



Upper Occoquan Service Authority

Leader in Water Reclamation and Reuse

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To: Official Contract Document Holders

Subject: Questions from Official Bidding Document Holders

Date: January 18, 2024

INTERPRETATIONS AND CLARIFICATIONS

Pursuant to the Instructions to Bidders, Article 1.B, the following interpretations and clarifications are being offered in response to questions from potential bidders and other interested parties. These responses are intended to clarify, not change, the terms, conditions, and scope of the Work.

1. **Question:** The drawing scale is incorrect on all drawings. Please correct.

Response: Verified scale is correct. Full-size drawings are 22"x34". As noted in the Invitation To Bid the drawings are reduced scale (half-size are 11"x17").

2. **Question:** We request Davis Bacon wage scale for building scopes.

Response: Current construction type "Building" Davis Bacon rates were added along with the updated "Heavy" rates as part of Addendum #1. Rates are required to be confirmed 10 days prior to the Bid date.

3. **Question:** Please reference Specification Section 104416, Drawing A-2 and Drawing A-11. Please confirm that the Fire Extinguishers are to be provided by the owner.

Response: Fire Extinguishers including installation are by the Owner. See Addendum #2 Item B. 52.

4. **Question:** Please reference Drawing H-3. Please provide a roof curb detail for electric fans located at the Ozone Generation Building LL Roof Plan.

Response: Refer to Detail D and Detail E on Sheet HD-1 for curb-mounted roof fan installation details. Refer to Detail F on Sheet A-9 for roof curb flashing/sealing details.

Roof curb to be provided by fan manufacturer per Note 6 in Fan Schedule on Sheet H-7. Refer to Specification Section 233432 HVAC Power Ventilators for roof curb product requirements.

5. **Question:** Drawing A-5 South & East Elevation indicates 10" High Extruded Aluminum Channels. Please confirm the 10" Aluminum Channels have no structural purpose.

Response: The channels have no structural purpose.

6. **Question:** Please confirm the VDOT detail on C-15 should be used for all asphalt repair of utility crossings.

Response: Confirmed, see Specification Section 321216 Asphalt Paving for additional related requirements.

7. **Question:** Please confirm the C-31 thru 36 drawings of the H/2 Lime Storage Building are not in the scope of the project and are for reference only.

Response: C-31 through C-36 are for reference only.

8. **Question:** On Drawing C-46, the 60" CC-EFL-PCCP pipe is called to be abandoned and filled. Please confirm whether the whole pipe should be filled or if the first 6 feet of the pipe can be filled and then capped.

Response: The entire 60" CC-EFL-PCCP pipe should be filled with cellular fill from the new pipe plug to the northernmost extent of the pipe (i.e., existing cap).

9. **Question:** The contractor requests a basis of design or list of preferred manufacturers for the pre-engineered building of the Ozone Generation Building.

Response: See Addendum #2 Item B. 53.

10. **Question:** The contractor requests a list of preferred manufacturers for the precast concrete panels of the Ozone Generation Building.

Response: Provide from a precast fabricator that meets the specification requirements. No list of fabricators will be provided.

11. **Question:** Please reference Drawing S-13 detail E. Please confirm there is no additional rebar needed around the micropiles in the SOG for the Ozone Contractor structure.

Response: Additional reinforcing is not required around the micropiles.

12. **Question:** Please confirm if a full time QA/QC manager is required.

Response: See Specification Section 01 45 16.13 Contractor shall assign a qualified and experienced representative to act as the responsible party for implementation and monitoring of the QA/QC program.

13. **Question:** Please confirm the potential stockpile area, and provisions in the event the stockpile area is shown in drawing C-10 is not enough to stockpile all the excavated material.

Response: Per note 4 on C-10 the contractor shall coordinate the final location of stockpile area with the site inspector during the pre-construction meeting.

14. **Question:** Please confirm the owner is responsible (Coordinate, contract, pay) for all special inspections. Clarify what inspections will be subcontractor responsibility.

Response: The Owner will be responsible for procuring Special Inspection services. The Contractor is responsible for all testing, inspection, and other quality control services necessary to execute the Work in accordance with the Contract requirements. See Specification Section 014516.13 Contractor Quality Control.

15. **Question:** We request a mutual waiver of consequential damages be added to the contract.

Response: Contract Requirements to remain as written.

16. **Question:** Please confirm that Liquidated Damages are the Owner's sole and exclusive remedy for delay.

Response: See GC 88, 90, 91, 94, and 110.

17. **Question:** Please reference GC Section 60(B). We request that the indemnification related to patents be limited due to the fact the contractor should not be liable for patent infringement related to sole sourced equipment.

Response: See GC 80 for Contract terms for Royalties and Patents.

18. **Question:** Please reference GC Section 60(B). We request that the indemnification obligation be limited to third party claims and negligence, not "all acts".

Response: GC 60 remains as written.

19. **Question:** Please reference GC Section 104(B). Please provide a Change Order dispute resolution process that includes a clear issue escalation process.

Response: GC 104 remains as written.

20. **Question:** Please reference GC Section 104(B). We request a waiver of jury trial be provided as part of this contract.

Response: GC 104 remains as written.

21. **Question:** Please referenced GC Section 64(c). We request that the clause be changed to allow for any increases in the Contract Time and/or Sum that results from a change in the law after the bid submission - for example; the contractor should be entitled to any increase in the Tax Rate.

Response: GC 64 remains as written.

22. **Question:** We request the bid date be postponed by a week to allow for additional time for all subcontractors/vendors/suppliers to verify pricing during the holiday season at the end of December/early January.

Response: See Addendum # 1 for revised Bid date.

23. **Question:** Please reference GC Section 91(A). It will be difficult to judge the potential impact of a delay within the mandated seven (7) days. We request that the Notice of Claim notification period be extended to the AIA standard twenty-one (21) days.

Response: GC 91 remains as written.

