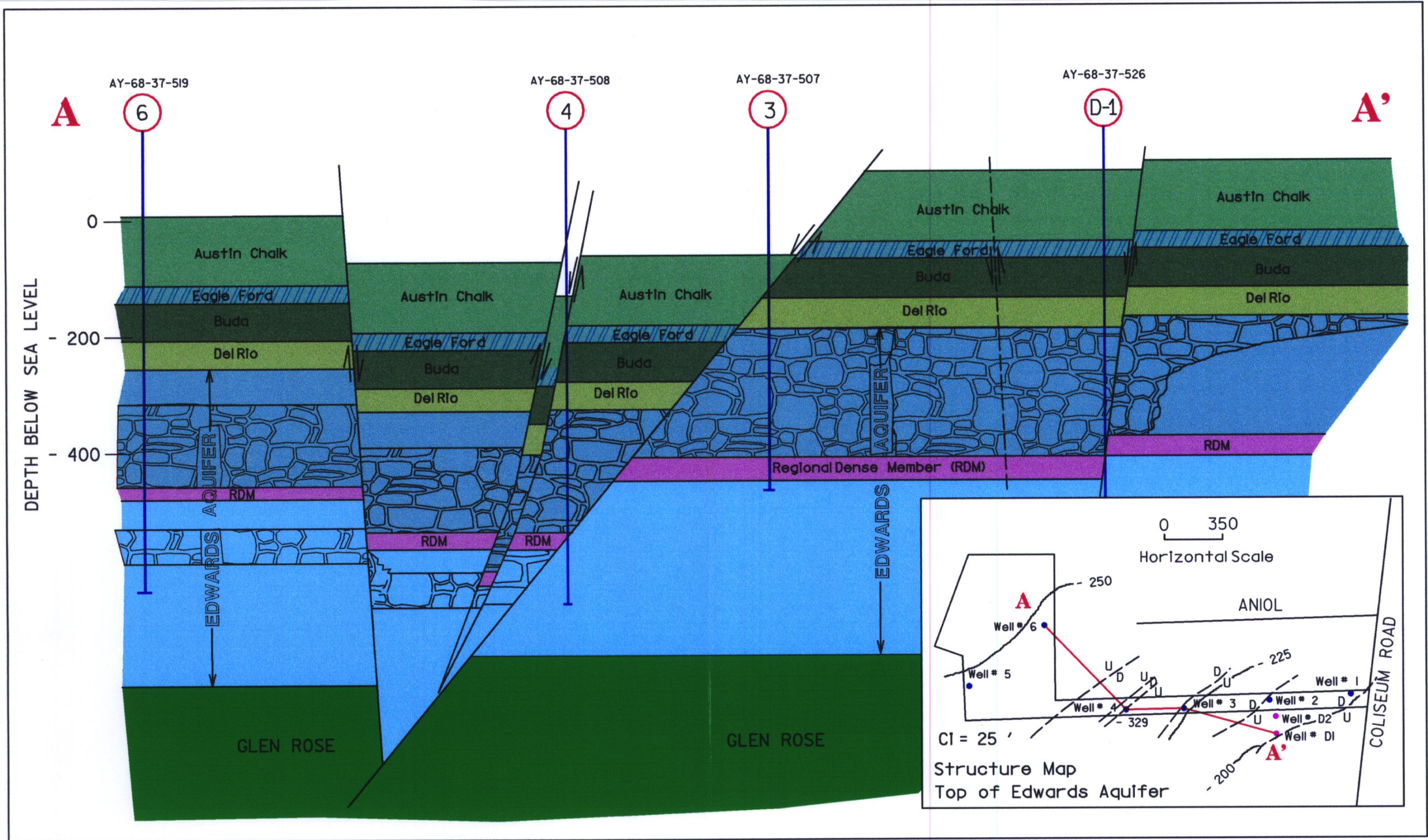
- Attachments:
- Figure 2-4
 - Site Visit Sign-In Sheet
 - Price Proposal
 - 28 00 05 – Network Cameras
 - 01 29 00 – Payment Procedures



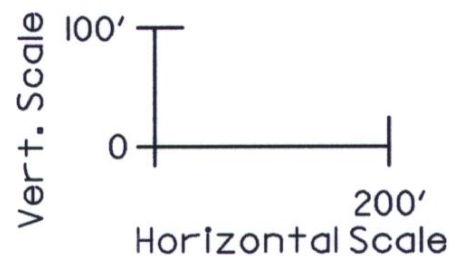
Arcadis U.S., Inc.
Texas Firm No. F-533



Arcadis U.S., Inc.
Texas Firm No. F-533



Indicated Cavernous Zones



Artesia Pump Station Structural Cross Section Showing Possible Cavernous Zones

Figure 2-4: Artesia PS Structural Cross Section

Source: San Antonio Water System, Aquifer Protection and Evaluation Section; Author: Alvin L. Schultz, PG - Consulting Geologist.

SITE VISIT on Friday, September 10, 2010			
Appointment Time	Vendor Name	Phone Number	Names of Attendees
9:00 AM	SAWS	210 284-1974	Delano Muelos
9:30 AM			
10:00 AM	Jerdon LP	512-720-1773	James Tennant
10:30 AM	Hydro Resources	832-712-1230	Wesley Box Kevin Kerry
11:00 AM	Alsay Incorporated	832-473-8651	Stuart Natareno Jerry Gomez
11:30 AM	SAWS	210-233-3596	Vicente J Garza
12:00 PM			
12:30 AM			
1:00 PM	Alterman, Inc.	512-826-7633	Anthony Goodson, Jr. Tyler Grimmet
1:30 PM	Weisner Inc.	210-727-4488	Victor Suarez Steve Bell
2:00 PM			
2:30 PM			
3:00 PM			
3:30 PM			
4:00 PM			

Delano Muelos

James Tennant

Wesley Box
Kevin Kerry

Stuart Natareno
Jerry Gomez

Vicente J Garza

Anthony Goodson, Jr.
Tyler Grimmet

Victor Suarez
Steve Bell

PRICE PROPOSAL

PROPOSAL OF _____, a corporation
a partnership consisting of _____
an individual doing business as _____

THE SAN ANTONIO WATER SYSTEM:

Pursuant to Instructions and Invitation for Competitive Sealed Proposals, the undersigned proposes to furnish all labor and materials as specified and perform the work required for the project as specified, in accordance with the Plans and Specifications for the following prices in the bid proposal to wit:

PLEASE SEE ATTACHED LIST OF BID ITEMS.

RESPONDENT'S SIGNATURE & TITLE

FIRM'S NAME (TYPE OR PRINT)

FIRM'S ADDRESS

FIRM'S PHONE NO. /FAX NO.

FIRM'S EMAIL ADDRESS

The Contractor herein acknowledges receipt of the following:
Addendum Nos. _____

OWNER RESERVES THE RIGHT TO ACCEPT THE OVERALL MOST RESPONSIBLE PROPOSAL.

The Respondent offers to construct the Project in accordance with the Contract Documents for the contract price, and to complete the Project within **910** calendar days after the start date, as set forth in the Authorization to Proceed. **The Respondent understands and accepts the provisions of the contract Documents relating to liquidated damages of the project if not completed on time.**

Complete the additional requirements of the Proposal which are included on the following pages.

Statement on President's Executive Orders

Has your firm previously performed work subject to the President's Executive Orders Numbers 11246 and 11375 or any preceding similar executive orders (Numbers 10925 and 11114)?

