September 16, 2020
ORANGE COUNTY, FLORIDA

INVITATION FOR BIDS
Y20-753, ORANGE COUNTY SOUTHWEST SERVICE AREA POTABLE WATER STORAGE AND REPUMP FACILITY AND AVALON RD MASTER PUMP STATION
ADDENDUM NO. 9

This addendum is hereby incorporated into the documents of the project referenced above. The following items are clarifications, corrections, additions, deletions and/or revisions to and shall take precedence over the original documents.

A. THE SUBMISSION DEADLINE IS CHANGED TO TUESDAY, <u>DECEMBER 15, 2020 4:00PM EST</u>.

B. QUESTIONS AND ANSWERS

1. QUESTION: 15600 GENERATOR FUEL STORAGE SYSTEM listed Phoenix or Fireguard as the approved manufacturers while 15437 "FIREGUARD" DIESEL STORAGE TANK listed Phoenix or approved equal as the manufacturer. We are respectfully requesting "Or Equal" to be added to the list to the 15600 Spec to be able to get more alternatives.

RESPONSE: This response pertains to Package A and Package B. The list of approved manufacturers is updated. Refer to Package A (SWSA SRF) specification Section 15437 revisions and Package B (ARMPS) specification Section 15600 revisions in Part C of this addendum.

2. QUESTION: Sheet E003 do not show any scale. Please furnish the scale.

RESPONSE: This response pertains to Package A (SWSA SRF). The scale for drawing E003 is **<u>1" = 30'</u>**.

3. QUESTION: Section 16110- 1.01 requires all underground conduits to be PVC Schedule 80. Section 16402-1.01-2.01 requires ducts encased in concrete to PVC DB type. Underground conduits shown on Drawings E002 and E003 require concrete encasement. Please advise if PVC 80 or PVC DB to be used in above mentioned situation.

RESPONSE: This response pertains to Package A (SWSA SRF). In Specification 16402, page 1, paragraph 2.01A, replace reference to "~~PVC type DB~~" with "**<u>PVC Schedule 80</u>**"

4. QUESTION: Regarding permits, Section 01065, this says permits are provided for in Section 00700, We cannot locate this section? Bid form says that the item is supposed to be .2% of the total bid, just going of the Engineers estimate, this is roughly $36,000 dollars.

Obviously, this is a cost, we can't just put .2% of the total in the bid item without offsetting the cost.

RESPONSE: IFB Y20-753-TA Bid Form Schedule, Item 7, shall be the lump sum unit cost of 0.2% fixed percentage of the total sum of Items 1 through 6 as specified in the note section. This is the County's estimate for the Permit Fees listed in Paragraph C of Section 01065. Should unforeseen changes occur, provisions as specified in the bid documents for change orders may apply. Refer to Part C, Instructions to Bidders, Provision 31-Licenses/Permits/Fees as this line item is a result of the Public Bid Disclosure Act, Section 218.80, Florida Statutes.

5. **QUESTION:** Please confirm both PLC, OIT, workstation and HMI/SCADA programming is to be provided by the system integrator.

   RESPONSE: This response pertains to both Package A and Package B. All programming for the PLC, OIT, workstation, and HMI/SCADA Programming is to be completed by the System Integrator. The System Integrator is responsible for modifying the existing HMI/SCADA system.

6. **QUESTION:** Please confirm the PLC at the SW Service Area PCP is a Siemens PLC.

   RESPONSE: This response pertains to Package A (SWSA SRF). The PLC for SWSA Potable Water Storage & Repump Facility PCP is a Schneider M340 per Section 13300, page 18, paragraph 2.07.

7. **QUESTION:** Please provide a workstation specification for the panel mounted workstation indicated on SW Service Area drawing I-6.

   RESPONSE: This response pertains to Package A (SWSA SRF). Per Section 13300, page 19, paragraph 2.08, the HMI is to be a Dell Precision T5610, or current family product. See spec section for minimum specs and requirements.

8. **QUESTION:** SW Service Area drawing I-6 indicates the Ethernet switch, firewall and router is to be specified by the owner. Please advise whether the owner will be furnishing these items or a budgeted cost that needs to be included in the proposal.

   RESPONSE: This response pertains to Package A (SWSA SRF). The Contractor is to provide the network hardware shown on Drawing I006. (See response to Question 11 in this addendum for specific manufacturer and model numbers.)

9. **QUESTION:** Sheet E003 storage and pump facility show fiber and Telephone pull boxes. Please advise if the boxes are above ground or in ground type. If the PBs are in ground furnish the size.

RESPONSE: This response pertains to Package A (SWSA SRF). Pull Boxes for Fiber & Telephone shown on Drawing E003 are to be in-ground type. Boxes shall be 24”x24”x18” deep, with Traffic Rated cover.

10. QUESTION: Reference SWSA I-02:

a. Please clarify who is to provide the Mixer SCADA Panel (Loop 1060).
b. Is there a SCADA component in the panel? It appears to be a simplex motor starter panel.

RESPONSE: This response pertains to Package A (SWSA SRF).

1. The panel shall be provided by the Mixer manufacturer as stated in Drawing M200, Note 2.
2. Mixer Panel to include a 24VDC relay to allow for remote on/off control of the mixer and integration of a 4-20mA output for motor current monitoring.

11. QUESTION: Reference SWSA I-06 Note 1:

a. Please specify the Ethernet Switch, Firewall & Router.

RESPONSE: This response pertains to Package A (SWSA SRF). The network equipment referenced on Drawing I-006 for the SWSA Project is as follows:

1. Router – IE4000-4GS8GP4G-E with PWR-IE170W-PC-AC and CON-SNT-IE40004P
2. Firewall – Tempered Network HIPSwitch150e
3. Switch – RS20-1600T1T1SDAE Rail Switch

The power monitors noted on Drawing I-006 are to be provided and installed by the electrical contractor. The power monitors are to be configured by the System Integrator.

12. QUESTION: Reference Avalon Pump Station drawing I-602 Note #1, clarify Power Monitors to be provided with Electrical Switchgear or by the PICS? Monitored installed by EC or PICS?

RESPONSE: This response pertains to Package B (ARMPS). Power Monitors referenced on Avalon Pump Station Sheet I-602 (and shown on One Line Riser on Sheet E-201) are to be provided by the supplier of the Electrical Switchgear and configured by the System Integrator.

13. QUESTION: Do we have to turn in the bid bond before the bid if we are submitting electronically? Other municipalities we don’t, it is just a copy of bid bond submitted with all other paper work. Our reply is needed soon to make sure we do this correctly.

RESPONSE: Addendum 1 encourages the electronic submission of bid, and requires a copy of the bid bond to be included with the electronic submission. The bid bond and a certified and effectively dated copy of the power of attorney shall be submitted electronically with the bid in lieu of a hard copy submittal.

14. **QUESTION:** The bid documents say you must meet the M/WBE requirements? I don't remember this being the case as long as you did the good faith effort?

    RESPONSE: The 25% goal is a requirement. If it is not met, then Good Faith Effort documentation shall be submitted and successfully achieved.

15. **QUESTION:** Is there going to be a prebid?

    RESPONSE: This will be addressed in a future addendum.

16. **QUESTION:** On the doors, they say they are FRP with Alum frames? Can FRP frames be supplied?

    RESPONSE: This response pertains to Package A (SWSA SRF). FRP frames may be proposed as a substitution. In accordance with Article 9 of the General Conditions, application for the use of a substitute material or equipment shall be submitted for approval following Notice of Award. Such application(s) may be considered after execution of the Contract in accordance with Article 7 of Part C – Instructions to Bidders.