24. **Question:** Please reference GC Section 91(F). We request that "pandemic" be added to the first sentence of the clause, in order to add it to the list of reasons the contract be entitled to an extension of time/increase in cost.

Response: GC 91 remains as written.

25. **Question:** Please identify who the Owner has selected as the firm responsible for Special inspections.

Response: ECS Mid-Atlantic, LLC will provide special inspections services as a subconsultant to CDM Smith.

26. **Question:** Please reference GC Sections 72(B) and 91(F). Please confirm that the contractor is entitled to an increase in the Contract Sum for the discovery of Type 1 Differing Site Conditions. Please confirm that the Contractor is entitled to an increase in Contract Sum and Contract Time for the discovery of Type 2 Differing Site Conditions. The language of the referenced GC sections appears to conflict. If needed we suggest a Unit Price be created to address the nature of unknown soil conditions.

Response: All assertions of differing site conditions will be evaluated in accordance with the Contract Documents. Note that excavation is Unclassified. 31 20 00 Paragraph 3.4.A.

27. **Question:** Please reference GC Sections 72(B) and 91(F). We request that the timeframe for submitting Differing Site Conditions claims be increased to the AIA Standard 14 days after the discovery of concealed conditions.

Response: The GC's remain as written.

28. **Question:** Who is responsible for providing the following Gas Detection Panels located in the Ozone Generator Building LL, and the Ozone Contractor 86, shown on drawing sheet E-42?

Response: Gas Detection Panels shall be provided by Division 40 per sheets I-6 and I-15. Wiring will be by Division 26.

29. **Question:** Who is responsible for providing the Fire Alarm Control Panel shown on drawing sheet E-42?

Response: Per Sheet E-3, fire alarm to be provided by Electrical/Division 26 contractor.

30. **Question:** A local control panel (L/2-8-910 LCP) is shown on drawing sheet E-26 and E-35, for the Air Scour Blower No.3. Who is responsible for providing this local control panel?

Response: The Air Scour Blower LCP shall be provided by the Air Scour Blower supplier per sheet I-19.

31. **Question:** There is no one-line electrical and specification for the local control panel (L/2-8-910) for the Air Scour Blower No.3. Please advise, also, advise the NEMA Rating for the L/2-8-910 LCP.

Response: Air Scour Blower LCP is shown on the schematic diagram included on sheet E-40 and one-line referencing Air Scour Blower is sheet E-26. Sheet E-35 indicates the blower room is considered a "DAMP" area, and sheet E-3 indicates that (unless otherwise noted), "DAMP" areas shall utilize NEMA 4X equipment.

32. **Question:** Please reference Drawings A-14 and A-11. Please provide a concrete repair detail for the existing exterior wall of L2 in addition to the Stucco details provided.

Response: No additional details will be provided. Follow Specification Section 024119 Selective Demolition and Specification Section 092400 Cement Plastering requirements.

33. **Question:** Please reference Drawing C-4. Please confirm that during the period of demolition and construction on the west side of Building L2 that no access/egress will need to be provided to the two man doors or the rollup door on the west side of L2.

Response: L/2 Building mandooors are egress doors and access must be maintained throughout construction. In accordance with Specification Section 013113 Paragraph 1.7, the Contractor must provide temporary provisions for maintaining the existing egress pathway through the Building L/2 mandooors. Temporary provisions must be acceptable to UOSA. Work impacting the rollup door access must be coordinated with UOSA per Specification Section 013113 Paragraph 1.7.

34. **Question:** Please reference Drawing C-4. Please confirm that during the period of demolition and construction on the west side of Building L2 that access to the Chemical fill station will not need to be maintained.

Response: Access to the existing alum fill station will need to be maintained. Contractor to coordinate construction activities with Owner and schedule activities that may impact chemical delivery with Owner per Specification Section 013113.

35. **Question:** Please reference Drawing C-4. Please confirm that during the period of demolition and construction on the west side Building L2 the access to the emergency eyewash station and shower does not need to be maintained.

Response: Access to the existing alum fill station and associated emergency eyewash and shower must be maintained. Contractor to coordinate construction activities with Owner and schedule activities that may impact chemical delivery with Owner per Specification Section 013113. Temporary provisions, if required, to keep the fill station and eyewash in service shall be the responsibility of the Contractor and subject to Owner approval.

36. **Question:** Please clarify if the emergency eyewash/shower on the west side of Building is to be demolished as part of this work? It is not clearly shown on the drawings but during the site visit we noticed its proximity to the construction work.

Response: Existing eyewash/shower to remain.

37. **Question:** Please reference Drawing C-14. Note 2 on Drawing C-14 calls states "no new signage per this plan". However, Fairfax County details are provided for Fire Lane and Hydrant markings/signage. Please clarify if new signage or markings are to be provided under this contract.

Response: Confirmed, the sign details are included on the drawing for reference and as a requirement by the Fire Marshal's office during the course of Site Plan review/approval. No new fire lane signage is required.

38. **Question:** Please reference Drawing C-10. At the construction entrance leading to the new Ozone Generation Building Site there is a note that states "Wash Rack (Source of Water to be water truck or fire Hydrant)". Please identify what if any requirements the Owner has for utilizing an existing fire hydrant (i.e. Backflow preventers, meter, etc.) and any associated costs to those requirements.

Response: Per Specification Section 01 50 00 Paragraph 1.7.D, non-potable plant effluent (2W) is available for the contractor's use free of charge. This may be used for wash rack, pipe testing, and concrete curing but is not potable water and is prohibited from use in concrete mixing. Use of a hydrant requires the hydrant to be fully open with contractor provided flow control device. Hoses shall not remain charged when not in use.

39. **Question:** Please reference Drawing C-8. Please clarify if the contractor is responsible for the installation/connection of the new Gas lines shown or if the contractor is only responsible for coordinating with the gas company to schedule the install/connection of new gas lines.