Yes No

Item No.	Description	Unit	Quantity	Unit Price	Total Price
1	INSTALL 42-INCH DIAMETER CONDUCTOR CASING	LF	480	\$	\$
2	DRILL PILOT BOREHOLE, UPPER INTERVAL	LF	1520	\$	\$
3	PILOT BOREHOLE GEOPHYSICAL LOGGING SUITE "RUN 1"	EA	2	\$	\$
4	REAM UPPER PILOT BOREHOLE TO A MINIMUM 36-INCH DIAMETER	LF	400	\$	\$
5	REAM LOWER PILOT BOREHOLE TO A MINIMUM 30-INCH DIAMETER	LF	1600	\$	\$
6	GYROSCOPIC ALIGNMENT/CALIPER SURVEY OF REAMED BOREHOLE	EA	2	\$	\$
7	FURNISH AND INSTALL 30-INCH O.D. CASING, HSLA STEEL (ASTM A 606, TYPE 4)	LF	400	\$	\$

8	FURNISH AND INSTALL 24-INCH O.D. CASING, HSLA STEEL (ASTM A 606, TYPE 4)	LF	1600	\$	\$
9	FURNISH AND EMPLACE API CLASS H CEMENT WITH APPROVED ADDITIVES	LF	2000	\$	\$
10	GYROSCOPIC ALIGNMENT SURVEY OF PUMP CHAMBER CASING	EA	2	\$	\$
11	DRILL PILOT BOREHOLE – OPEN-HOLE INTERVAL	LF	800	\$	\$
12	PILOT BOREHOLE GEOPHYSICAL LOGGING SUITE "RUN 2"	EA	2	\$	\$
13	REAM OPEN-HOLE BOREHOLE TO A MINIMUM 23" DIAMETER	LF	800	\$	\$
14	FURNISH AND INSTALL 20,000 GALLONS OF 28% HYDROCHLORIC ACID IN PRODUCTION BOREHOLE	EA	2	\$	\$

15	ACIDIZING IN EXCESS OF 20,000 GALLONS 28% HYDROCHLORIC ACID IN PRODUCTION BOREHOLE	GAL	1000	\$	\$
16	REMOVE AND DISPOSE OF ACID RESIDUE	EA	2	\$	\$
17	CONSTANT-DISCHARGE PUMPING TEST (24-HOUR)	EA	5	\$	\$
18	WATER QUALITY SAMPLING AND ANALYSES	EA	2	\$	\$
19	WELL DISINFECTION	EA	5	\$	\$
20	CONSTRUCT WELL SEALING BLOCK	EA	2	\$	\$
21	WELL MUDDING	LS	1	\$	\$

22	SITE IMPROVEMENTS	LS	1	\$	\$
23	ABOVE-GROUND AND BELOW-GROUND CIVIL/MECHANICAL/STRUCTURAL/ PLUMBING	LS	1	\$	\$
24	ELECTRICAL	LS	1	\$	\$
25	INSTRUMENTATION/CONTROLS	LS	1	\$	\$
26	TRENCH EXCAVATION SAFETY	LF	500	\$	\$
27	STANDBY TIME AT THE DIRECTION OF THE ENGINEER	HR	100	\$	\$
28	POST-PROCESSING OF GEOPHYSICAL LOGGING DATA	EA	2	\$	\$

29	ABANDONMENT OF PILOT BOREHOLE	LF	100	\$	\$
SUBTOTAL (ITEMS 1 - 29)				\$	

30	SUBSURFACE UTILITY LOCATION ALLOWANCE	ALW	1	\$10,000	\$10,000
31	PERMITTING ALLOWANCE	ALW	1	\$20,000	\$20,000
100	MOBILIZATION AND DEMOBILIZATION, MAX 10% OF LINE ITEMS 1 - 29	LS	1	\$	\$
102	INTERMEDIATE DEMOBILIZATION AND REMOBILIZATION	EA	1	\$	\$

Mobilization and Demobilization shall be limited to the maximum percentage shown. **If the percentage exceeds the allowable maximum stated for mobilization, SAWS reserves the right to cap the amount at the percentages shown and adjust the extensions of the bid items accordingly.**

TOTAL BID PRICE				\$	
(TO INCLUDE LINE ITEMS 1 - 31 AND 100-102)					

SECTION 28 00 05

NETWORK CAMERAS

PART 1 - GENERAL

1.1 DESCRIPTION

- A. Provide the services of a Security System Integrator (SSI) to furnish and install network cameras.
- B. Network cameras shall be connected to the existing Network Panel located in the Pump Station Control Room.
- C. SSI shall provide design, labor, material, and services to complete the installation and performance acceptance testing of network cameras in conformance with OWNER and manufacturer requirements. The services provided by the SSI shall include:
 - 1. Defining the required system components, and preparing detailed system interconnecting wiring diagrams.
 - 2. Procuring security equipment specified in this Section.
 - 3. Installation of security equipment including providing necessary mounting accessories.
 - 4. Modifying the configuration of existing Access Control and Security Systems as required to integrate the new network cameras.
- D. SSI shall be responsible for furnishing and installing incidental items not shown or specified which are required by standard industry practice to provide a complete and functional system.
- E. Intent of Drawings:
 - 1. Drawings show general locations of equipment, devices, and raceways unless specifically dimensioned.
 - 2. Drawings do not necessarily depict all required security/access control components, conduit, field devices, cabling, jumper cables, interconnects, materials and services. SSI is responsible for a complete design and integration of the network cameras into the existing security system.
- F. Related Sections:
 - 1. Section 01 33 00, Submittals Procedures.
 - 2. Division 26, Electrical.

1.2 COORDINATION

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- A. SSI shall coordinate the installation of cameras, connection to the security enclosure and all other necessary equipment for a fully operational system.
- B. Network cameras and all associated equipment shall be fully compatible with the existing security system.

1.3 WARRANTY

- A. Provide original equipment manufacturers warranty documentation for acceptance by the OWNER.
- B. Warranty Period: As stated in the General Conditions.
- C. For 24 months after acceptance of project, provide technical service with a maximum 12-hour response time to calls for any adjustments or repairs required to keep the system fully operational. Service period shall be included in the base bid of this project, resulting in no service fees or repair fees for parts and labor.

1.4 REFERENCES

- A. Standards referenced in this Section are listed below:
 - 1. American National Standards Institute, (ANSI).
 - 2. Factory Mutual, (FM).
 - 3. Institute of Electrical and Electronic Engineers, (IEEE).
 - 4. National Electrical Code, (NEC).
 - 5. National Electrical Manufacturers Association, (NEMA).
 - 6. Underwriters' Laboratories, Inc., (UL).

1.5 QUALITY ASSURANCE

- A. The SSI shall perform all work necessary to select, furnish, configure, customize, debug, install, connect, calibrate, and place into operation all hardware and software specified within this section.
- B. The SSI shall be regularly engaged in the design and the installation of security systems and their associated subsystems as they are applied to the municipal water or wastewater industry. For the purposes of this specification section, a SSI shall comply with all of the following criteria:
 - 1. Shall be a "Certified Integrator" under the Schneider Electric Certification programs or equal.
 - 2. Shall have manufacturer's certification within the last five years.
 - 3. Employs a registered professional Control Systems Engineer to supervise or perform the work required by this specification section.
 - 4. Has performed work of similar or greater complexity on at least three (3) projects within the last five (5) years and has implemented and completed at least one of these three projects with the proposed software.

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5. Has been in the water/wastewater industry performing the type of work specified in this specification section for the past five (5) continuous years.
- C. The SSI shall maintain a fully equipped office/production facility with full-time employees capable of fabricating, configuring, installing, calibrating, troubleshooting, and testing the system specified herein. Qualified repair personnel shall be available and capable of reaching the facility within 24 hours.
- D. Actual installation of the system need not be performed by the SSI employees; however, the SSI shall provide the on-site technical supervision of the installation.
- E. The SSI shall furnish equipment which is the product of one manufacturer to the maximum practical extent. Where this is not practical, all equipment of a given type shall be the product of one manufacturer.
- F. Installer Qualifications:
 1. Engage installer with at least five years experience of similar installation types. Installer shall demonstrate successful experience designing, installing, commissioning, training and servicing network camera systems of similar size and complexity. Provide at least five references to the ENGINEER for evaluation upon request.
 2. Installer shall have completed factory approved training and be certified by the manufacturer as qualified to install, operate and maintain product(s) specified.
 3. Install the system in accordance with the equipment manufacturers recommended procedures and applicable industry standards.

1.6 SUBMITTALS

- A. Action Submittals: Submit the following:
 1. Manufacturer's literature, illustrations, specifications and engineering data including general arrangement, outline drawings, dimensions, materials, size, weight, and performance data.
 2. Written determination of the following at each camera location, considering intended camera coverage areas: camera fields of view, ambient lighting levels and serviceability.
 3. Lens type and focal length.
 4. Mounting and housing recommendations.
 5. Riser diagrams clearly labeling all conduit and wire.
- B. Closeout Submittals: Submit the following:
 1. Operation and Maintenance Manuals:
- C. Maintenance Materials Submittals: Furnish the following:
 1. Spare Parts: Manufacturer recommended spare parts and maintenance materials

1.7 DELIVERY AND PRODUCT STORAGE

- A. Network cameras shall be delivered, stored and handled in accordance with Division 01, General Requirements, the manufacturer's instructions, and the following:
 - 1. Security equipment shall be inspected by CONTRACTOR for shipping damage or loose parts when received. Evidence of water, which may have entered equipment during transit, shall be checked.
 - 2. Equipment shall be stored in a clean, dry location in which a uniform temperature is maintained. Equipment shall be protected with coverings and maintain air circulation.
 - 3. Where dampness or condensation may be encountered, heaters shall be provided for equipment to prevent moisture damage.