17. **QUESTION:** Specification section 11214 – Horizontal split case centrifugal pumps, chapter 2.05 Factory Testing, part B, states "A certified performance test shall be performed on each pumping unit utilizing is specified calibrated driver at full speed and 80%, 60% and 40% of full speed. All tests shall be performed in accordance with the Hydraulic Institute Standards for Centrifugal Pumps current edition." Please clarify if certified performance test shall be performed with specified JOB motor or calibrated FACTORY motor.

    RESPONSE: This response pertains to Package A (SWSA SRF). Section 11214, page 8, paragraph 2.05B states "A certified performance test shall be performed on each pumping unit utilizing its specified calibrated driver…" The specified calibrated driver is the calibrated job motor for that pump.

18. **QUESTION:** The specs call for underground ducts to be laid on 6" of gravel. Is this required for all concrete encased electrical duct banks?

    RESPONSE: This response pertains to Package A (SWSA SRF). 6" of gravel referenced in Section 16402, page 1, paragraph 3.01C applies to non-concrete encased ducts. Concrete encased duct banks do not require 6" gravel mat or subbase.

19. **QUESTION:** Does concrete encasement stop at the edge of a building or structure slab or do conduits underneath these slabs need to be concrete encased?

    RESPONSE: This response pertains to Package B (ARMPS). Concrete encasement for underground conduits extends a minimum 5' beyond the footer as detailed on Avalon MPS

Sheet E-101, Typical Below Footer Detail. Other than as shown on detail, conduits under structure slab do not require concrete encasement.

20. QUESTION: Section 16402-2, underground duct entrances to buildings and structures made with steel conduit. Does this refer to conduits from the duct banks that would be underneath a building or structure slab and stubbing up into gear and equipment? Would it be painted or shrink wrapped aluminum instead of steel?

RESPONSE: This response pertains to Package A (SWSA SRF). Delete Section 16402, page 2, paragraph 3.01.F. The reference to the requirement for steel conduit for entrances in buildings does not apply. The requirement for Rigid Aluminum conduit coated in mastic or shrink wrap on turn-ups to above ground still applies.

21. QUESTION: There is detail in the master pump station drawings showing steel reinforced concrete encased duct banks extending 5' on either side of a footer. Does this also apply for the operations building of package "A"?

RESPONSE: This response pertains to Package A (SWSA SRF). Yes, the "Typical Below Footer Detail" shown on Package B (ARMPS) Sheet E-101 applies to the Operations Building of Package "A".

22. QUESTION: Regarding the Avalon Road Master Pump Station bid, Daniel Company would like to be named in Section 11310 Packaged Two-Stage Odor Control System and Section 15062 Fiberglass Reinforced Plastic Pipe (Air Service).

RESPONSE: This response pertains to Package B (ARMPS). In accordance with Article 9 of the General Conditions, application for the use of a substitute material or equipment shall be submitted for approval following Notice of Award. Such application(s) may be considered after execution of the Contract in accordance with Article 7 of Part C – Instructions to Bidders.

23. QUESTION: The FRP Door spec 08220 lists Cline Aluminum Doors as a manufacturer. Cline cannot meet the fireproof rating spec. Would the owner consider Chem-Pruf doors as an approved manufacturer?.

RESPONSE: This response pertains to Package A (SWSA SRF). The interior doors have been revised to hollow metal. Refer to revised Door Schedule under Package A Drawing A108 in Part C of this addendum. Chem-Pruf doors may be proposed as a substitution for Cline Aluminum Doors. In accordance with Article 9 of the General Conditions, application for the use of a substitute material or equipment shall be submitted for approval following Notice of Award. Such application(s) may be considered after execution of the Contract in accordance with Article 7 of Part C – Instructions to Bidders.

24. QUESTION: What is the R value of thickness of the insulation under the metal roof on the operations building?

RESPONSE: This response pertains to Package A (SWSA SRF). The roof insulation shall be nominal R-value 38. Provide 7.5 inches of extruded-polystyrene board insulation specified in Section 07210, and as shown in Drawings A103 and A107 revisions in Part C of this addendum.

25. QUESTION: One ductbank detail on sheet E020 shows the #3 rebar ties at 2' on center, the other detail on the same sheet shows the ties at 12'. Which is correct?

RESPONSE: This response pertains to Package A (SWSA SRF). Provide ties at maximum 24" on center as noted in "Typical Conduit Ductbank Section".

26. QUESTION: I was just wondering when a pre-bid meeting & site walk will occur.

RESPONSE: A pre-bid meeting and site visit will be addressed in a future addendum.

27. QUESTION: Section 3c states all participating M/WBE's must be certified by Orange County. We have reached out to several M/WBE vendors and although we are expecting to receive number of quotation for the work on this bid, our early estimated numbers indicates that we may still fall short on meeting the goal of 25%. We would like to request if Orange County will consider minority and women owned businesses certified by other entities such as FDOT, City of Orlando and such for the M/WBE participation?

RESPONSE: Orange County's M/WBE program only accepts M/WBE participation from companies certified with Orange County Government.

28. QUESTION: Package A Section 03901 – For leak Testing of 3.5MG concrete tank , please advise:

a. if there is a water source on site we could use to fill the tank?
b. If contractor will be charged for the water required for the leak testing?
c. If the water after testing can be discharged to the sewer system at a rate that does not overburden the system?

RESPONSE: This response pertains to Package A (SWSA SRF). The Contractor shall install a temporary 6" line for water during construction as shown on Drawings C007 and C005. Water meter will be provided by the Owner and installed by the Contractor per Section 01590, page 5, paragraph 1.06D. Contractor will pay for water used per paragraph 1.06D.6. Water after testing the 3.5 MG tank may be discharged in the same manner as disinfection water per Section 13205, paragraph 3.04B as modified under Part C of Addendum 7.

29. QUESTION: Package A – Please clarify regarding the trees on the Landscaping Plan drawing L000. The plant list states a quantity of three "JV" trees and five "PE" trees while

the drawing shows a quantity of two JV trees and six PE trees. Please clarify quantity of each of these trees.

RESPONSE: This response pertains to Package A (SWSA SRF). The plan is correct and the PLANT LIST table will be revised. Refer to Package A Drawing L000 revisions in Part C of this addendum.

30. QUESTION: Package B: Please confirm if the following note for Section 02220, page 7 paragraph 3.02B.1.a. referenced in Addendum #5 applies to perimeter wall footings as well? Bottom of 15' wide footing is indicated at EL 102.00, which is at an approx. depth of 10'-12' from existing elevation along the northern section of the perimeter; with the referenced note, the bottom of excavation will need to be minimum 45' wide to allow structural backfill 15' beyond the exterior of the footing. Please advise if the contractors interpretation is correct?

7. **Page 7, paragraph 3.02B.1.a** REVISE the paragraph as follows:
"Excavation for ~~precast or prefabricated~~ structures shall be carried to an elevation 2 feet lower than the proposed outside bottom of the structure to provide space for the ~~select~~ **structural** backfill material. **Structural backfill material shall extend 15 feet beyond the exterior of structure foundations.** Prior to placing the ~~select~~ **structural** backfill, the excavation shall be measured by the County to verify that the excavation has been carried to the proper depth and is reasonably uniform over the area to be occupied by the structure.

RESPONSE: This response pertains to Package B (ARMPS). Refer to revised Package B specifications in Part C of this addendum. The excavation shall be wide enough to allow structural backfill to extend 5' beyond the exterior of the footing.

31. QUESTION: Addendum #2, answer to question #1: Please confirm that deletion of hypochlorite system will also result in deletion of concrete tank support pad, deep sump w/ grating, and containment curb from the scope?

RESPONSE: This response pertains to Package A (SWSA SRF). Confirmed. Revised drawings will be provided in a future addendum.