Response: Yes, the Contractor is responsible for installation of buried natural gas lines shown on C-8 and C-9.

40. **Question:** Please provide any MOT restrictions the Owner has.

Response: All actions/shutdowns involving UOSA travel ways must be submitted to UOSA for prior written approval.

41. **Question:** Please detail the process and expected timeframe the Contractor should anticipate for requesting road closures.

Response: See Specifications Sections 01 31 13 and 01 31 13.01.

42. **Question:** Please provide a list of any weekly deliveries and their associated trucking routes that could be impacted by the construction activities that are part of this contract.

Response: Deliveries are on an as needed basis; construction activities shall not interfere with UOSA deliveries.

43. **Question:** Please reference Drawings C-18 and C-18A. Please clarify if the Swale (Cross-Section BB) for Outfall #1, shown on drawing C-18 is intended to be a part of this contract.

Response: The swale is included for stormwater computations and not part of the construction work.

44. **Question:** Please reference Drawing C-46. Please confirm that the area designated "Extent of Excavation" on Drawing C-46 is the area where Support of Excavation is called to be installed.

Response: The approximate extents of the excavation for the partial demolition and abandonment of the existing 60-inch PCCP are shown on sheet C-50. The final extents of the excavation are to be determined by the Contractor based upon his/her proposed means and methods of excavation, temporary excavation support, and dewatering. The excavation support system must be coordinated with results of test holes for locating existing utilities to remain in place.

45. **Question:** Please reference Drawing C-46. Please provide any as-builts for the 60" CC-EFL-PCCP line that are available.

Response: All available documents per contract can be viewed by appointment per the Instructions To Bidders.

46. **Question:** Please reference Drawings C-46 and Drawings S-7. It appears that on Drawing C-46 the 60 Inch 90-degree bend, 3' stub, plug and concrete encasement are called out to be installed on this project. However, on Drawing S-7 the 90-degree bend is called out as existing. Please clarify if the 90 has already been installed.

Response: Partial demolition of the existing 60-inch PCCP, installation of concrete pipe plug, 60-inch 90-degree bend, 3-ft stub w/ cap, and concrete encasement around the 90-degree bend are to be completed as part of this project. Refer to C-46 for yard piping at the ozone contactor. See Addendum #2 Drawing S-7.

47. **Question:** Please reference Drawing C-46, Drawing S-7 and Specification Section 013113 Article 1.9.A.1. Please clarify - is the as-built survey only required for the portion of the 60" inside the project LOD or does the survey need to extend to the termination of the line.

Response: Survey of 60-inch PCCP is limited to piping within project LOD.

48. **Question:** Please reference Drawing C-46, Drawing s-7 and Specification Section 013113 Article 1.9.A.1. Please identify what information is required for the as-built survey?

Response: Existing pipe location and elevation. Stations and center line elevations at each fitting and joint.

49. **Question:** Please confirm drawings C-25 through C-39 are provided for reference only.

Response: C-25 through C-39 are for reference only.

50. **Question:** Please reference Drawing C-46, Drawing S-7 and Specification Section 013113 Article 1.9.A.1. Please clarify - is the existing 60" line currently in continuous operation?

Response: The existing 60-inch PCCP is in continuous operation. See Specification Section 01 31 13.01 Request for Outage of Existing Facilities for related requirements.

51. **Question:** Please reference Drawings C-45 and C-46. Note 1 calls for the Contractor to pothole all utility crossings for the Ozone Piping prior to ordering any material for the pipe alignment. Please confirm this requirement is only for the Ozone Piping and is not required for all other underground utilities i.e. ductbanks, water lines, etc.

Response: Potholing required for ozone piping (i.e., stainless steel yard piping). Refer to Specification Section 01 31 13 Paragraph 1.6.B for requirements related to existing utilities.

52. **Question:** Please reference Drawings C-45 and C-46 Note 1. Is the intent of this note to have the Contractor design the profile/layout of the Ozone Piping (or other utilities - please reference my previous question) and submit it for the Engineers review prior to ordering material?

Response: Piping profiles are provided in the Contract documents. Intent is for contractor to field verify utility crossing for ozone piping (i.e., stainless steel yard piping) prior to ordering materials or starting excavation to account for any necessary adjustments to the profiles as a result of potholing investigations.

53. **Question:** Please clarify if Support of Excavation (SOE) can be left in place or if needs to be fully removed.

Response: It is at the Contractor's option to leave the excavation support system in place. At a minimum, the excavation support system must be removed to 5 feet below finished grade. Refer to Specification Section 31 50 00 Paragraph 3.9 for additional details.

54. **Question:** Please reference Supplemental Conditions 77.D. Please confirm if the submittal review process starts from the day electronic copies (email) are received or from the date hard copies are received by UOSA.

Response: The submittal review process starts the date the hard copies are received.

55. **Question:** Please confirm if UOSA/Engineer would be open to using our Management Program (Procore) to expedite submittals review and approval.

Response: Submittals to be handled per the Contract Documents.

56. **Question:** Please reference Page 11 of the Bid Form. Bullet point 8 refer to Specification "Section 40 91 00 Process Instrumentation and Control Systems (PICS)". It appears there is no Section 40 91 00 included in the docs but we believe this was intended to reference Specification Section 40 61 00. Please confirm.

Response: See Addendum #2 A. Bidding Requirements.

57. **Question:** Please reference Subpart C of the Virginia Clean Water Revolving Loan Fund - 2016 Contract Inserts. Please confirm the MBE and WBE goals listed are goals and not requirements.

Response: Take it as read. All VCWRLF requirements are the responsibility of the Contractor to know, understand, and follow.

58. **Question:** Please confirm this project is subject to American Iron and Steel requirements.

Response: Yes. All VCWRLF requirements are the responsibility of the Contractor to know, understand, and follow.

59. **Question:** Please confirm this project is subject to Davis Bacon Wage requirements.