PART 2 - PRODUCTS

2.1 PAN-TILT-ZOOM NETWORK CAMERAS

- A. General:
 - 1. Provide UL Listed Network Pan-Tilt-Zoom (PTZ) High Definition (HD) Cameras as indicated on the Contract Drawings and specified herein. The camera system shall consist of an outdoor camera and housing designed specifically for use in moderate to severe climate conditions and shall include thermostatically controlled heater, along with any accessories which may be required for a complete environmental camera system.
 - 2. All hardware and software shall be provided and installed.
 - 3. Operating Conditions: -40 Deg C to 50 Deg C with 55 Deg C intermittent. Humidity: 10-100% RH (condensing).
 - 4. Connectors: RJ45 10BASE-T/100BASE-TX PoE.
- B. Camera features:
 - 1. Image sensor: 1 / 2.8" progressive scan RGB CMOS
 - 2. Lens: Varifocal, 4.25 - 170mm, F1.6-4.95, horizontal field of view: 65.1-2.0 degrees, vertical field of view: 39.1-1.18 degrees, Auto focus, Auto iris.
 - 3. Day and night: Automatically removable infrared-cut filter.
 - 4. Minimum illumination: Color 0.1 lux at 30 IRE, F1.6, black and white 0.002 lux at 30 IRE, F1.6, Color 0.15 lux at 50 IRE, F1.6, black and white 0.003 lux at 50 IRE, F1.6.
 - 5. Shutter speed: 1 / 11000 seconds to 1/3 seconds with 50 Hz, 1 / 11000 seconds to 1/3 seconds with 60 Hz.
 - 6. Pan/Tilt/Zoom: Pan: 360 degrees endless, 0.05-450 degrees / seconds
Tilt: 220 degrees, 0.05-450 degrees / seconds
Zoom: 40x optical, 12x digital, total 480x zoom, E-flip, 256 preset positions, tour recording (max 10, max duration 16 min each), guard tour (max 100),

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control queue, on-screen directional indicator, orientation aid PTZ, set new Pan 0 degree adjustable zoom speed, focus recall.

7. System on Chip (SoC): Model ARTPEC-7. Memory 1024 MB RAM, 512 MB Flash. Machine learning processing unit (MLPU). Storage: Support for SD/SDHC/SDXC card, Support for SD card encryption, Support for recording to Network-Attached Storage (NAS)..

C. Video:

1. Compression: H.264 (MPEG-4 Part 10/AVC) Baseline, Main and High Profiles, H.265 (MPEG-H Part 2/HEVC) Main Profile Motion JPEG.
2. Resolution: HDTV 1080p 1920x1080 to 320x180
3. Frame Rate: Upto 50/60 fps with power line frequency 50/60Hz, in HDTV 1080p
4. Video Streaming: Multiple, individually configurable streams in H.264, H.265, and Motion JPEG. Axis Zipstream technology for H.264 and H.265. Controllable frame rate and bandwidth. VBR/ABR/MBR H.264/H.265

D. Network:

1. Security: Password protection, IP address filtering, HTTPS encryption, IEEE 802.1X (EAP-TLS) network access control, digest authentication, user access log, centralized certificate management, brute force delay protection, signed firmware, secure boot protection of cryptographic keys with FIPS 140-2 certified TPM 2.0 module.
2. Supported Protocols: IPv4, IPv6 USGv6, HTTP, HTTP/2, HTTPS, SSL/TLS, QoS Layer 3 DiffServ, FTP, SFTP, CIFS/SMB, SMTP, Bonjour, UPnP, SNMP v1/s2c/v3 (MIB-II), DNS, DynDNS, NTP, RTSP, RTP, SRTP, TCP, UDP, IGMPv1/v2/v3, RTCP, ICMP, DHCPv4/v6, ARP, SOCKS, SSH, SIP, LLDP, MQTT, Syslog.

E. System Integration:

1. Application Programming Interface: Open API for software integration. Cameras shall be integrated into the existing security system head end equipment.
2. Analytics: motion detection, active tampering alarm, audio detection.
3. Event Conditions: analytics, external input, supervision of input, edge storage events, virtual inputs through API.
4. Event Actions: Day/night mode, overlay text, video recording to edge storage, pre-and post-alarm video buffering, send SNMP trap, PTZ: PTZ reset, start/stop guard tour. File upload via FTP, SFTP, HTTP, HTTPS & TCP, notification via email, HTTP, HTTPS, and TCP.
5. Data Streaming: Event data.
6. Built-in installation aids: Pixel counter, leveling guide.

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- F. Power:
 - 1. Axis High PoE 60 W SFP midspan: 100-240V AC, max 66.1 W, Camera consumption: typical 14 W, max 51 W.
- G. Casing/Housing:
 - 1. NEMA 4X and IP66 and IP67 rated, IK10 impact resistant with polycarbonate (PC) clear dome and sunshield (PC/ASA).
- H. Mounting:
 - 1. Mounting shall be suitable for pole, wall, or parapet mounting.
- I. Surge Protection:
 - 1. Each camera shall be protected with a surge protection device at each end of the ethernet cable run. One device shall be at the camera (in a weatherproof enclosure) and one device shall be inside the Flowmeter Enclosure. Ground surge devices. Device shall be Axis T8061, or by approved camera manufacturer.
- J. Ethernet to Fiber Optic Converter:
 - 1. Each camera shall be provided an Ethernet to fiber optic converter. Converter shall provide power over ethernet (POE) for camera, shall provide 10/100/1000 Mbps data rate, shall support single mode fiber, shall be complete will all copper and fiber connection ports / terminations, shall be UL Listed, and shall operate on 120VAC supply power. Converter shall be Axis T8154-60W-SFP Midspan, or by approved camera manufacturer.
- K. Product and Manufacturer: Provide one of the following:
 - 1. Axis Q6075-E PTZ Network Camera
 - 2. Or Equal

PART 3 - EXECUTION

3.1 INSTALLATION

- A. Camera locations shown are approximate. Locate cameras to yield optimum coverage as approved by the OWNER and ENGINEER.
- B. Install in conformance with the requirements of National Electrical Code.
- C. Install network camera, including conduit and cable, in accordance with approved Shop Drawings and the manufacturer's recommendations.
- D. Install all conduit and cable required for the complete system. Provide pull and junction boxes as required.

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- E. Bond metallic conduits entering non-metallic enclosures to a ground terminal within the enclosure.
- F. Provide all configuration of camera and associated monitoring equipment, including IP addressing, ethernet to fiber converter, etc. for complete installation and operation.

3.2 ADJUSTING AND CLEANING

- A. Clean and touch up components to the satisfaction of OWNER and ENGINEER.
- B. Lenses, equipment enclosures, windows, and monitors shall be clean and free from scratches, mars, etc.

3.3 TESTING

- A. Demonstrate to OWNER and ENGINEER each camera's field of view using proposed lens type.
- B. Test programs and procedures shall be created by the SSI. Test procedures shall have signoff spaces for ENGINEER, the OWNER, and the SSI. Where OWNER furnished test procedures exist, they shall be used in place of SSI test procedures.
- C. The organizing, coordination of personnel, and scheduling of all tests shall be the responsibility of the SSI. Notification of testing shall be submitted to each testing participant a minimum of one week prior to the requested testing date.
- D. Final Acceptance Testing: At the completion of installation, each camera shall be tested with a factory-trained field technician and upon successful completion of the work, a signed/dated certificate of proper installation shall be provided.

++ END OF SECTION ++

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SECTION 01 29 00

PAYMENT PROCEDURES

1.00 GENERAL

1.01 DESCRIPTION OF WORK

- A. This Section defines the method that will be used to determine the quantities of work performed or materials supplied and establish the basis upon which payment will be made.

1.02 ADMINISTRATIVE SUBMITTALS

- A. Schedule of Values: Submit Schedule of Values on the Contractor's standard form. Refer to Paragraph 1.05 of this Section and Section 01 33 00 Submittal Procedures for additional requirements.
- B. Schedule of Estimated Progress Payments (refer to Paragraph 1.06 of this Section for additional requirements):
 - 1. Submit with initially acceptable Schedule of Values.
 - 2. Submit adjustments thereto with Application for Payment.
- C. Application for Payment.
- D. Final Application for Payment.