32. QUESTION: On Drawing M-101 The access hatch covers for the mixers and pumps call out H-20 loading. In spec section 11305-9, Part 2, S, 2a specifies 300lb live load. Please clarify.

RESPONSE: This response pertains to Package B (ARMPS). H-20 loading is required for the hatch covers. Refer to revised Package B specifications in Part C of this addendum.

33. QUESTION: On table 11305-A please confirm SulzerABS Pump Model – XFP150M-CB2.360-PE630/4. Please confirm Impeller Number – should be 365 not 205J CB2.

RESPONSE: This response pertains to Package B (ARMPS). The pump is required to meet the performance requirements of the spec. The Model and Impeller numbers are for reference only.

34. QUESTION: Please confirm quantity of the adjustable reach hoist. Typically only 1 hoist is supplied. Does this project require quantity 2?

RESPONSE: This response pertains to Package B (ARMPS). Only 1 hoist is required for this project.

35. QUESTION: Should certified factory hydraulic curves be to Hydraulic Institute Level 2B?

RESPONSE: This response pertains to Package B (ARMPS). Certified hydraulic curves are required to be to HI Level 1B or higher.

36. QUESTION: Please confirm pump monitoring features. Specifications state that full monitoring with graphic interface may be required but is not shown on electrical drawings. If all monitoring is supplied per specifications a Graphical interface is required to be installed. If standard bearing temperature and moisture sensors are all that is required there will be no change to current electrical drawings.

RESPONSE: This response pertains to Package B (ARMPS). Standard Temp Sensors and Seal Fail alarms shall be provided for each submersible pump and shall be shown on the Master PCP/SCADA panel.

37. QUESTION: Is System Supplier (Revere or Curry Controls) responsible for supplying VFDs, Mixer and Pump Disconnects Back Up Float Control Panel, Floats, and Pulsar Level Transmitter? Section 11305 Part 1.02, 3a calls for a pump control panel to be supplied?

RESPONSE: This response pertains to Package B (ARMPS).

1. The Electrical Contractor is to provide VFDs, and Pump Disconnects.
2. The System Supplier shall provide the Level Transmitter, Backup Control Panel (BCP), Floats, and Pump Control Panel (PCP)
3. Refer to revised Package B specifications in Part C of this addendum.

38. QUESTION: Please confirm section 11305 1.03A.1-24, this extensive testing is not typical of OCU projects. Typically the only required tests are pump hydraulic performance and motor integrity test. Please confirm if additional testing is required.

RESPONSE: This response pertains to Package B (ARMPS). Testing per the specification is required.

39. QUESTION: Per spec section 11305-6 2.04.D.2 the guide rail assembly is to be non-sparking. This is not typical of OCU projects. Please confirm if non-sparking is required. In

this same section, a rubber profile gasket is allowed. This is not typical of OCU project. Please confirm if profile gaskets will be approved on the pump bracket.

RESPONSE: This response pertains to Package B (ARMPS). The guide rail system shall be non-sparking as specified. Only metal to metal seating will be allowed. Refer to revised Package B specifications in Part C of this addendum.

40. QUESTION: Is there a bill of material available for the PLC panels at both locations?

RESPONSE: This response pertains to Package A and Package B. A specific bill of materials is not provided for either package.

1. For SWSA: Section 13300, paragraph 2.04 details control panel requirements and components.
2. For Avalon MPS: Section 13300, paragraph 2.05 details control panel requirements and components.

41. QUESTION: Section 15117, Electronic Interface Valves; The specs call for 50-80 psi>>>down to 2PSI… (Under subsection 2.03 Design, Item D) 2 PSI on the downstream? The max pressure drop on a valve without cavitation is 3:1 so 50>>18 or 80>>26. If it is indeed 2PSI then we recommend an orifice plate downstream and possible a cavitation cage as well. This application seems to be unrealistic. Please clarify.

RESPONSE: This response pertains to Package A (SWSA SRF). Section 15117 clearly calls for anti-cavitation trim and reduced port. The valve manufacturer shall provide other items as necessary to handle the stated conditions, and shall provide a cavitation analysis as required in Section 15117, page 3, paragraph 2.03D.

42. QUESTION: Can a site visit be scheduled prior to the bid?

RESPONSE: Refer to the response to Question 26 in this addendum.

43. QUESTION: In Addendum #5, the plans and specs were re-issued. Were there any changes to this set vs. the original bid documents?

RESPONSE: This response pertains to Package A and Package B. The plans and specifications were not re-issued by Addendum 5. Re-issued individual drawings and individual specifications are addressed in Part C of each addendum.

44. QUESTION: It appears from Google maps that the site (or at least most of the site) has already been cleared and that some earthwork operations have been performed on the site. Are the existing elevations on Civil Site plan C001 reflective of this work?

RESPONSE: This response pertains to Package A (SWSA SRF). The existing elevations for the project site on Drawing C001 represent existing conditions. In the Access and Utility

Easement, some additional earthwork occurred after survey so the existing elevations may be somewhat different from the elevations shown on Drawing C001.

45. QUESTION: Has the previous contractor already cleared the entire site of trees and vegetation?

RESPONSE: This response pertains to Package A (SWSA SRF). The project site and the Access and Utility Easement were cleared and filled so there are no trees. However, vegetation has regrown. Thus, clearing and grubbing will still be required per Section 02230.

46. QUESTION: According to the landscaping plan, virtually the entire site is to be sodded. Do we need to place topsoil under the sodded area? Has the previous contractor that cleared the site stockpiled the top soil on site or do we need to plan on importing top soil?

RESPONSE: This response pertains to Package A (SWSA SRF). Yes, topsoil is required per Section 02215. The previous contractor has not stockpiled any topsoil on site so topsoil will have to be imported. In addition to the areas shown on the SWSA site, the unpaved areas within the Access and Utility Easement, Access Easement, and Utility Easement, and disturbed areas within the Avalon Road ROW shall be sodded. Refer to Package A Drawing L000 revisions in Part C of this addendum.

47. QUESTION: A potable water mixer is stated on drawing M200 for the 3.5MG Finished Water Tank. No other section detail specifications are found. How do we go about getting Kasco's NSF61 potable water mixer added to be approved to be used on this project?

RESPONSE: This response pertains to Package A (SWSA SRF). The mixer identified on Drawing M200 has features of no bearing maintenance, no lubrication replacement, and operation down to 2 feet of water depth. In accordance with Article 9 of the General Conditions, application for the use of a substitute material or equipment shall be submitted for approval following Notice of Award. Such application(s) may be considered after execution of the Contract in accordance with Article 7 of Part C – Instructions to Bidders.

48. QUESTION: Page S101 of the Structural Drawings specify the wind speed is 160 MPH. This would require impact resistant materials. However, neither the Architectural Drawings or the Specifications indicate impact resistant materials are required. Are impact resistant materials required?

RESPONSE: This response pertains to Package A (SWSA SRF). Yes, impact resistant materials are required. Include impact resistance in accordance with Florida Building Code in the performance requirements for all exterior components. Confirm in Product Approval submittals.

49. QUESTION: Door 105B is shown as a double door on A102. This door is listed as a single door on the Door Schedule found on A108. Please clarify.

RESPONSE: This response pertains to Package A (SWSA SRF). Door 105B is confirmed as a double door. Refer to revised Door Schedule in Package A Drawing A108 revisions in Part C of this addendum.

50. QUESTION: Section 10522 – Fire Extinguishers, Cabinets and Accessories. There are no fire extinguishers, cabinets or accessories shown on the drawings. Please advise locations for all extinguishers, cabinets and accessories.

RESPONSE: This response pertains to Package A (SWSA SRF). There will be 6 fire extinguishers in wall-mounted cabinets. One fire extinguisher/cabinet in each room, except for restroom. Locations will be added to the Life Safety Plan in a future addendum.