Response: Yes. All VCWRLF requirements are the responsibility of the Contractor to know, understand, and follow.

60. **Question:** Please reference the Contractor Access Card Request. Please confirm there are no costs associated with requesting or receiving an Access Card.

Response: Confirmed.

61. **Question:** The pressure indicating transmitter for the LOX Gas Filter Outlet Pressure (PIT-54-044) listed on the Appendix 407000-A: Field Instrument schedule, but it is not shown on the I-5 P&ID drawing specified. Please advise.

Response: See Addendum #2 Item B. 49.

62. **Question:** Instrument tag AE/AIT-54-801 is listed on the Appendix 407000-A: Field Instrument schedule, but it is not shown on the I-13 P&ID drawing sheet. Who is responsible to supply this instrument. Please advise.

Response: See Addendum #2 Item B. 50.

63. **Question:** Instrument tag AE/AIT-54-401 is listed on the Appendix 407000-A: Field Instrument schedule, but it is not shown on the I-14 P&ID drawing sheet. Who is responsible to supply this instrument. Please advise.

Response: See Addendum #2 Item B. 51.

64. **Question:** Just for clarification purposes, drawing sheet I-3, Control System Architecture, shows all the equipment to be provided by the Ozone System Supplier (OSS), per note 2. Please confirm that the Process Control System Supplier (PCCS) is not responsible to supply the said equipment on drawing sheet I-3.

Response: The Process Control System Supplier (PCCS) is not responsible for supplying any of the equipment shown on drawing sheet I-3.

65. **Question:** Please reference GC Section 65. Please confirm the 5 year experience requirement is only applicable to the designated "Project Superintendent" and "Project Manager".

Response: GC 65 is for any Superintendent or Project Manager working on the Contract.

66. **Question:** Please reference GC Section 70(B). The last sentence in paragraph B states: "The Contractor shall appoint an employee who is qualified, authorized and charged with the responsibility to supervise and enforce compliance with the safety program." Please clarify if the intent of this sentence is for the contractor to provide a full time on site safety manager.

Response: The means/method of implementation and insuring compliance with the Contractor's Safety Plan(to include Subcontractors) is the responsibility of the Contractor.

67. **Question:** Please reference GC Section 70(G). Please advise if the Owner has any specific Confined Space requirements for the project site. If applicable please provide any confined space survey or site specific safety manuals.

Response: The contractor is responsible for their Confined Space program and all associated equipment/cost/safety/ and regulations.

68. Question: Please reference the Supplemental Conditions Section 61.F. Please provide a list of other projects currently ongoing and the areas of the plant they are expected to perform work in.

Response: Coordination is an ongoing process throughout the length of the project.

69. Question: Due to the complexity of the project, we request the question deadline be changed to 20 days before the bid date (Close of business on Friday, December 15th 2023) to allow sufficient time for all subcontractors and vendors to review the documents.

Response: Refer to Addendum # 1.

70. Question: Please reference Specification Section 01 32 00 Project Schedule. Please confirm that for the Joint Acceptance Meeting and Monthly update meetings the Contractors Designated Chief Scheduler will be required to attend.

Response: Confirmed, the Contractor's scheduler is required to be a part of schedule meetings.

71. Question: Please reference Specification Section 013233. Please provide a list of professional photographers whose previous work has been acceptable to the Owner.

Response: UOSA does not maintain a list of subcontractors for photography.

72. Question: Please reference Specification Section 013300. Please clarify if the 10 hard copies of submittals is required for all submittals including For Information Only Submittals and Administrative Submittals.

Response: Yes.

73. Question: Please reference Specification Section 013300. Please clarify if the 10 hard copies of submittals is required for all submittals including O&M Manuals.

Response: Yes.

74. Question: Please reference Specification Section 013300. Please clarify if the 10 hard copies of submittals is required for resubmittals.

Response: Yes.

75. **Question:** Please reference Specification Section 013300. Please clarify if the 10 hard copies of submittals is required for all submittals including Samples, Test Specimens and color selections.

Response: Specification Section 01 33 00 Paragraph 1.8 covers samples and test specimens. Quantity can vary as needed, but typically 2 samples and test specimens and 1 mock-up.

76. **Question:** Please reference Specification Section 014333 Article 1.12. Please clarify if on-site trainings are to be videotaped and if a professional videographer is required.

Response: Specification Section 01 43 33 Paragraphs 1.12 B.1.b and B.10 indicate video recording to be by the owner.

77. **Question:** Please reference Specification Section 015000 Article 1.7.B.4. Please provide the electrical rates that the Contractor will be charged by the Owner.

Response: Varies, Contractor is billed at the rate billed to UOSA. The current rate is \$ 0.1346 per kWh.

78. **Question:** Please reference Specification Section 015000. Please advise if there are locations that are approved for the contractor to tie in water and sewer service for the required contractors and engineers field offices.

Response: Trailers in the vicinity of the work will not have water or sewer available per Specification Section 01 50 00 Paragraphs 1.7 D. and E. An alternative area at the north end of the Plant may be available with water and/or sewer.

79. **Question:** Please reference Drawing C-3 and Specification 015000 Article 3.C.1. The Engineers Field Office Trailer location is not specifically called out on drawing C-3. It is assumed the Engineers Field Office will be adjacent to the Contractors Field Office. Please confirm or specify an alternate location.

Response: The engineer's trailer will either be adjacent to the contractor's trailer or at an alternative location selected by the Owner per Specification Section 01 50 00 Paragraph 3.C.

80. **Question:** Please reference Specification Section 015000 Article 3.3.C. Please confirm the contractor is only responsible for clearing snow and ice around the areas of work covered under this contract.

Response: Specification Section 01 50 00 Paragraph 3.3.C. is for access to the Contract Site and the area within the Contract Site.