1.03 RELATED WORK

- A. Section 01 33 00 Submittal Procedures

1.04 PRICE

- A. Required items of the work and incidentals necessary for the satisfactory completion of the Project shall be considered incidental to the specified work required under this contract and shall be considered as included in the unit prices for the various proposal items. the Contractor shall prepare his bid accordingly to allow for such items:
 - 1. Not specifically listed in the Bid Proposal.
 - 2. Not specified in this Section to be measured or to be included in one of the items listed in the Bid Proposal.
 - 3. To include the Contractor's overhead and profit.
- B. The work includes the furnishing of all labor, materials, equipment, tools, and related items for performing all operations required to complete the Project satisfactorily in place and in full operability, as specified by the Contract Documents.

1.05 SCHEDULE OF VALUES

- A. The Contractor shall prepare a Schedule of Values for the Project and submit to the Owner for review and approval.
- B. Use line items in the proposal as line items in the Schedule of Values. Provide adequate detail to allow easy determination of the percentage of the work completed for each item.
- C. Lump sum work
 - 1. Reflect Schedule of Values format included in conformed Bid Proposal form, specified allowances, and equipment selected by the Owner, as applicable.
 - 2. List bonds and insurance premiums, mobilization, demobilization, facility startup, and contract closeout separately.
 - 3. Separate product costs and installation costs. Break down by the applicable divisions for each of the Project facilities.
 - a. Product costs include cost for product, delivery and unloading, royalties and patent fees, taxes, and other cost paid directly to the supplier or vendor.
 - b. Installation costs include cost for the supervision, labor and supervision, labor and equipment for field fabrication, erection, installation, start-up, initial operation and the Contractor's overhead and profit.
 - 4. Divide principal subcontract amounts into an adequate number of line items to allow determination of the percentage of the work completed for each item. These line items may be used to establish the value of the work to be added or deleted from the project.
- D. An unbalanced or front-end loaded Schedule of Values will not be acceptable.
- E. Summation of the complete Schedule of Values representing all work shall equal the Contract price.
- F. The Contractor submittals
 - 1. A preliminary Schedule of Values shall be submitted to the Owner prior to or at the Pre-construction Conference. The Schedule of Values shall be a breakdown of each bid item and may be used to verify costs of credits, change orders, etc.
 - 2. The preliminary Schedule of Values will be reviewed by the Owner and Engineer for acceptance. The Schedule of Values shall include sufficient detail, as decided by the Owner and Engineer, to determine if the prices included are "unbalanced" or "front-end loaded." Inflation of prices for those items of the work to be completed in the early stages of the work shall not be acceptable.
 - 3. Owner and Engineer will provide the Contractor with comments and may request additional information from the Contractor to justify certain item quantities and prices thereof. The Contractor shall revise and resubmit the Schedule of Values addressing all the Owner's and Engineer's comments until final acceptance by the Owner.

4. The final approved Schedule of Values shall become the Schedule of Values used in determining partial payment estimates.
5. No partial payment requests (including the first) shall be approved until the final Schedule of Values has been approved by the Owner.
6. After acceptance of the final Schedule of Values, no modifications will be made to the Schedule of Values, except as required by approved change orders.
7. The Contractor shall provide a copy of the final accepted Schedule of Values as an MS Excel format document and upload it to Owner's CPMS website. This will facilitate the process of contract modifications to implement the Schedule of Values.

G. Partial Payment Request

1. Each payment request submitted by the Contractor shall include the approved Schedule of Values, modified to indicate the total quantity and price of the work completed up to the date of the request, redline drawings, revised construction schedule, and construction progress report with photos of the work done.

H. Format

1. In so far as possible, total quantities and unit prices shall be shown for all items of the work, separating for each item the materials and labor and such other sub-items the Contractor may desire.
2. "Lump Sum" and "miscellaneous" and other such general entries in the Schedule of Values shall be avoided whenever possible.
3. Such items as bond premiums, insurance, temporary facilities and equipment storage may be listed separately in the Schedule of Values provided the costs can be substantiated.
4. Overhead and profit shall not be listed as separate items in the Schedule of Values.
5. Breakdown costs to list major products or operations for each line item which has an installed value of more than \$20,000.00.
6. The sum of the items listed on the Schedule of Values shall equal the contract lump sum price. No additional payment will be allowed if the quantities shown on the Schedule of Values are less than those actually required to accomplish the work, unless the quantities are altered by a change order.

I. Forecast of Payments

1. Within 30 days after the award of the Contract, prepare and submit to the Owner a chart forecasting the monthly partial payment amounts that are anticipated for the Project. During progress of the work, mark this chart to show actual payments to date and revise the forecast of payments as necessary and submit the revised chart to the Owner monthly.

1.06 SCHEDULE OF ESTIMATED PROGRESS PAYMENTS

- A. Show estimated payment requests throughout Contract times aggregating the initial**

Contract Price.

- B. Base estimated progress payments on initially acceptable progress schedule. Adjust to reflect subsequent adjustments in progress schedule and Contract price as reflected by modifications to the Contract Documents.

1.07 APPLICATION FOR PAYMENT

- A. Reference Article VII Contract Payments of the General Conditions.
- B. Preparation:
 - 1. Review with Owner and Engineer quantities and the work proposed for inclusion in each progress payment. Application for Payment shall cover only the work and quantities recommended by the Owner and Engineer.
 - 2. Contractor shall be required to review with Engineer or Owner the status of record documents in connection with Owner's review of each Application for Payment. Failure to maintain record document current shall be just cause for Engineer to recommend a reduction in payment for record documents in accordance with Section 01 29 73 Schedule of Values and will entitle the Owner to set-offs in accordance with the Contract Documents.
 - 3. Submit to Owner's CPMS system.
 - 4. Engineer will act on request for payment in accordance with the General Conditions and Supplementary Conditions.
 - 5. Round values to nearest dollar.
 - 6. List each Change Order and Written Amendment executed prior to date of submission as separate line item. Totals to equal those shown on the Transmittal Summary Form for each Schedule of Values as applicable.
 - 7. Submit Application for Payment, including a Transmittal Summary Form and detailed Application for Payment Form(s) for each Schedule of Values as applicable, a listing of materials on hand for each schedule as applicable and such supporting data as may be requested by Owner.
- C. Include accepted Schedule of Values for each schedule or portion of the work, the unit price breakdown for the work to be paid on unit price basis, a listing of Owner-selected equipment if applicable, and allowances, as appropriate.

1.08 MEASUREMENT – GENERAL

- A. Weighing, measuring, and metering devices used to measure quantity of materials for the work shall be suitable for purpose intended and conform to tolerances and specifications as specified in National Institute of Standards and Technology, Handbook 44.
- B. Whenever pay quantities of material are determined by weight, the material shall be weighed on scales furnished by the Contractor and certified accurate by the state agency responsible. A weight or load slip shall be obtained from the weigh facility and delivered to the Owner's representative at the point of delivery of the material.
- C. If material is shipped by rail, the car weights will be accepted provided that actual weight

of material only will be paid for and not minimum car weight used for assessing freight tariff, and provided further that car weights will not be acceptable for material to be passed through mixing plants.

- D. Vehicles used to haul material being paid for by weight shall be weighed empty daily and at such additional times as required by Owner. Each vehicle shall bear a plainly legible identification mark.
- E. All materials that are specified for measurement by the cubic yard measured in the vehicle shall be hauled in vehicles of such type and size that the actual contents may be readily and accurately determined. Unless all vehicles are of uniform capacity, each vehicle must bear a plainly legible identification mark indicating its water level capacity. All vehicles shall be loaded to at least their water level capacity. Loads hauled in vehicles not meeting the above requirements or loads of a quantity less than the capacity of the vehicle, measured after being leveled off as above provided, will be subject to rejection, and no compensation will be allowed for such material.
- F. Where measurement of quantities depends on elevation of existing ground, elevations obtained during construction will be compared with those shown on Drawings. Variations of 1.0 foot or less will be ignored, and profiles shown on Drawings will be used for determining quantities. Quantities will be based on ground profiles shown.
- G. Units of measure shown on the Schedule of Values shall be as follows unless specified otherwise.

Item	Method of Measurement
AC	Acre-Field Measure by Owner
CY	Cubic Yard-Field Measure by Owner within the limits specified or shown
CY-VM	Cubic Yard-Measured in the Vehicle by Volume
EA	Each-Field Count by Owner
GAL	Gallon-Field Measure by Owner
HR	Hour
LB	Pound(s)-Weight Measure by Scale
LF	Linear Foot-Field Measure by Owner
LS	Lump Sum-Unit is one; no measurement will be made
MFBM	Thousand Foot Board Measure-Delivery Invoice
SF	Square Foot
SY	Square Yard
TON	Ton-Weight Measure by Scale (2,000 pounds)

1.09 PAYMENT

- A. Reference Article VII Contract Payments of the General Conditions.
- B. General:
 - 1. The date for the Contractor's submission of monthly Application for Payment

shall be established at the Pre-construction Conference.