51. QUESTION: Section 10550 – Defibrillator Specialties. Please identify location and quantity for the defibrillators.

RESPONSE: This response pertains to Package A (SWSA SRF). One (1) defibrillator and accessories shall be provided with cabinet mounted on the wall between the Control Room and the Mechanical Room as directed by the Owner's RPR and in accordance with ADA. Refer to Package A Section 10550 revisions in Part C of this addendum.

52. QUESTION: The door hardware schedule on sheet A108 of the Bid Package "A" Southwest Service Area Potable Water Storage and Repump Facility drawings does not provide the hardware set required for each door. Please provide required hardware information for each door.

RESPONSE: This response pertains to Package A (SWSA SRF). The door hardware sets have been added to the Door Schedule on Drawing A108. Refer to revised Door Schedule under Package A Drawing A108 in Part C of this addendum

53. QUESTION: The door schedule is calling out for a ALUM frame with the FRP doors. Normally the purpose to use FRP is non corrosive material but the alum. frame is corrosive. Most of time when ordering a FRP door they spec a FRP frame. Is a FRP frame acceptable?

RESPONSE: This response pertains to Package A (SWSA SRF). Refer to responses to Questions 16 and 23 in this addendum.

54. QUESTION: Specification Section 11345 Sodium Hypochlorite Feed System:
Is it the intent to sole source Prominent metering pumps? May we submit Lutz Jesco America metering pump having NSF-61 certification and components to offer competitive bid pricing if sole source is not determined? Is it the intent to sole source supplier/constructors of the chemical feed system or are bidding contractor allowed to partner with competitive chemical metering pump companies who will support and assist the contractors in both supply and construct the chemical feed system?

RESPONSE: This response pertains to Package A (SWSA SRF). As stated in Addendum 2, response to Question 1: The hypochlorite system and related components will be deleted from this project. Updated drawings and specifications reflecting this change will be issued at a later date.

C. SPECIFICATIONS AND DRAWINGS

Package A (SWSA SRF)

Section 01025 MEASUREMENT AND PAYMENT

1. Page 4, Table A, item 1.2b., DELETE the words "~~fire sprinkler system,~~".
2. Page 5, Table A, item 1.7, DELETE this item in its entirety.

Section 01311 ELECTRONIC COMMUNICATION PROTOCOLS, Page 1, paragraph 1.01A.4.

1. Page 1, paragraph 1.01A.4. – ADD at the end of the paragraph:

   "**f. Section 01340, Web Based Project Controls System.**"

2. Page 2, paragraph 1.03A.1. – REVISE this paragraph as follows:

   "1. The CONTRACTOR ~~shall access~~ **will not be accessing** the Orange County Utilities server ~~through the use of computer(s) provided by the CONTRACTOR~~. **Instead, the project will be hosted on the Cloud as described in Section 01340.** The **Contractor shall provide their own** computer~~(s) shall be~~ located at ~~the~~ **their** Temporary Field Office~~s and shall be~~ dedicated to the sole use of the web-based project controls system. ~~These computers will be put in service by the Orange County IT Department and shall be loaded with the appropriate Orange County parameters, software, Firewalls, etc. as needed. Computers shall be accessible at any time throughout the duration of the project by the Orange County IT Department.~~"

3. Page 3, paragraph 1.04F.1.b. – REVISE this paragraph as follows:

   "b. Website hosting will be by ~~OWNER~~ **CONTRACTOR**.

4. Page 3, paragraph 1.04F.1.c. – REVISE this paragraph as follows:

   "c. Website address will be furnished ~~to~~ **by** CONTRACTOR **to OWNER** within ~~ten~~ **fourteen (14)** days after the Effective Date of the Contract.

Section 01340 WEB BASED PROJECT CONTROLS SYSTEM

1. REVISE page 1, paragraph 1.01A.1., third sentence as follows:

   "The intended users on the individual license shall include the OWNER (seven (7) users), Construction Consultant (three (3) users), ENGINEER**(s)** (~~three (3)~~ **seven (7)** users), ~~and~~ CONTRACTOR (minimum of two (2) users)**, and TBD (up to two (2) users)**."

2. REVISE page 1, paragraph 1.01A.4., first sentence, as follows:

   "4. A web-based hosting service to provide individual user access for a minimum of ~~fifteen (15)~~ **twenty one (21)** named PCM licenses, including sequel server database software. ..."

3. REVISE page 2, paragraph 1.01A.7. as follows:

   "7. Installing ~~a~~ single mode fiber optic cable**s** exterior and Multi-Mode interior, ~~from the existing Administration Building~~ to the temporary CONTRACTOR's and OWNER's field offices to be located ~~in the general vicinity of the South Effluent Pump Station~~ **generally as shown on Package A, Drawing C001. Refer to Section 01590**."

3. REVISE page 4, paragraph 3.01A.2.e. and f. as follows:

   "e. Meeting Minutes – All meetings shall be documented in Contract Management. Business Items and Attendees will be documented, and attachments will be attached as appropriate. Recurring meetings shall

   ~~f.~~ be generated using delivered functionality within Contract Management, and will be updated by the meeting organizer. Logs presented at the meetings including but not limited to Shop drawing logs, RFI logs, Change Order Logs, Test Request & Results logs, and correspondence logs shall be generated from Contract Management, dispersed and attached to the meeting minutes module. Logs shall be downloaded as of the date of the meeting to provide the most current status of all logs."

Section 01370 SCHEDULE OF VALUES, page 5, Table 01370-1, item V.

DELETE item V. in its entirety.

Section 01590 CONSTRUCTION FACILITIES AND TEMPORARY CONTROLS

1. REVISE page 11, paragraph 2.01C.5. as modified by Addendum 7, as follows:

   "5. Internet Access:

      a. Obtain and pay for Internet service until removal of the field office, with unlimited (untimed) Internet access, for OWNER's sole use.

      b. Set up system and appurtenances required and verify functionality in the field office.

c. Internet service shall be one of the following, listed in order of preference; provide a lower type of access only when the next-higher level is unavailable:

1) Fiber-optic or Cable Provider Service:

a) Provide service via communication service provider via either cable or fiber-optic service at a download speed of not less than ~~15~~ **45** megabytes per second (Mbps) and upload speed of not less than ~~1~~ **15** Mbps.

b) Provide appropriate modem, cabling, and appurtenances.

2) ~~DSL:~~

~~a) Provide service via asymmetrical digital subscriber line with download speed of not less than 1.5 Mbps and upload speed of not less than 0.384 Mbps.~~

~~b) Provide dedicated telephone line for Internet access.~~

~~c) Provide DSL filters on each non-DSL outlet in the field office telephone system.~~

~~3)~~ Mobile Broadband Wireless:

a) Provide mobile broadband wireless 4G network by AT&T, Verizon, Sprint, T-Mobile, or equal, with download speed of not less than 37 Mbps and upload speed of not less than 17 Mbps.

b) Provide mobile broadband wireless router. Product and manufacturer: Linksys Wireless-G Router for Mobile Broadband, or equal.

c) Provide mobile broadband air-card for field office. Product and manufacturer: Sierra Wireless 597E, Novatel Merlin EX720, or equal.

d) Router and air-card will remain CONTRACTOR's property upon removal of field office from the Site.

~~4) Satellite:~~

~~a) Provide 4G network service with download speed of not less than 12 Mbps.~~

~~b) Provide required equipment, including outdoor unit (dish) and indoor satellite modem equipment, together with required cabling.~~

~~c) Provide telephone modem in computer, together with telephone line and service, for file uploading.~~"

2. REVISE page 13, paragraph 2.01D.1.q.16) and 17) as follows:

"16) ~~Coordinate with OWNER's IT department for setting up access to the network and servers~~

~~17)~~ Provide all items and Work necessary for a fully-operational unit with properly-

functioning capability as specified."