81. Question: Please reference Specification Section 400515 Pipe Schedule Page 3 of 5 – GOX and 1W system The column for Insulation Requirements and Specification reference for the GOX and 1W (plant water) systems lists specification 15082. This specification is not included in the bid documents, please provide this specification.

Response: See Addendum #2 Item B. 55.

82. Question: Please reference Specification Section 400515 Pipe Schedule Page 2 of 5 – Drains Specification 404213 does not provide insulation / jacketing guidance for drains routed outdoors. Please provide.

Response: See Addendum #2 Item B. 83.

83. Question: Please reference Specification Section 400515 Pipe Schedule Page 2 of 5 – Liquid Oxygen System This system requires pre-insulated vacuum insulation with the pipe joints covered after field install. Will this be under the scope of the pipefitting contractor?

Response: Per Specification Section 463156, Liquid Oxygen Storage and Feed Equipment, Paragraph 2.4,B, the piping system including the vacuum jacketing will be factory fabricated in sections and joined in the field.

84. Question: Please reference Specification Section 400515 Pipe Schedule Page 2 of 5 – Ozone quenching agent Specification 404213 does not provide insulation / jacketing guidance for the CHEM system routed outdoors. It appears in the drawings M-9 to be double wall with 2" insulation. Will this be under the scope of the pipefitting contractor?

Response: This is part of the Contractor's scope of work and may be completed by the pipefitting subcontractor at the option of the Contractor. Insulation for outdoor quenching chemical piping is Type P-1 per Section 404213 with a PVC jacket. See Addendum #2 Item B. 84.

85. Question: Please reference Drawings M-3 and M-4. With regards to insulation of cooling water skids 1 and 2 and ozone generators no 1 and 2, are the skids coming from the manufacturer pre-insulated? If so, are we to field insulate from the first valve off the skid?

Response: Ozone equipment skids will be insulated by the OSS at the factory. Contractor responsible for insulation of non-skid mounted piping, valves, fittings, and other appurtenances.

86. Question: Please reference Drawing M-8. Are the LOX tanks and Nitrogen Tanks pre-insulated?

Response: Yes, tanks are factory insulated.

87. **Question:** Please reference the H Series Drawings. There are duct insulation requirements shown on H-2 in Building LL. There is no apparent insulation direction via specification or sheet notes in the bid documents. Please provide guidance on duct insulation requirements.

Response: Outdoor/exterior ductwork (exposed to weather) is required to be doublewall duct per Specification Section 233113 Metal Ducts Paragraph 3.3,C. Doublewall duct insulation shall be per Specification Section 233113 Metal Ducts Paragraph 2.3,E. Insulation thickness shall be 2-inch per Specification Section 233113 Metal Ducts Paragraph 3.11,E. Note, all duct dimensions indicated on Drawings are inside clear dimensions and do not include insulation or duct wall thickness, per Specification Section 233113 Metal Ducts Paragraph 2.1,F.

Indoor exposed ductwork located in the space that it serves does not require insulation.

88. **Question:** Please push bid dated out to February as much as possible to account for holiday shutdowns at factory's technical resource centers. The upcoming holidays not only leads to fewer personnel for support, but the factories will have complete shutdowns for multiple weeks during the existing bid schedule.

Response: Refer to Addendum #1 and Addendum #2.

89. **Question:** Valve schedule (Spec 400551, Para 3.4.A) shows total of (3) 48" butterfly valves – (1) at facility 86 (new ozone contactor) which is accounted for on sheet M-9, and an additional (2) shown in the schedule for facility LL but are not shown on the drawings (new ozone generation building – no large diameter pipe to be installed here).

Response: See Addendum #2 Item B. 60. Contractor is responsible for takeoffs from Contract documents and shall submit a valve schedule for all Div 40 process valves in accordance with Specification Section 400551.

90. **Question:** Valve schedule does not show any valves less than 20" diameter; however, there are a lot of smaller valves not included on the valve schedule – for example, there are 17EA 10" electric butterfly valves shown on the air scour piping (sheets M-27 and M-28).

Response: Valve schedule included in Specification Section 400551 Common Requirements for Process Valves is for 12-inch valves and larger only. Refer to P&IDs and process mechanical drawings for process valves less than 12-inches.

91. **Question:** Sheet C-45 shows 1" Potable waterline to new Ozone Building. Connection to existing line is not detailed. No material type is given (schedule lists both copper and PVC). Drawing P-2 shows this line is 2".

Response: Potable waterlines are Type K copper per Specification Section 221116 and Specification Section 331213. See "1W Protected" entry in the pipe schedule in Specification Section 400515. See Specification Section 331213 Water Service Connections Paragraph 3.3 Installation, for installation requirements. See Addendum #2 Drawing C-45.

92. **Question:** Sheet C-45 shows a 1" N2 and 2.5" GOX to the new Ozone Building. Sheets M-3 and M-7 show ½" N2 and 1" GOX for same lines.

Response: See Addendum #2 Drawing C-45 and C-49.

93. **Question:** Sheet C-9 shows Sewer/Drain Connection to new Ozone Building. Appears to be new manhole/structure needed to intercept existing – but no information given. Similar – shows cleanout #7 – no detail given. Appears to be existing on sheet C-45.

Response: See Sheet C-16 for 4" sanitary lateral profile and manhole detail. See sheet C-49 for cleanout detail. Shop drawing is required for the modified doghouse manhole with inside drop connection. Sewer connection, c.o., and manhole are new work.

94. **Question:** Sheet M-11, Plan View shows a 6" air/vacuum release valve (L/2-ARV-846) and shown as 2" on M-11, Section 1.

Response: L/2-ARV-846 is 6-inches. See Addendum #2 Drawing M-11.

95. **Question:** Pipe Schedule – Specification Section 400515 – the 'material' and 'specification section' columns do not agree for many of the items listed.

Response: See Addendum #2 Item B. 61.