- C. Payment for all work shown or specified in the Contract Documents is included in the Contract Price. No measurement or payment will be made for individual items.

1.10 NONPAYMENT FOR REJECTED OR UNUSED PRODUCTS

- A. Payment will not be made for the following:
 1. Loading, hauling, and disposing of rejected material.
 2. Quantities of material wasted or disposed of in manner not called for under the Contract Documents.
 3. Rejected loads of material, including material rejected after it has been placed by reason of failure of the Contractor to conform to provisions of the Contract Documents.
 4. Material not unloaded from transporting vehicle.
 5. Defective work not accepted by the Owner.
 6. Material remaining on hand after completion of the work.

1.11 PARTIAL PAYMENT FOR STORED MATERIALS AND EQUIPMENT

- A. Partial payment for stored materials and equipment shall be in accordance with the General Conditions of these Contract Documents and any revisions to said General Conditions as documented in the Supplementary Conditions of the Contract.
 1. Payment will be made for materials and equipment materials properly stored and successfully incorporated into the Project less the specified retainage.
 2. Provide a bill of sale, invoice, or other documentation warranting that Owner has received the materials and equipment free and clear of liens. Provide documentation of payment for materials and equipment with the next Application for Payment. Remove items from the tabulation of materials and equipment if this documentation is not provided with the next Application for Payment.
 3. Provide evidence that the materials and equipment are covered by appropriate property insurance or other arrangements to protect Owner's interest.
 4. No payment for vegetation (tree/shrubs, plants, etc.)
 5. The work covered by progress payments becomes the property of the Owner at the time of payment. The Contractor's obligations with regard to proper care and maintenance, insurance, and other requirements are not changed by this transfer of ownership until final acceptance in accordance with the General Conditions.
 6. Payment for materials and equipment does not constitute acceptance of the product.
 7. No partial payments will be made for materials and equipment delivered or stored unless Shop Drawings or preliminary operation and maintenance manuals are acceptable to the Owner. All partial payments shall be approved

by the Owner. Materials that will not be paid for prior to installation include, but are not limited to, bulk quantities such as nails, fasteners, conduits, conductors, concrete steel reinforcement, formwork, sand, and gravel. The Contractor's request for payments for materials stored on the job site shall include copies of paid invoices provided by approved supply sources in accordance with the General Conditions of the Contract. Payment for materials stored on the job site shall be based upon the costs listed in the supplier's paid invoices and shall be in accordance with the General Conditions of the contract. Material stored off-site must be identified, separated from stock, and kept secure.

1.12 FINAL PAYMENT

- A. Final payment will be made only for products incorporated in the work. Remaining products, for which partial payments have been made, shall revert to Contractor unless otherwise agreed, and partial payments made for those items will be deducted from final payment.

1.13 PRICE PROPOSAL ITEMS

- A. Bidder will complete the work for the following listed work items for the prices listed on the Bid Proposal:

Item No. 1: Install 42-inch Diameter Conductor Casing

- 1. Description
 - i. This item includes all work and materials associated with furnishing and installing a 42-Inch O.D. Conductor Casing. The work includes providing all materials, labor, supervision, equipment, tools, and all other incidentals necessary to complete the work in place.
- 2. Measurement will be based on the number of linear feet of conductor casing installed, tested, and accepted all in accordance with the Contract Documents. (See Sections 33 11 13 and 33 11 14 for details).
- 3. Payment for the full price shall be on a unit price per linear feet installed basis, as indicated in the Price Proposal, paid for the work performed and in accordance with the Schedule of Values. Payment shall constitute full compensation for the completed WORK in accordance with the Contract Documents. Payment shall constitute full compensation to the Contractor for furnishing all: labor, equipment, tools, materials, permits, removal, and disposal of waste or excess materials; and for performing all operations required to furnish to the Owner this item, as specified and as indicated on the Contract Drawings and Specifications.

Item No. 2: Drill Pilot Borehole, Upper Interval

- 1. Description
 - i. CONTRACTOR shall provide all labor, supervision, tools, equipment, and materials necessary to drill the upper interval of the pilot borehole.

2. Measurement will be based on the number of linear feet of pilot borehole logged (by geophysical logging subcontractor), tested, and accepted, all in accordance with the Contract Documents.
3. Payment for the full price shall be on a unit price per linear foot logged (by the geophysical subcontractor) basis, as indicated in the Price Proposal, paid for the work performed and in accordance with the Schedule of Values. Payment shall constitute full compensation to the CONTRACTOR for furnishing all: labor, equipment, tools, materials, permits, removal, disposal of waste or excess materials, and sieve analyses; and for performing all operations required to furnish to the Owner this item, as specified and as indicated on the Contract Drawings and Specifications.

Item No. 3: Pilot Borehole Geophysical Logging Suite “Run 1”

1. Description
 - i. CONTRACTOR shall provide all labor, supervision, tools, equipment, and materials necessary to conduct geophysical logging. CONTRACTOR will be required to purchase “tool insurance” from the geophysical subcontractor to limit liability in the case of an accidental loss of a geophysical logging sonde in the pilot borehole.
2. Measurement will be based on each logging suite completed and accepted, all in accordance with the Contract Documents.
3. Payment for the full price shall be paid on a per-each basis, as indicated in the Price Proposal, paid for the work performed and in accordance with the Schedule of Values . Payment shall constitute full compensation to the Contractor for furnishing all: labor, equipment, tools, and materials; and for performing all operations required to furnish to the Owner this item, as specified and as indicated on the Contract Drawings and Specifications. CONTRACTOR will not receive extra compensation for rig time or stand-by time while the geophysical logging is conducted.

Item No. 4: Ream Upper Pilot Borehole to a Minimum 36-Inch Diameter

1. Description
 - i. CONTRACTOR shall provide all labor, supervision, tools, equipment, and materials necessary to ream the pilot borehole to a minimum nominal 36-inch diameter.
2. Measurement will be based on the number of linear feet of pilot borehole logged (by gyroscopic alignment/ caliper survey) and accepted, all in accordance with the Contract Documents.
3. Payment for the full price shall be on a unit price per linear foot basis, as indicated in the Price Proposal, paid for the work performed and in accordance with the Schedule of Values. Payment shall constitute full compensation to the Contractor for furnishing all: labor, equipment, tools, materials, permits, removal, and disposal of waste or excess materials; and for performing all operations required to furnish to the Owner this item, as specified and as

indicated on the Contract Drawings and Specifications.

Item No. 5: Ream Lower Pilot Borehole to a Minimum 30-Inch Diameter

1. Description
 - i. The Contractor shall provide all labor, supervision, tools, equipment, and materials necessary to ream the pilot borehole to a minimum nominal 36-inch diameter.
2. Measurement will be based on the number of linear feet of pilot borehole logged (by gyroscopic alignment/ caliper survey) and accepted, all in accordance with the Contract Documents.
3. Payment for the full price shall be on a unit price per linear foot logged basis, as indicated in the Price Proposal, paid for the work performed and in accordance with the Schedule of Values. Payment shall constitute full compensation to the Contractor for furnishing all: labor, equipment, tools, materials, permits, removal, and disposal of waste or excess materials; and for performing all operations required to furnish to the Owner this item, as specified and as indicated on the Contract Drawings and Specifications.

Item No. 6: Gyroscopic Alignment/Caliper Survey of Reamed Borehole

1. Description
 - i. The Contractor shall provide all labor, supervision, tools, equipment, tool insurance, and materials necessary to perform a gyroscopic alignment/ caliper survey (with total borehole volume indicator) of reamed upper borehole.
2. Measurement will be based on the number of each Gyroscopic Alignment/Caliper Surveys completed and accepted, all in accordance with the Contract Documents.
3. Payment for the full price shall be paid on a per-each basis, as indicated in the Price Proposal, paid for the work performed and in accordance with the Schedule of Values. Payment shall constitute full compensation to the Contractor for furnishing all: labor, equipment, tools, and materials; and for performing all operations required to furnish to the Owner this item, as specified and as indicated on the Contract Drawings and Specifications. CONTRACTOR will not receive extra compensation for rig time or stand-by time while the geophysical logging is conducted.

Item No. 7: Furnish and Install 30-Inch O.D. Casing, HSLA Steel (ASTM A 606, Type 4)

1. Description
 - i. The Contractor shall provide all labor, supervision, tools, equipment, tool insurance, and materials necessary to furnish and install 30-Inch O.D. HSLA (ASTM A606, Type 4) with swage.
2. Measurement will be based on the number of linear feet of casing (including 30 inches above ground) installed, tested, and accepted, all in accordance with the Contract Documents.