Section 08710 DOOR HARDWARE, pages 10-11

1. ADD the following statement at the end of HARDWARE GROUP NO. 01, HARDWARE GROUP NO. 02, AND HARDWARE GROUP NO. 03:

   "**CONFIRM HARDWARE IS COMPATIBLE WITH FRP DOOR FLORIDA PRODUCT APPROVAL.**"

2. ADD HARDWARE GROUP NO. 07 as follows:

   "**HARDWARE GROUP NO. 07**

   Provide each RU door(s) with the following:

QTY	DESCRIPTION	CATALOG NUMBER	FINISH	MFR
1		HARDWARE BY DOOR MANUFACTURER		

"

Section 11214 HORIZONTAL SPLIT CASE CENTRIFUGAL PUMPS, page 6, paragraph 2.03A

ADD paragraph 2.03A.3. as follows:

"**3. Provide a 3/4" ARV (not combination type) assembly at the vertical priming connection on each pump casing. ARV shall have 316 stainless steel or high strength composite body and corrosion-resistant operating parts. Fittings, pipe, and isolation valve shall be threaded and made of 316 stainless steel.**"

Section 10550 DEFIBRILLATOR SPECIALTIES, page 2, paragraph 2.1A

1. REVISE cabinet reference number as follows:

   "~~#C1415F12 with alarm~~ **1417F12**"

2. REVISE Cabinet Style as follows:

   "2. Cabinet Style: ~~Surface Mounted~~ **Semi-Recessed Mounted in compliance with ADA**."

Section 15100 ANCILLARY EQUIPMENT, page 2, paragraph 2.02A.3

REVISE paragraph as follows:

"Fittings**, pipe, and isolation valve** ~~from the main~~ to the air release valve shall be threaded and made of ~~brass~~ **316 stainless steel**."

Section 15437 "FIREGUARD" DIESEL STORAGE TANK

1. Page 1, paragraph 1.02A – REVISE the paragraph as follows:
   "A. Acceptable Manufacturer**s**:

   1. Phoenix Products (Envirovault)~~, or approved equal.~~

   2. Modern Welding (Fireguard)

   3. Envirosafe (Fireguard)"

2. Page 4, paragraph 2.02G – ADD the following at the end of paragraph 2.02G:

   "**1. Furnish a KRUEGER SENTRY GAUGE Therma Gauge H-2 Stainless Steel Rod Direct Reading Gauge or approved equal for visible level monitoring.**

   2. Furnish a MTS® SYSTEMS CORPORATION SENSORS DIVISION Level Plus® M-Series Analog (MR) FLEX Liquid Level Sensor (magnetostrictive level/temperature transmitter), or approved equal, providing two (2) 4-20 mA outputs for SCADA.

   3. Furnish a tank monitoring system including tank alarm console, high-level detection, low-level detections, double containment tank leak sensing, and associated modules for a complete tank leak detection system.

   4. The emergency system shall include low fuel level contacts for remote alarm. Fuel tanks are required to alarm at 90% (high) and 10-15% (low) fuel levels. If necessary to guard against ;loss of prime to pump, a check valve and fuel shut off valve shall be mounted on the pump intake. The emergency system shall include a float switch, fuel level gauge and standard control panel. Provide fuel level gauge with a 4-20 mA output to indicate tank level.

   5. The tank monitoring system shall include provisions for remote monitoring of alarm conditions

   6. The tank monitoring system shall include an integral and remote mounted audible electronic horn and flashing red light to indicate a trouble or leak condition.

   7. The tank monitoring system includes all required terminals, switches, transmitters, and local wiring shall be complete. Wiring required between sensors and panels shall be furnished. All wiring shall be installed in conduits per NEC and approved for location.

   8. The tank monitoring system console shall be labeled correctly and properly for HIGH LEVEL ALARM, LOW LEVEL ALARM, TANK LEAK ALARM, RESET, HIGH WATER LEVEL ALARM and TEST.

   9. The tank monitoring system shall meet all applicable regulatory requirements for tank leak detection, monitoring, and reporting.

10. One (1) system shall be provided for each new tank.

11. The monitoring system shall be mounted on a stainless steel UNISTRUT® frame or approved equal at location indicated on Drawings. Secure to frame using stainless steel fasteners. Coordinate mounting location with field conditions.

12. The system shall be a PNEUMERCATOR™ CO., INC. Model LC1004 Tank Monitoring System (FDEP File No. EQ-319) and associated sensors or approved equal.

13. Tank level detection – Tank high/low level floats shall be custom length PNEUMERCATOR™ CO., INC. Model LS-600 Series (FDEP File No. EQ-240) or approved equal. The floats and sensors shall be furnished complete with the installation kits, riser caps, seals, and other parts as required for a complete installation.

14. Double Wall Interstitial Leak Sensor – The double wall interstitial leak sensor shall be capable of detecting the presence of any liquid in the annulus of the tank. The Sensor shall be a PNEUMERCATOR™ CO., INC. Model LS-600-LDSS or approved equal. The 316 Stainless Steel Float, Shaft with Teflon® wiring sensor shall be furnished complete with the installation kits, riser caps, seals, and other parts as required for a complete installation.

15. Spill Kit – A 30-gallon spill kit shall be provided for the new tank."

Drawing G001

1. REVISE GENERAL CONSTRUCTION NOTE 18 that was revised by Addendum 7 as follows:

   "ALL BACKFILL SHALL BE COMPACTED TO NOT LESS THAN 95% OF MAXIMUM DRY DENSITY AS MEASURED BY AASHTO T-180 METHOD 'D' TEST (MODIFIED PROCTOR) IN OPEN AREAS AND TO NOT LESS THAN 98% OF MAXIMUM DRY DENSITY AS MEASURED BY AASHTO T-180 METHOD 'D' TEST (MODIFIED PROCTOR) UNDER STRUCTURES AND 5-FT BEYOND STRUCTURE FOUNDATIONS ~~EXPANDING TO 15-FT BEYOND STRUCTURE FOUNDATIONS AT GRADE~~ AND **UNDER** EXISTING OR PROPOSED ASPHALT OR CONCRETE PAVEMENT AND WITHIN 3-FT OF EXISTING OR PROPOSED PAVEMENT. ALL SOIL TESTING TO BE CONDUCTED BY THE COUNTY. THE CONTRACTOR SHALL PROVIDE ALL REASONABLE ASSISTANCE DURING SOIL TESTING. REFER TO SECTIONS 02220 AND 01410."

2. REVISE the SHEET INDEX as follows:
   "M101 ~~HYPOCHLORITE SYSTEM~~ **STORAGE ROOM** PLAN & SECTIONS
   M102 ~~METERING PUMP SKID &~~ ANALYZER DETAILS
   ~~FIRE PROTECTION~~
   ~~F100 FIRE PROTECTION GENERAL NOTES~~

~~F101 FIRE PROTECTION FLOOR PLAN~~
~~F102 FIRE PROTECTION DETAILS~~
I004 ~~P&ID SODIUM HYPOCHLORITE~~ NOT USED"

Drawing C006

DELETE the HYPOCHLORITE pipe, tubing and casing pipe, termination box, and STATIC MIXER.

Drawing C010

DELETE the FDC sign from the SPECIALTY SIGNS detail, and delete "/FDC" from the name of the FIRE HYDRANT~~/FDC~~ MARKING AND SIGNAGE DETAIL.

Drawing C012

ADD the missing detail in Detail 9 - SEALED VALVE BOX.

Drawing C015

DELETE Detail 27 – DOUBLE DETECTOR CHECK VALVE ASSEMBLY.