96. **Question:** We have also received comments from several of the major suppliers requesting clarifications on the valves and requesting a valve schedule for all valves. Some of the issues stated are: Valve tags from mechanical drawings that do not show up on the PI&D drawings – for example: M-13, Plan View and M-16, Section View do not show the valves shown on PI&Ds I-15, I-16 (86-V-520, 86-V-521, 86-V-540, 86-V-541, 86-V-600, 86-V-601, 86-V-650, 86-V-651). Valves shown with no call out for what type they are – for example: M-18 shows a valve 86-V-591 with no callout of type.

Response: Process mechanical drawings do not include all of the valve tags. Refer to the P&IDs for valve tags. See Addendum #2.

97. **Question:** We would like to reach out to clarify with the I&C/Process Engineer for CDM since Hach is named under Section 407616 for the Ozone Analyzers for Hach 9185 sc required for liquid phase ozone measurement. However per Dwg listed below only ambient ozone monitors are required as Hach 9185 will only measure dissolved ozone.

Response: Liquid-phase (residual) ozone measurement is included on drawing I-15. This is the only such analyzer. Other requirements in Specification Section 407616 will apply for the ambient ozone analyzers included on other drawings.

98. **Question:** P&ID I-1. RIO-L2 shows "note 2" Furnished by OSS. Typically building RIO's or PLC's where no OSS equipment or OSS I/O is included are not by OSS. Please confirm that RIO-L2 is to be provided by OSS.

Response: Yes, OSS is to furnish all control panels and control panel hardware. Programming of the PLC-MOCP and PLC-86 (including RIO-L2) will be done by the AESS.

99. **Question:** P&ID I-5. Instruments AIT-54-045 (Dew point) and TIT-54-046 should show as Div 46 and not Div. 40. These instruments should be provided by OSS, especially the Dew point analyzer as it is a process instrument. The dotted line envelope for the LOX system should probably be moved to before the GOX Filter to show that the equipment and instruments from the GOX filter and on should be by OSS.

Response: See Note 1 and Note 3 on I-5. Control valve assembly, gas filter, pressure control valves, and associated instruments to be selected and furnished by OSS. See Addendum #2 Item B. 62 and Drawing I-5.

100. **Question:** P&ID I-6. Instruments on and after the LIN tank that show "46" by the instruments should be changed to "40". Since the LIN tank shows "note 1" to be provided by the Contractor. Also, there needs to be Pressure Regulating valve and a bypass line with manual valve and flow indicator around the mass flow controller to ensure that if the mass flow controller is unavailable, nitrogen can still be injected into the main GOX line. The Pressure regulator is required to control the N2 pressure and ensure it is above the GOX pressure in the main GOX line.

Response: Bypass line for mass flow controller was considered during design. Since ozone system can still operate although at limited capacity without nitrogen the decision was to omit the bypass line and limit the number of assets requiring routine maintenance. Plant can operate without ozone or on temporary nitrogen gas source with pressure regulator with bypass of nitrogen tank. See Addendum #2 Item B. 63 and Drawing I-6.

101. **Question:** P&ID I-7, I-8 and I-9. Since there is an Injection System for the Ozone Dissolution System, it is strongly recommended to have a Purge line to the destruct

units that is used when rotating equipment from duty to standby. The purge line is a separate line off of the ozone line that has an automatic valve, manual valve and orifice plate to send the ozone/oxygen gas to the destruct units and not process line during the purge shutdown sequence when ozone generators are rotated.

Response: Purge line to destruct units and also purge-to-destruct unit were considered during design and omitted since ozone is being used for process optimization via oxidation and intermittent fluctuations in dose related to purge cycling can be accommodated.

102. **Question:** P&ID I-8. There is a conflict on the Ambient Ozone and Oxygen Analyzers (AIT-54-146, AIT-54-147) where there is a "note 2" provided by OSS and a "Div 40" notation next to the analyzers that would indicate "to be provided by Contractor" Please clarify. It makes the most sense to have these analyzers provided by OSS.

Response: See Note 2 on I-8. Analyzers are to be furnished by OSS and installed by Contractor.

103. **Question:** P&ID I-10, I-11. Since there is a common manifold for the closed-loop CW skid outputs the local control panel on the Cooling Water skids should be called "Cooling Water Control Panel" and not "Ozone Generator Control Panel" since the skids are not part of CW train.

Response: Local control panels on the cooling water skids are called "Ozone Generator Cooling Panel No. X" which refer to the cooling process.

104. **Question:** P&ID I-13. There is a conflict for the ambient O₃ analyzer AIT-54-600 where it has a "note 2 provided by OSS" and "Div 40" next to the instrument. Please clarify. It makes the most sense to have the analyzer be provided by the OSS.

Response: See Note 2 on I-13. Analyzers are to be furnished by OSS and installed by Contractor.

105. **Question:** P&ID I-13. All of the I/O on this drawing is for equipment and instruments not provided by OSS. Normally the Building RIO or PLC panel that does not have any OSS supplied equipment is provided by Contractor and not OSS. Please confirm this Control Panel is to be provided by OSS and not Contractor.

Response: Yes, OSS is to furnish all control panels and control panel hardware. Programming of the PLC-MOCP and PLC-86 (including RIO-L2) will be done by the AESS.

106. **Question:** Drawing I-20. In the upper-left section, the panel in which the signals land is clearly identified, but the signals shown in the upper-right are landing in an unidentified panel. Please clarify where those upper-right signals are meant/expected to land into.

Response: These are existing signals going to an existing panel and will not be moved under this project.

107. **Question:** 46 31 50 Par 1.2.C.4.d. In the third and fourth lines it states the OSS is to coordinate the overall control of Ozone System equipment that we neither specified or supplied (LOX, LIN, Ozone Dissolution System with the exception of O3 gas flow control manifold. This responsibility may require a lot more site time than is necessary for the commissioning of the OSS provided equipment. Please clarify this paragraph to refer to OSS to coordinate with AESS on OSS supplied equipment. If OSS is to take on additional coordination responsibilities it should be stated this will be provided at an additional cost on a per diem basis for time above the Services Table at the end of the section 46 31 50.