3. Payment for the full price shall be on a unit price per linear foot logged basis, as indicated in the Price Proposal, paid for the work performed and in accordance with the Schedule of Values. Payment shall constitute full compensation to the Contractor for furnishing all: labor, equipment, tools, and materials; and for performing all operations required to furnish to the Owner this item, as specified and as indicated on the Contract Drawings and Specifications.

This includes, but is not limited to, all materials, tools, labor, equipment, supplies, permits, removal and disposal of waste or excess materials, etc. necessary to have the this item installed, tested, accepted, and ready for use as its intended purpose. Payment for this item will not be made prior to receipt and acceptance (by the ENGINEER) of the results of the gyroscopic alignment survey and casing pressure testing.

Reduction in payment for casing not meeting minimum acceptance criteria. Full Payment for this item will be contingent upon the results of the gyroscopic alignment survey and casing pressure testing as described in Section 33 11 14, Paragraphs 3.12 and 3.13. Full payment will be made for if the effective inner diameter of the casing is 23 inches or greater to a depth of 200 feet below surface. No payment will be made for an effective inner casing diameter of 20 inches or less to a depth of 200 feet below surface. Payment will be prorated between 24 inches and 20 inches as follows:

Payment	Inner effective diameter
100%	=29.25" and >=23.25"
75%	<23.25" and >=22"
50%	<22" and >=21"
25%	<21" and >=20"
0%	< 20"

Casings that fail the pressure test will have payment reduced by 25%. Penalties for failure to meet alignment and pressure testing criteria are cumulative.

Item No. 8: Furnish and Install 24-Inch O.D. Casing, HSLA Steel (ASTM A 606, Type 4)

1. Description
 - i. The Contractor shall provide all labor, supervision, tools, equipment, tool insurance, and materials necessary to furnish and install 24-Inch O.D. HSLA (ASTM A606, Type 4) with swage.
2. Measurement will be based on the number of linear feet of casing installed, tested, and accepted, all in accordance with the Contract Documents.
3. Payment for the full price shall be on a unit price per linear foot logged basis, as indicated in the Price Proposal, paid for the work performed and in accordance with the Schedule of Values. Payment shall constitute full compensation to the Contractor for furnishing all: labor, equipment, tools, and materials; and for performing all operations required to furnish to the Owner this item, as specified and as indicated on the Contract Drawings and Specifications.

This includes, but is not limited to, all materials, tools, labor, equipment, supplies,

permits, removal, and disposal of waste or excess materials, etc. necessary to have this item installed, tested, accepted, and ready for use as its intended purpose. Payment will not be made prior to receipt and acceptance (by the ENGINEER) of the results of the gyroscopic alignment survey and casing pressure testing.

Item No. 9: Furnish and Emplace API Class H Cement with Approved Additives

1. Description
 - i. This item shall govern the furnishing and emplacing of API Class H cement with approved additives into the annulus of the production casing and borehole.
2. Measurement will be based on the number of linear feet installed, tested, and accepted, all in accordance with the Contract Documents.
3. Payment for the full price shall be on a unit price per linear foot logged basis, as indicated in the Price Proposal, paid for the work performed and in accordance with the Schedule of Values. Payment shall constitute full compensation to the Contractor for furnishing all: labor, equipment, tools, and materials; and for performing all operations required to furnish to the Owner this item, as specified and as indicated on the Contract Drawings and Specifications.

Item No. 10: Gyroscopic Alignment Survey of Pump Chamber Casing

1. Description
 - i. The Contractor shall provide all labor, supervision, tools, equipment, tool insurance, and materials necessary to perform a gyroscopic alignment survey of the pump chamber casing.
2. Measurement will be based on each Gyroscopic Alignment Survey completed and accepted, all in accordance with the Contract Documents.
3. Payment for the full price shall be paid on a per-each basis, as indicated in the Price Proposal, paid for the work performed and in accordance with the Schedule of Values. Payment shall constitute full compensation to the Contractor for furnishing all: labor, equipment, tools, and materials; and for performing all operations required to furnish to the Owner this item, as specified and as indicated on the Contract Drawings and Specifications.

Item No. 11: Drill Pilot Borehole – Open-Hole Interval

1. Description
 - i. The Contractor shall provide all labor, supervision, tools, equipment, tool insurance, and materials necessary to drill the open-hole interval of the pilot borehole.
2. Measurement will be based on the number of linear feet of pilot borehole logged (by geophysical logging subcontractor), tested, and accepted, all in accordance with the Contract Documents.

3. Payment for the full price shall be on a unit price per linear foot logged (by the geophysical subcontractor) basis, as indicated in the Price Proposal, paid for the work performed and in accordance with the Schedule of Values. Payment shall constitute full compensation to the CONTRACTOR for furnishing all: labor, equipment, tools, materials, permits, removal, disposal of waste or excess materials, and sieve analyses; and for performing all operations required to furnish to the Owner this item, as specified and as indicated on the Contract Drawings and Specifications.

Item No. 12: Pilot Borehole Geophysical Logging Suite “Run 2”

1. Description
 - i. The Contractor shall provide all labor, supervision, tools, equipment, tool insurance, and materials necessary to conduct geophysical logging. The Contractor will be required to purchase “tool insurance” from the geophysical subcontractor to limit liability in the case of accidental loss of a geophysical logging sonde in the pilot borehole.
2. Measurement will be based on each logging suite completed and accepted, all in accordance with the Contract Documents.
3. Payment for the full price shall be paid on a per-each basis, as indicated in the Price Proposal, paid for the work performed and in accordance with the Schedule of Values. Payment shall constitute full compensation to the Contractor for furnishing all: labor, equipment, tools, and materials; and for performing all operations required to furnish to the Owner this item, as specified and as indicated on the Contract Drawings and Specifications. CONTRACTOR will not receive extra compensation for rig time or stand-by time while the geophysical logging is conducted.

Item No. 13: Ream Open-Hole Borehole to A Minimum 23” Diameter

1. Description
 - i. The Contractor shall provide all labor, supervision, tools, equipment, and materials necessary to perform to ream the pilot borehole to a minimum 23-inch diameter.
2. Measurement will be based on the number of linear feet of pilot borehole logged (by volumetric/ caliper survey) and accepted, all in accordance with the Contract Documents.
3. Payment for the full price shall be on a unit price per linear foot basis, as indicated in the Price Proposal, paid for the work performed and in accordance with the Schedule of Values. Payment shall constitute full compensation to the Contractor for furnishing all: labor, equipment, tools, materials, permits, removal, and disposal of waste or excess materials; and for performing all operations required to furnish to the Owner this item, as specified and as indicated on the Contract Drawings and Specifications.

Item No. 14: Furnish and Install 20,000 Gallons of 28% Hydrochloric Acid in Production Borehole

1. Description
 - i. Measurement of the item “Furnish and Install 20,000 Gallons of 28% Hydrochloric Acid in Production Borehole” will be based upon each completion as defined in the requirements of Section 33 11 14 of the specifications and accepted in accordance with the Contract Documents.
2. Measurement will be based on each furnishing and installation, inclusive, accepted, all in accordance with the Contract Documents and Section 33 11 14.
3. Payment for the full price shall be paid on a per-each basis, as indicated in the Price Proposal, paid for the work performed and in accordance with the Schedule of Values. Payment shall constitute full compensation to the Contractor for furnishing all: labor, equipment, tools, and materials; and for performing all operations required to furnish to the Owner this item, as specified and as indicated on the Contract Drawings and Specifications.

Only 75% (partial) payment for this item will be made upon acceptance of this item prior to demobilization from this site. Upon completion and acceptance of demobilization from the well site, the remaining 25% of payment for this item will be made.

Item No. 15: Acidizing in Excess of 20,000 Gallons 28% Hydrochloric Acid in Production Borehole

1. Description
 - i. This item shall include all work associated with Acidizing in Excess of 20,000 gallons 28% Hydrochloric Acid in Production Borehole in accordance with the Contract Documents.
2. Measurement will be based on each addition gallon from the requirements of Section 33 11 14, all in accordance with the Contract Documents.
3. Payment for the full price shall be paid on a per-gallon basis, as indicated in the Price Proposal, paid for the work performed and in accordance with the Schedule of Values and the requirements of Section 33 11 14. Payment shall constitute full compensation to the Contractor for furnishing all: labor, equipment, tools, and materials; and for performing all operations required to furnish to the Owner this item, as specified and as indicated on the Contract Drawings and Specifications.