Drawing L000

1. REVISE Plant List as follows:

PLANT LIST

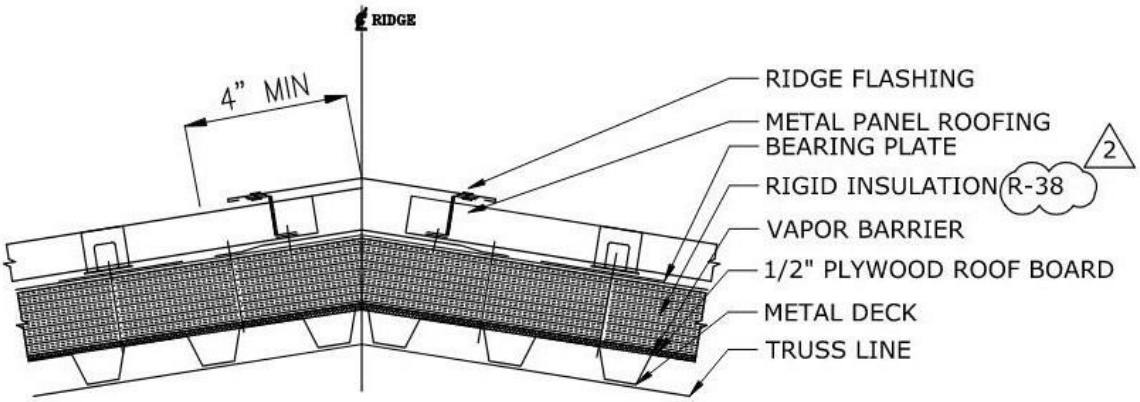
KEY	QTY	BOTANICAL NAME	COMMON NAME	MINIMUM SIZE	WATER ZONE	E/ D
	2					
Trees						
JV	~~3~~ 2	Juniperus virginiana silici	Southern Red Cedar #	8' ht. 2" cal. 30 gal.	H	E
PE	~~5~~ 6	Pinus elliottii	Slash Pine #	14-16' Ht., 3.5" cal.	H	E
Sod						
SOD		Palspalum natatum 'Arge	Argentine' Bahia Sod	Sod per specifications		E

2. ADD Notes as follows:

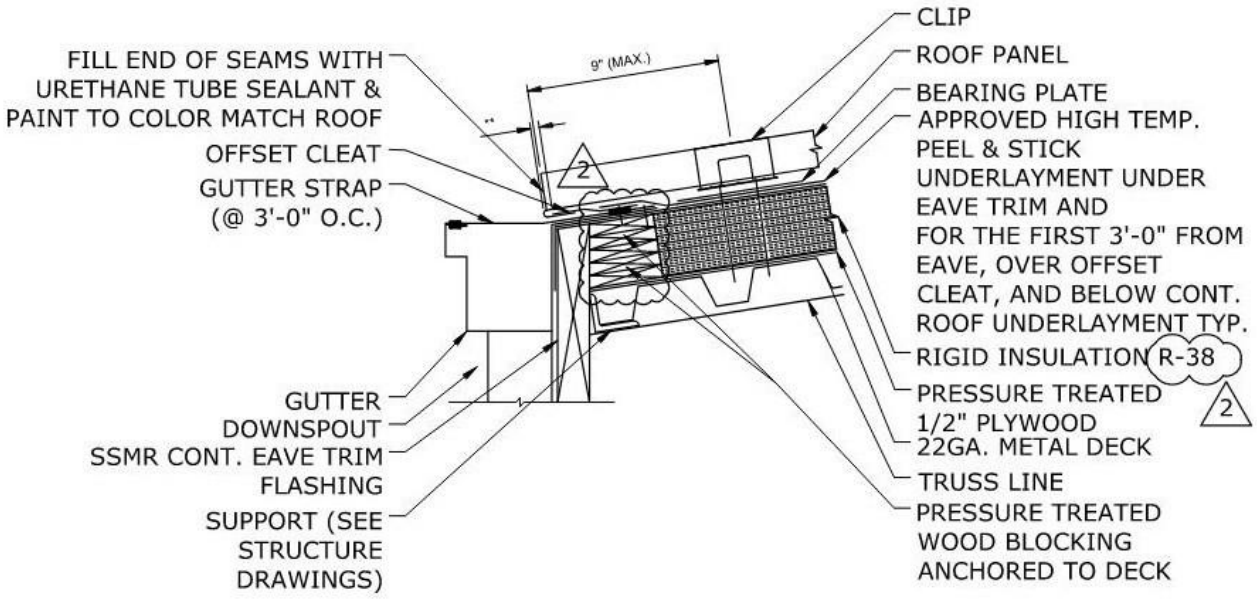
"**7. Refer to Section 02215 for additional topsoil requirements.**
8. Sod and temporary irrigation shall be provided for unpaved portions of the Access and Utility Easement, Access Easement, and Utility Easement, and all disturbed portions of the Avalon Road ROW."

Drawing A103

REVISE 3A and 3B as follows:



3A A103 RIDGE/ HIP DETAIL 11/2"=1'-0"



3B A103 GUTTER DETAIL 11/2"=1'-0"

Drawing A105

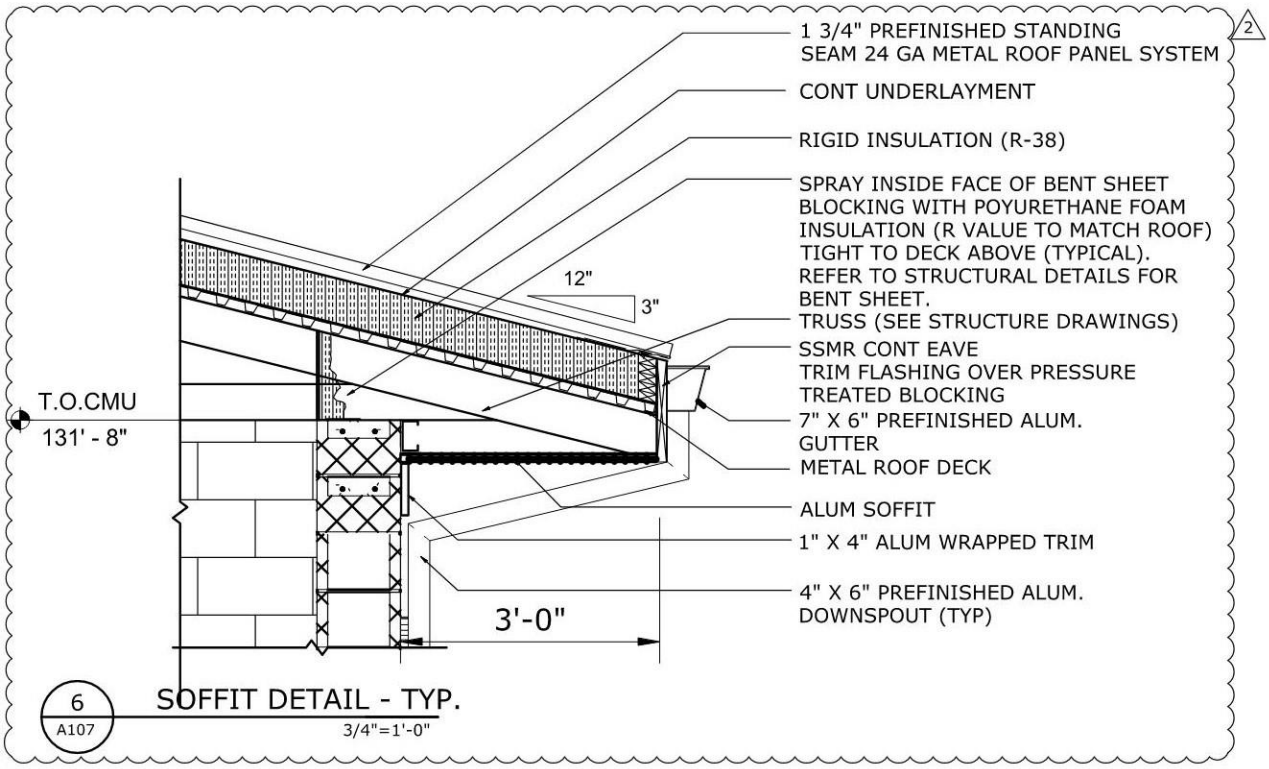
REVISE the name for Room 102 from ~~CHEMICAL ROOM~~ to **STORAGE ROOM** in two places.