Response: Agreed, but interaction with non-OSS equipment still needs to be coordinated. See Addendum #2 Item B. 64.

108. **Question:** 46 31 50 Par. 1.2.E.1.c. This paragraph seems to state that all the I/O for the Injection System goes to RIO L.2 while the P&ID's show the Injection System components going to PLC-86. Please clarify and confirm.

Response: Signals shown on I-14 (including Injection System components) go to PLC-86. See Addendum #2 Item B. 65.

109. **Question:** 46 31 50 Par. 1.2.E.1.d. This paragraph indicates Contractor to develop OIT screens for use by the AESS and OSS in their respective OIT screen displays. The OSS is only providing OIT screen displays for the PSU as the VOD LCP does not have an OIT. The OSS will use Veolia standard symbols for equipment continuity and ability to troubleshoot in the future.

Response: Noted.

110. **Question:** 46 31 50 Par. 1.2.G.1.a. This paragraph indicates that OSS to program individual PLC's to incorporate ozone/oxygen leak detection but this does not make sense as this programming is to be done in the MOCP which is programmed by the AESS and not OSS. The PSU PLC does not take in signals directly from the ozone/oxygen analyzers. This should be changed.

Response: Ambient ozone and oxygen alarms will be communicated from the PLC-MOCP to generator PLCs for use in Generator System Shutdown sequences as described in Specification Section 406196, Process Control Descriptions, Paragraph 3.3,C,11.

111. **Question:** 46 31 50 Par. 1.5.B. 60 days is too short a time for submittals as we need to coordinate with outside suppliers. This should be increased to at least 70 - 84 days.

Response: See Addendum #2 Item B. 66.

112. **Question:** 46 31 50 Par. 1.8.A.1. Please change "SUEZ Water Technologies - Elmwood Park, NJ" to "Veolia Water Technologies Treatment Solution USA, Inc. - Leonia, NJ as this is the correct company name and address for bidding and Contracts.

Response: See Addendum #2 Item B. 67.

113. **Question:** 46 31 50 Par. 1.10.B.3. There should be a max. Liquidated Damages for power consumption. A logical value would be double the power guarantee figure of 4.2 kwh/lb O3. Please add this to the end of the paragraph.

Response: Compensation is for costs incurred in excess of the power guarantee. A maximum does not support compliance with the power guarantee.

114. **Question:** 46 31 50 Par. 1.10.C.3, 4. The extended warranties for Dielectrics and PSU Converter/Inverter are acceptable but should be for materials only as once the initial warranty is over the Client is responsible for operation and maintenance of the equipment. Please change the extended warranties for those Veolia proprietary components to materials only.

Response: See Addendum #2 Item B. 68.

115. **Question:** 46 31 50 Par. 2.1.F.1. In the first line "programming" is very general and it should be clearly stated that the programming refers only to equipment PLC's for the Power Supply Unit and Ozone Destruct units.

Response: OSS programming scope is defined in Section 463150, Ozone System General, Paragraph 1.2,C,4,e as limited to Power Supply Units and Ozone Destruct Units.

116. **Question:** 46 31 50: 2.1.F.2.a. Passage indicates that "OSS to provide...MOCP...and software configuration associated with the Ozone System". Yet, paragraph 1.2.E.1.a indicates that AECS will provide the programming for the MOCP. Please clarify and correct.

Response: See Addendum #2 Item B. 69.

117. **Question:** 46 31 50 Par. 2.1.F. 3.a. The end of this paragraph describes a lot of support by the OSS to AECS that can be very open-ended and estimating the amount of "assist" time is very difficult and should be limited. An amount of time should be added to the Services table at the end of the specification section.

Response: The OSS must assess the time required to develop materials listed in this Paragraph to assist the AESS based on OSS scope of supply.

118. **Question:** 46 31 50: 2.1.F.2.d. Passage indicates that "Each LCP [for each ozone destruct unit] to be free standing...". Given that the ozone destructs are skids, and that there are a limited number of components required for the operation of the destruct unit, please allow the LPC to be wall-mounted, such that it is "hung" on the ozone destruct skid frame.

Response: See Addendum #2 Item B. 70.

119. **Question:** 46 31 50: 2.1.F.2.f. Passage indicates that "RIO Panel for the nitrogen system and liquid oxygen system" is to be a "Skid mounted panel". This panel is traditionally a free-standing panel, and since there is no "skid" to speak about, please allow this to be a free-standing panel.

Response: See Addendum #2 Item B. 71.

120. **Question:** 46 31 50: 2.1.F.3.a. This paragraph relates to the programming of the MOCPOIT. Passage indicates that "The OSS must follow the plant PICS standards for developing graphical screens..." Since the OSS is only providing the development and programming services for the Power Supply Unit PLC and OIT, along with the PLC and [possible] OIT of the Ozone Destruct Units, this passage should be stricken from the paragraph to eliminate any sort of confusion on scope of supply and responsibility.

Response: This paragraph applies. The OSS must follow PICS standards for development of any PLC programs and OIT graphic screens for the PSU and/or ODU systems.

121. **Question:** 46 31 50: 2.1.F.4. Please confirm that as per the electrical drawings (E-44 and E-45), many field devices and instruments are already powered by UPS circuits, outside the scope of the control panel said instruments and devices are connected to, and that these drawings are depicted how the system will be built and installed.

Response: Equipment and instruments provided by the OSS and connected to OSS supplied panels which are indicated by the P&IDs or other requirements to be powered by UPS power shall have terminals to accept external UPS power and the OSS shall be responsible for wiring to these terminals as well as wiring the field instrument or equipment being powered.