Item No. 16: Remove and Dispose of Acid Residue

1. Description
 - i. This item shall include all work associated with the well development, acid residue removal, and disposal in accordance with the Contract Documents.

2. Measurement will be based on each item completed in accordance with the requirements of Section 33 11 14 of the specifications, all in accordance with the Contract Documents.
3. Payment for the full price shall be paid on a per-each basis, as indicated in the Price Proposal, paid for the work performed and in accordance with the Schedule of Values. Payment shall constitute full compensation to the Contractor for furnishing all: labor, equipment, tools, and materials; and for performing all operations required to furnish to the Owner this item, as specified and as indicated on the Contract Drawings and Specifications.

Item No. 17: Constant-Discharge Pumping Test (24-Hour)

1. Description
 - i. This item shall consist of the work required to conduct a 24-hour, constant-discharge pumping test of the well. This item shall also include short-term pre-tests that are required in Section 33 11 14, and test pump removal. The Contractor will receive no additional compensation for pretesting or test pump removal.
2. Measurement will be based on each "Constant Discharge Pumping Test" completed and accepted, all in accordance with the Contract Documents.
3. Payment for the full price shall be paid on a per-each basis, as indicated in the Price Proposal, paid for the work performed and in accordance with the Schedule of Values. Payment shall constitute full compensation to the Contractor for furnishing all: labor, equipment, tools, and materials; and for performing all operations required to furnish to the Owner this item, as specified and as indicated on the Contract Drawings and Specifications.

This includes, but is not limited to, all materials, tools, labor, equipment, supplies, permits, removal, and disposal of waste or excess materials, etc. necessary to constant rate test the well, complete, tested and accepted all in accordance with the Contract Documents.

Payment shall be based upon the well achieving a 75% efficiency rating as determined on the completion of the 24-hour constant-discharge pumping test using calculated transmissivity and storage values. The straight-line method presented by Cooper and Jacob (1946) will be used with data from the pumping well to compute the theoretical well drawdown. The ratio of the theoretical drawdown at the limits of the reamed hole to the measured drawdown in the pumped well will determine well efficiency. If it is determined that the well's target efficiency was not reached in the first 60 minutes or at the pumping time that the data deviates from the Cooper-Jacob straight-line response due to leakance or other aquifer caused hydraulic behavior, no payment will be made for the constant-discharge pumping test and the Contractor will be required to re-initiate development operations. The selected discharge rate shall be maintained throughout the test within +5%. If the discharge rate is not maintained within 5% of the initial rate, the test will be repeated with no additional compensation to the Contractor. Additionally, the Contractor will be required to pay the Owner for Engineer standby time used during the execution of the failed pumping test.

Only 75% (partial) payment for this item will be made upon acceptance of this item prior to demobilization from this site. Upon completion and acceptance of demobilization from the well site, the remaining 25% of payment for this item will be made.

Item No. 18: Water Quality Sampling and Analyses

1. Description
 - i. The Contractor shall provide all labor, supervision, tools, equipment, and materials necessary to conduct water quality sampling and analyses.
2. Measurement will be based on each water quality sampling completed and accepted, all in accordance with the Contract Documents.
3. Payment for the full price shall be paid on a per-each basis, as indicated in the Price Proposal, paid for the work performed and in accordance with the Schedule of Values. Payment shall constitute full compensation to the Contractor for furnishing all: labor, equipment, tools, and materials; and for performing all operations required to furnish to the Owner this item, as specified and as indicated on the Contract Drawings and Specifications.

This includes, but is not limited to, all materials, tools, labor, equipment, supplies, permits, removal, and disposal of waste or excess materials, etc. necessary to have water quality sampling and analysis, completed and accepted. CONTRACTOR will not receive extra compensation for rig time or stand by time while the water quality sampling and analyses are conducted.

Only 75% (partial) payment for this item will be made upon acceptance of this item prior to demobilization from this site. Upon completion and acceptance of demobilization from the well site, the remaining 25% of payment for this item will be made.

Item No. 19: Well Disinfection

1. Description
 - i. The Contractor shall provide all labor, supervision, tools, equipment, and materials necessary to complete well disinfection.
2. Measurement will be based on each well disinfection completed and accepted, all in accordance with the Contract Documents.
3. Payment for the full price shall be paid on a per-each basis, as indicated in the Price Proposal, paid for the work performed and in accordance with the Schedule of Values. Payment shall constitute full compensation to the Contractor for furnishing all: labor, equipment, tools, and materials; and for performing all operations required to furnish to the Owner this item, as specified and as indicated on the Contract Drawings and Specifications.

This includes, but is not limited to, all materials, tools, labor, equipment, supplies, permits, removal, and disposal of waste or excess materials, etc. necessary for well disinfection completed and accepted. CONTRACTOR will not receive extra compensation for rig time or stand by time while the well disinfection is conducted. Payment shall not be made for this item until all laboratory analyses

(Item No. 18) for the presence of fecal coliform bacteria have been received and verified with a “negative” result.

Only 75% (partial) payment for this item will be made upon acceptance of this item prior to demobilization from this site. Upon completion and acceptance of demobilization from the well site, the remaining 25% of payment for this item will be made.

Item No. 20: Construct Well Sealing Block

1. Description
 - i. The Contractor shall provide all labor, supervision, tools, equipment, and materials necessary to Construct Well Sealing Block, as specified in the Contract Documents.
2. Measurement will be based on each well sealing block completed and accepted, all in accordance with the Contract Documents.
3. Payment for the full price shall be paid on a per-each basis, as indicated in the Price Proposal, paid for the work performed and in accordance with the Schedule of Values. Payment shall constitute full compensation to the Contractor for furnishing all: labor, equipment, tools, and materials; and for performing all operations required to furnish to the Owner this item, as specified and as indicated on the Contract Drawings and Specifications.

This includes, but is not limited to, all materials, tools, labor, equipment, supplies, permits, removal, and disposal of waste or excess materials, etc. necessary to complete the item in accordance with the Contract Documents.

Only 75% (partial) payment for this item will be made upon acceptance of this item prior to demobilization from this site. Upon completion and acceptance of demobilization from the well site, the remaining 25% of payment for this item will be made.

Item No. 21: Well mudding

1. Description
 - i. The Contractor shall provide all labor, supervision, tools, equipment, and materials necessary to for well mudding activities for Wells 3, 4, 5, 7, and 8, as specified in the Contract Documents.
2. Measurement will be lump sum for all costs associated with the works described, all in accordance with the Contract Documents.
3. Payment of the full price shall be paid for the work performed and in accordance with the Schedule of Values. Payment shall constitute full compensation to the Contractor for furnishing all: labor, equipment, tools, and materials; and for performing all operations required to furnish to the Owner this item, as specified and as indicated on the Contract Drawings and Specifications.

Item No. 22: Site Improvements

1. Description
 - i. The Contractor shall provide all labor, supervision, tools, equipment, and materials necessary for general civil/structural site improvements associated with the Artesia Pump Station. This item shall include but is not limited to demolition of existing facilities, grading, paving, permitting, site preparation, saw cutting, asphalt repair, and submittals, as indicated in the Contract Documents.
2. Measurement will be lump sum for all costs associated with the works described, all in accordance with the Contract Documents.
3. Payment of the full price shall be paid for the work performed and in accordance with the Schedule of Values. Payment shall constitute full compensation to the Contractor for furnishing all: labor, equipment, tools, and materials; and for performing all operations required to furnish to the Owner this item, as specified and as indicated on the Contract Drawings and Specifications.

Item No. 23: Above-Ground and Below-Ground Civil/Mechanical/Structural/Plumbing

1. Description
 - i. The Contractor shall provide all labor, supervision, tools, equipment, and materials necessary to complete all above-ground and below-ground civil/mechanical/structural/plumbing improvements. This item shall include, but is not limited to, installation of Well Nos. 7 and 8 piping, valves, and appurtenances not required as part of Bid Item Nos. 1 through 20, improvements to Well Nos. 3, 4, and 5 pumps; tie-ins, excavation, backfill, submittals, and manufacturer field services, start-up, testing, training, and commissioning associated with the Artesia Pump Station Additional Well Nos. 7 and 8.
2. Measurement will be lump sum for all costs associated with the works described, all in accordance with the Contract Documents.
3. Payment of the full price shall be paid for the work performed and in accordance with the Schedule of Values. Payment shall constitute full compensation to the Contractor for furnishing all: labor, equipment, tools, and materials; and for performing all operations required to furnish to the Owner this item, as specified and as indicated on the Contract Drawings and Specifications.