Drawing A106

1. REVISE the Building Section A and Section B numbers by switching the A and B letters.
2. REVISE the room name in right Section from ~~CONTROL ROOM 105~~ to **STORAGE ROOM 102**.

Drawing A107

REVISE Soffit Detail 6 as follows:



Drawing A108

REVISE the DOOR SCHEDULE as follows:

DOOR SCHEDULE

MARK	ROOM NUMBER	ROOM NAME	DOOR							FRAME			FINISH	HARDWARE	2 NOTES
			DOOR SIZE	THICK	MAT'L	FINISH	RATING	TYPE	GLAZ	MAT'L	TYPE	GLAZ			
101A	101	GENERATOR RM	3'-0" x 7'-2"		FRP	FF		N	G1	AL	F1		FF	02	
101B	101	GENERATOR RM	3'-0" x 7'-2"		FRP	FF		N	G1	AL	F1		FF	02	
101C	101	GENERATOR RM 2	12'-0" x 11'-4"			FF								07	CHAIN WHEEL ROLL UP DOOR
102A	102	STORAGE RM	3'-0" x 7'-2"		FRP	FF		N	G1	AL	F1		FF	02	
102B	102	STORAGE RM	3'-0" x 7'-2"	2	FRP	FF 2		N	G1	AL	F1		FF	02	
102C	102	STORAGE RM	3'-0" x 7'-2"		HM	FF	3 HRS	N	G1	HM	F1		FF	04	RATED VIEW WINDOW - NO MORE THAN 100 SQFT
102D	102	STORAGE RM	3'-0" x 7'-2"		HM	FF	3 HRS	N	G1	HM	F1		FF	04	RATED VIEW WINDOW - NO MORE THAN 100 SQFT
102E	102	STORAGE RM	12'-0" x 11'-4"			FF								07	CHAIN WHEEL ROLL UP DOOR
103A	103	PUMP RM	3'-0" x 7'-2"		FRP	FF		N	G1	AL			FF	03	
103B	103	PUMP RM	3'-0" x 7'-2"		FRP	FF		N	G1	AL	F1		FF	03	
103C	103	PUMP RM	12'-0" x 11'-4"			FF								07	CHAIN WHEEL ROLL UP DOOR
103D	103	PUMP RM	12'-0" x 11'-4"			FF								07	CHAIN WHEEL ROLL UP DOOR
104A	104	ELECTRICAL RM	3'-0" x 7'-2"		FRP	FF		N	G1	AL	F1		FF	02	
104B	104	ELECTRICAL RM	3'-2" x 7'-2" DOUBLE		FRP	FF		N	G1	AL	F2		FF	01	
104C	104	ELECTRICAL RM	3'-2" x 7'-2" DOUBLE	2	FRP	FF		N	G1	AL	F2		FF	01	
104D	104	ELECTRICAL RM	3'-0" x 7'-2"		HM	FF	90 MIN	N	G1	HM	F1		FF	04	RATED VIEW WINDOW - NO MORE THAN 100 SQFT
104E	104	ELECTRICAL RM	3'-0" x 7'-2"		FRP	FF		N	G1	AL	F1		FF	05	
105A	105	CONTROL RM	3'-0" x 7'-2" 2		FRP	FF		N	G1	AL	F1		FF	03	
105B	105	CONTROL RM	3'-2" x 7'-2" DOUBLE	2	FRP	FF 2		N	G1	AL	F1		FF	01	
105C	105	CONTROL RM	3'-0" x 7'-2"		HM	FF		N	G1	HM	F1		FF	04	
106	106	MECHANICAL RM	3'-2" x 7'-2" DOUBLE	2	FRP	FF		N	G1	AL	F2		FF	01	
107	107	UNISEX RESTROOM	3'-0" x 7'-2"		HM	FF		L		HM	F1		FF	06	LOUVER LOWER HALF
108	108	EXHAUST PLENUM	3'-0" x 7'-2"		FRP	FF		N	G1	AL	F1		FF	03	
109	109	INTAKE PLENUM	3'-0" x 7'-2"		FRP	FF		N	G1	AL	F1		FF	03	

Drawing A111

REVISE the callout in Detail 4 by adding "**(HOLLOW METAL AT FIRE-RATED DOORS)**" after "ALUMINUM DOOR FRAME".

Drawing S102

1. REVISE the FLOOR PLAN to DELETE sump pits, stepped footing, metering pumps pad, tank pads, and containment curb.
2. REVISE room name from "~~CHEMICAL ROOM~~" to "**STORAGE ROOM**" in FLOOR PLAN.

Drawing S104

1. REVISE SECTION A to delete containment curb, tank pads, and metering pumps pad.
2. REVISE room name from "~~CHEMICAL ROOM~~" to "**STORAGE ROOM**" in SECTION A.

Drawing M101

1. REVISE the PLAN and SECTION A to delete NOTES, hypochlorite piping, containment curb, tanks, pads, and equipment, except for floor drains and exhaust fans.
2. REVISE room name from "~~CHEMICAL ROOM~~" to "**STORAGE ROOM**".

Drawing M102

1. DELETE Details 1, 2, 3, and 5.
2. REVISE Detail 4 to show the third set of analyzers and piping as FUTURE and to cap off the sample pipe from the WATER OUT SAMPLE TAP above the floor near the SAMPLE SINK.

Drawing H102

DELETE the containment curb inside Room 102 from the PLAN.

Drawing P101

DELETE EWS-1 COMBINATION EMERGENCY SHOWER/EYEWASH from the PLUMBING FIXTURE SCHEDULE.

Drawing P102

1. DELETE the containment curb inside Room 102 from the PLAN.
2. REVISE the name for Room 102 from "~~CHEMICAL RM~~" to "**STORAGE RM**".

Drawing P103

DELETE Detail 03/P103 EYE-FACE WASH & SAFETY SHOWER DETAIL.

Drawing P105

DELETE two (2) EWS-1 from the PLUMBING DOMESTIC WATER RISER.

Drawings F100, F101, F102

DELETE these drawings in their entirety.

Drawing E007

DELETE the EYE WASH ALARM AND RESET elementary diagram.

Drawing E009

INSERT “WITH BATTERY BACKUP” after “CLICK2ENTER” in SPECIFIC NOTE 5.

Drawing E010

1. DELETE all electrical and control inside Room 102, except for electrical outlets, power and control for exhaust fans, thermostat, and door switches.
2. REVISE the name for Room 102 from “~~CHEMICAL RM~~” to “**STORAGE RM**”.

Drawings E011, E012

1. DELETE the containment curb, hypochlorite tanks, and hypochlorite piping inside Room 102.
2. REVISE the name for Room 102 from “~~CHEMICAL RM~~” to “**STORAGE RM**”.

Drawing E017

DELETE EYEWASHES FSH 2030 and FSH 2031, LIT 2032, SODIUM HYPOCHLORITE CONTROL PANELS 2040 and 2041, FIT 2045, LIT 2033, XA 2032, XA 2033, and PIT 2045.

Drawing I003

DELETE ANALYZER for WATER OUT, and POST-CHLORINE INJECTION POINT.