Item No. 24: Electrical

1. Description
 - i. The Contractor shall provide all labor, supervision, tools, equipment, and materials necessary to complete electrical construction. The item includes, but is not limited to the electrical, conduit, wiring/cables, lighting, electrical connections, submittals, programming, electrical room demolition/preparation, permitting, manufacturer's field services, testing, startup, and commissioning.

1. Measurement will be lump sum for all costs associated with the works described, all in accordance with the Contract Documents.
2. Payment of the full price shall be paid for the work performed and in accordance with the Schedule of Values. Payment shall constitute full compensation to the Contractor for furnishing all: labor, equipment, tools, and materials; and for performing all operations required to furnish to the Owner this item, as specified and as indicated on the Contract Drawings and Specifications.

Item No. 25: Instrumentation/Controls

1. Description
 - i. The Contractor shall provide all labor, supervision, tools, equipment, and materials necessary to complete electrical and instrumentation controls construction. The item includes, but is not limited to the wiring/cables, instrumentation, connections, submittals, programming, permitting, manufacturer's field services, testing, startup, and commissioning.
2. Measurement will be lump sum for all costs associated with the works described, all in accordance with the Contract Documents.
3. Payment of the full price shall be paid for the work performed and in accordance with the Schedule of Values. Payment shall constitute full compensation to the Contractor for furnishing all: labor, equipment, tools, and materials; and for performing all operations required to furnish to the Owner this item, as specified and as indicated on the Contract Drawings and Specifications.

Item No. 26: Trench Excavation Safety

1. Description
 - i. The Contractor shall provide all labor, supervision, tools, equipment, materials, and incidentals required for safety items related to trench excavation.
2. Measurement will be on a linear-foot basis, all in accordance with the Contract Documents.
3. Payment for the full price shall be on a unit price per linear foot basis, as indicated in the Price Proposal, paid for the work performed and in accordance with the Schedule of Values. Payment shall constitute full compensation to the Contractor for furnishing all: labor, equipment, tools, and materials; and for performing all operations required to furnish to the Owner this item, as specified and as indicated on the Contract Drawings and Specifications.

Item No. 27: Standby Time at the Direction of the Engineer

1. Description – This item shall consist of standby time at the direction of the Engineer.
2. Measurement will be based on the per-hour actually spent on standby at the direction of the Engineer in accordance with the Contract Documents.

3. Payment for the full price shall be on a per-hour basis, as indicated in the Price Proposal, paid for the work performed and in accordance with the Schedule of Values. Payment shall constitute full compensation to the Contractor for furnishing all: labor, equipment, tools, and materials; and for performing all operations required to furnish to the Owner this item, as specified and as indicated on the Contract Drawings and Specifications.

Item No. 28: Post-Processing of Geophysical Logging Data

1. Description
 - i. The CONTRACTOR shall provide all labor, supervision, tools, equipment, and materials necessary to conduct "Post-Processing of Geophysical Logging Data" collected during "Geophysical Logging of Pilot Borehole" if this service is available, provided by the geophysical logging subcontractor. The Post-Processing will be conducted only at the request of and authorization by the ENGINEER and will be directed by the ENGINEER. The details of post-processing of geophysical logging data are shown in the Supplement to Section 33 11 14.
2. Measurement will be based on the post-processing of physical data per each pilot borehole, completed and accepted, all in accordance with the Contract Documents.
3. Payment for the full price shall be paid on a per-each basis, as indicated in the Price Proposal, paid for the work performed and in accordance with the Schedule of Values. Payment shall constitute full compensation to the Contractor for furnishing all: labor, equipment, tools, and materials; and for performing all operations required to furnish to the Owner this item, as specified and as indicated on the Contract Drawings and Specifications.

Item No. 29: Abandonment of Pilot Borehole

1. Description
 - i. The Contractor shall provide all labor, supervision, tools, equipment, and materials necessary to abandon the pilot borehole. This item shall be used at the direction of the ENGINEER and OWNER and will be used if geological data from the pilot borehole indicates that the well site is unsuitable for completion as a production well. Additionally, this item may be used to abandon portions of the pilot borehole below the production zone that were drilled for the purposes of borehole geophysical logging at the direction of the ENGINEER.
2. Measurement will be based on the number of linear feet of pilot borehole abandoned, tested, and accepted, all in accordance with the Contract Documents.
3. Payment for the full price shall be on a unit price per linear foot basis, as indicated in the Price Proposal, paid for the work performed and in accordance with the Schedule of Values. Payment shall constitute full compensation to the Contractor for furnishing all: labor, equipment, tools, materials, permits, removal, and disposal of waste or excess materials; and for performing all

operations required to furnish to the Owner this item, as specified and as indicated on the Contract Drawings and Specifications.

Item No. 30: Subsurface Utility Location Allowance

1. Description
 - i. The Contractor shall provide all labor, supervision, tools, equipment, and materials necessary to complete the task of utility location and depth verification to identify all underground tie-in locations/utility conflicts with proposed improvements; minimum of 15 potholes. Contractor shall be required to hydro vacuum extract, hand dig, or otherwise perform the excavation in a manner that does not harm the existing utilities.
2. Measurement for the item "Subsurface Utility Location Allowance" will be per each pothole and in accordance with the actual fees associated with the project, up to the allotted allowance amount.
3. Payment of the not to exceed allowance price shall be paid for the work. Payment shall constitute full compensation to the Contractor for the subsurface utility location investigations for the Project.

Item 31: Permitting Allowance

1. Description – This item shall be for permitting fees associated with the project scope. This shall include furnishing all materials, and incidentals required to obtain all necessary permits including review fees, in accordance with the Contract Documents, complete in place.
2. Measurement – Measurement for the item "Permitting Allowance" will be "by permit" of the actual fees associated with the project. This shall include furnishing all labor, materials, tools, equipment, and incidentals required to obtain all necessary permits. This allowance shall cover any approved reimbursement of costs related to obtaining permits required to construct the project. Proof of payment of permits fees will be required, and reimbursements will be made on the basis of actual permit fees required by each respective agency paid. The labor associated with obtaining permits is considered incidental to the other items.
3. Payment of the not to exceed allowance price shall be paid for the work. Payment shall constitute full compensation to the Contractor for obtaining all necessary permits for the Project. The Contractor shall provide permit receipts to Owner for reimbursement.

Item 100: Mobilization and Demobilization

1. Description – This item shall include mobilization and demobilization costs associated with the Artesia Well Nos. 7 and 8. Project scope. This item shall include project move-in and move-out of personnel and equipment, for all work including furnishing all labor, materials, tools, equipment and incidentals required to mobilize, demobilize, bond and insure the work for the project in accordance with the Contract Documents, complete in place.

2. Measurement – Measurement of Item 100 will be by lump sum as the work progresses and in accordance with the General Conditions. If the Lump Sum price for Item 100 exceeds the allowable maximum stated for Mobilization and Demobilization, Owner reserves the right to cap the amount at 10% and adjust the extension of the bid item accordingly.
3. Payment – Partial payments of the lump sum bid for mobilization will be as follows:
 - a. As shown in the General Conditions.
 - b. As shown in SAWS Item No. 100.

Item 102: Intermediate Demobilization and Remobilization

1. Description – This item shall include demobilization and remobilization costs associated with the Artesia Well Nos. 7 and 8. Project scope. This item shall include project move-in and move-out of personnel and equipment, for all work including furnishing all labor, materials, tools, equipment and incidentals required to mobilize, demobilize, bond and insure the work for the project in accordance with the Contract Documents, complete in place.

This bid item will only be paid for each prior authorization given in writing by Owner. This bid item is limited to delays outside of the Contractor's control that are not otherwise provided for in the General Conditions. Examples of these types of delays include Owner easement acquisition, permitting issues (only those permits not controlled by the Contractor), or other Owner activities. Any other provision contained herein notwithstanding Contractor will not be entitled to compensation under this bid item for work suspended during the 10 cumulative days allowed for by the Contract in the General Conditions, Article IV, Paragraph 4.8 Suspension of Work by Owner.
2. Measurement – Measurement of Item 102 will be per each intermediate demobilization and remobilization, inclusive. If the per each price for Item 102 exceeds the allowable maximum stated for Intermediate Mobilization and Demobilization, Owner reserves the right to cap the amount at 1% and adjust the extension of the bid item accordingly.
3. Payment – Partial payments of the lump sum bid for mobilization will be as follows:
 - a. As shown in the General Conditions.
 - b. As shown in SAWS Item No. 102.

END OF SECTION