Drawing I004

DELETE all items on this Drawing.

Drawing I005

DELETE CHEMICAL SUMP LSH.

Package B (ARMPS)

Section 02220 EXCAVATING, BACKFILLING, AND COMPACTING, Addendum No. 5. Paragraph 3.02B.1.a.

REVISE the paragraph as modified by Addendum 5 as follows:

"Excavation for structures shall be carried to an elevation 2 feet lower than the proposed outside bottom of the structure to provide space for the structural backfill material. Structural backfill material shall extend ~~15~~ **5** feet beyond the exterior of structure foundations. Prior to placing the structural backfill, the excavation shall be measured by the County to verify that the excavation has been carried to the proper depth and is reasonably uniform over the area to be occupied by the structure."

Section 11305 SUBMERSIBLE PUMPS AND APPURTENANCES

1. **Paragraph 1.01A.3.** DELETE item a. pump control panel.
2. **Paragraph 2.04D.2.** REVISE the first sentence as follows:
   "~~A field replaceable Nitrile (Buna-N) rubber profile gasket, O-ring, or m~~Metal to metal seating shall be provided to accomplish positive sealing of the pump guide bracket to the discharge elbow."
3. **Paragraph 2.04S.2.a.** REVISE as follows:
   "Liveload: H-20 loading."

Section 13300 PROCESS INSTRUMENTATION AND CONTROL SYSTEM

ADD **paragraph 2.02E.** as follows:

"E. Radar Level Element and Transmitter. The system shall consist of a sensor (Level Element, LE) that uses a non-contact measurement technique to measure the liquid level in a vessel, tank or basin that produces an analog signal proportional to level.
   1. System Performance:
      a. Overall system accuracy shall be plus or minus 0.08 inches.
      b. The unit shall contain programmable functions that allow false echoes from passing equipment are damped out.
      c. The system shall be field calibratable
   2. Power Requirement – Loop powered
   3. Materials – Stainless Steel
   4. Communications
      a. 4-20mA Output
      b. HART
   5. Options:
      a. Provide manufacturer provided stainless steel mounting hardware.
      b. Provide manufacturer supplied stainless steel sunshield.
   6. Manufacturer, Model series:
      a. Siemens LR560
      b. Approved equal."

Section 15600 GENERATOR FUEL STORAGE SYSTEM

REVISE **paragraph 2.02A.8** as follows:

"8. The tanks shall be as manufactured by**:**

a. Phoenix **Products (Envirovault)** ~~or Fireguard.~~

b. Modern Welding (Fireguard)

c. Envirosafe (Fireguard)"

Section 16108 MISCELLANEOUS EQUIPMENT

REVISE **Paragraph 2.01A.1.** DELETE the last sentence in its entirety and REPLACE with the following:

"**The power monitor devices shall be Siemens PAC 4200 with Profinet communications card and no equal.**"

Section 16670 LIGHTNING PROTECTION SYSTEM

ADD the attached section.

Sheet S-103, SCREEN WALL FOUNDATION PLAN

At the southwest corner, where the wall extends out to the west, ADD a reference to Section 5 on Sheet S-303.

Sheet S-303

In Section 5, ADD a call out for the reinforcing in the wall and footing to be the same as shown in Section 2 on Sheet S-303.

D. ACKNOWLEDGEMENT OF ADDENDA

1. The Bidder shall acknowledge receipt of this addendum by completing the applicable section in the solicitation or by completion of the acknowledgement information on the addendum. Either form of acknowledgement must be completed and returned not later than the date and time for receipt of proposal.

2. All other terms, conditions and specifications remain the same.

3. Receipt acknowledged by:

_____	_____
Authorized Signature	Date
_____	_____
Title	Name of Firm

SEPTEMBER 16, 2020
ORANGE COUNTY, FLORIDA

INVITATION FOR BIDS
Y20-753, ORANGE COUNTY SOUTHWEST SERVICE AREA POTABLE WATER STORAGE AND REPUMP FACILITY AND AVALON RD MASTER PUMP STATION
ADDENDUM NO. 9 - ATTACHMENT

CONTENTS:

SECTION 16670 – LIGHTNING PROTECTION SYSTEM

SECTION 16670

LIGHTNING PROTECTION SYSTEM

PART 1 - GENERAL

1.1 SCOPE

A. A Lightning Protection System shall be provided and installed as shown on the drawings and for all structures five (5) feet above grade level. They system shall be provided and installed in compliance with provisions of Code for Lightning Protection Systems as adopted by the National Fire Protection Association and Lightning Protection Institute. All equipment to that result shall be included whether or not specifically called for herein. Installers shall be LPI (Lightning Protection Institute) certified, master and Journeyman in accordance with LPI standards or of equal qualifications as approved by ENGINEER. A LPI label for the system shall be required.

B. Material shall comply in weight, size and composition with the requirements of the Lightning Protection Institute and the National Fire Protection Code relating to this type of installation, and shall be LPI labeled.
   1. All materials, where available by any one manufacturer, shall be cast. All bolts shall have hexagonal heads, no screw heads will be permitted. Where copper is mentioned or noted, tinned copper shall be required.
   2. Lightning protection cable shall be Class I tinned copper. Grounding counterpoise shall be as shown. All components, fittings and straps shall be cast tinned copper.

1.2 SUBMITTALS

A. Shop Drawings: Shop drawings shall be submitted before work is done. Drawings shall include full layout of cabling and points, and connections.

B. Product Data: Product Data shall be submitted on all equipment to show compliance with this section of the specifications and shall include manufacturer's written recommendations for installation.

PART 2 - PRODUCTS

2.1 AIR TERMINALS

A. Air terminals shall be tinned copper as required to match roof conductors. They shall have proper base support for surface on which they are attached and shall be securely anchored to this surface. Terminals shall project a minimum of 10" above top of object to which attached.

2.2 CONDUCTORS

A. Roof conductors shall consist of tinned copper complying with the weight and construction requirements of the Code, and shall be coursed to interconnect with air terminals, and in general, provide a two-way minimum path to ground. The angle of any turn shall not exceed 90 degrees, and shall provide an approximately horizontal or downward course. Down conductors shall be tinned copper, concealed within the structure. Radius of bends shall not be less than 8 inches. Roof conductors material shall match and/or be compatible with roof flashing material.

2.3 FASTENER

A. Conductor fasteners shall be of the same material as the conductor, having ample strength to support conductor. Where fasteners are to be mounted in masonry or structural work, they shall be furnished to the Masonry or Structural CONTRACTOR so they may be installed during construction of the project.

2.4 GROUND CONNECTIONS

A. Ground connections shall be made in accordance with requirements of all applicable codes. Ground rods shall be placed in a minimum of two (2) feet from building foundations. In addition to above artificial grounds, one down conductor of each two-path system shall be connected to water piping system with approved water pipe type strap connector. All ground rods shall be 5/8" diameter, with a minimum length of 20' copperweld type. Each installed ground rod shall be checked for resistance to ground. If a 0 to 5 ohm reading is not obtained, extend 10’ rod lengths and continue driving rods until the required reading is obtained. No rod can be connected to the bonding cable without the required ohm reading.

PART 3 - EXECUTION

3.1 INSTALLATION

A. Installation shall be made in an inconspicuous manner with conductors coursed to conceal equipment as much as possible. Down conductors shall be concealed within structure and shall be run in 1" PVC conduit. All metallic equipment within 6 feet of any lightning conductor shall be bonded to conductor. System shall also be tied to the main service electrical ground.

3.2 EQUIPMENT

A. Equipment shall be as manufactured by National Lightning Protection, Inc., Lightning Masters Corp., or Heary Bros Lightning Protection (premium lines).

++END OF SECTION++