122. **Question:** 46 31 50: 2.1.F.5.b. OSS should not be responsible for programs loaded on the Owner's computers. Please modify this statement in such a way that OSS is responsible to make sure that the software used by the OSS is compatible with the

Owner's, and that any resulting deliverable (PLC and OIT programs) will be compatible with the Owner's software.

Response: This paragraph serves to make sure that, in addition to the compatibility mentioned in the question, the programs have been delivered and the owner is able to fully access the vendor programs online for troubleshooting, rather than receiving a copy at a later date. It's the difference between "should work" and "has been done". It is in everyone's best interest to have this, including the OSS.

123. **Question:** 46 31 50: 2.1.F.6. Please confirm that the OSS scope of supply as far as "memory mapping" is limited to those PLCs that the OSS is actually programming, ie. Power Supply Unit PLCs and the Ozone Destruct Unit PLCs.

Response: Yes, memory maps referred to in this paragraph are for data in the OSS programmed PLCs.

124. **Question:** 46 31 50 Par. 2.2.G. Please add Cooling Water No. 1 CP and Cooling Water No. 2 CP to this list.

Response: See Addendum #2 Item B. 73.

125. **Question:** 46 31 50: 2.2.H. Please clarify: This paragraph stipulates that both [RIO-LOX] and [RIO-L2] are to be provided by the OSS. Yet, in the previous paragraph (2.2.G), control panel [Building L/2 CP] is mentioned as well. Are the [RIO-L2] and the [Building L/2 CP] one and the same, in terms of "panels"? If so, why mention both? If not, then in the case of [RIO-LOX], shouldn't the [LOX CP] be mentioned in 2.2.G as well?

Response: RIO-L2 is inside the Building L/2 control panel, but paragraph G is listing all control panels to be provided by the OSS and Paragraph H is listing all remote IO to be provided by the OSS. These are lists of two different things (control panels vs remote IO hardware).

126. **Question:** 46 31 50: 2.2.J. This paragraph only mentions the three OITs, yet in a previous paragraph (1.2.C.3.e), there is mention of an "OIT for quenching chemical system (OIT-86)". Please add if missing. Additionally, please indicate where OIT-86 is meant to be installed, and show on control system architecture I-3.

Response: There are three (3) OITs and one (1) HMI as part of this project. OIT-86 is shown on I-3 inside the Building 86 control panel. See Addendum #2 Item B. 74.

127. **Question:** 46 31 50: 2.7.B. In reference to the entire "Ozone Control System (OCS) Factory Acceptance Testing": Although the scope of the OSS is to supply the physical control panels for the OCS (MOCP, LOX-CP, etc.), it seems unreasonable that software portion of the testing be held at the OSS factory, given that the AESS will require full

access to the panels for an extensive period of time, powered and networked (somehow) prior to the commencing of any recorded testing, being unwitnessed or witnessed. It is also unreasonable that the expenses for both travel and lodging of the six representatives that will be present to witness the testing are to be absorbed by the OSS. We request that these requirements be stricken and that alternatives be developed such that the onus is put onto the AESS or the CONTRACTOR to execute OCS testing, after the control panels are released by the OSS.

Response: This approach (separate software testing during factory test) has been successful in dozens of projects including at OEM facilities. See Addendum #2 Item B. 75.

128. **Question:** 46 31 50: 3.3.A. For this entire section, please revise OSS scope of responsibility, such that it only reflects the actual deliverables provided and supplied by the OSS. The major concern is that the OSS cannot be responsible for the proper operation, and especially the control, of the entire ozone system when its scope is limited to local equipment (generator+PSU, ozone destruct, control panels minus the controls, etc.).

Response: See Addendum #2 Item B. 86.

129. **Question:** 46 31 50: 3.3.A.4.c. The passage incorrectly and inappropriately defines the OSS as being the PCSS. We believe that this is a mistake because the term "PCSS" is clearly defined in 40 61 21.10, paragraph 1.3, stating that the PCSS is "...The entity responsible for providing all materials, equipment, labor, and services required to achieve a fully integrated and operational control system", Given the manner in which the scopes and responsibilities are distributed, this OSS cannot and should not be defined as the PCSS.

Response: Concur. See Addendum #2 Item B. 87.

130. **Question:** 46 31 50 Par. 3.3.A.4.c. In this paragraph it states the OSS is referred to as the PCSS for the "Ozone System". It should be clarified that this is only in reference to the PSU PLC and O3 Destruct PLC and not any of the other PLC's or OIT's not associated with the PSU and O3 Destruct PLC.

Response: Concur. See Addendum #2 Item B. 88.

131. **Question:** 46 31 50 Table 46 31 50-3. A line should be added for AESS coordination/support with a set number of days and a note that any time required by the AESS above the stipulated days shall be available at a per diem rate of \$ 1460 per day plus expenses.

Response: The Table is for minimum trips/days. Additional trips/days needed to fulfill the requirements of the Contract Documents are at no cost to the Owner. Coordination and support with the AESS (CDM) is based on meeting all requirements in the Contract Documents. See Addendum #2 B. 111 for further clarification on the AESS.

132. **Question:** 46 31 53 Par. 2.1.M.4. The max. delta T for the closed loop CW is given as 5 deg F in the spec. This is too low. The delta T should be 8 deg F min. There is very little difference in O3 gen efficiency if 5 deg F, 7 deg F or 8 deg F. Pls change the 5 deg F to 8 deg F.

Response: Open loop cooling water temperature was reduced to 84 deg F which may alleviate this concern. The maximum temperature drop will remain 5 deg F. See Addendum #2 Item B. 81.

133. **Question:** 46 31 53 Par. 2.2.B. Since the closed-loop CW is not chilled water is not standard procedure to require insulation on either the vessel or cooling water lines as when the CW is cold the air temp in the ozone room is relative cool and when the room is warm, the closed loop CW temperature is warm. We recommend removing the insulation on the vessel and CW piping on the ozone generator skid. If it is still determined that insulation is required then the OSS should insulate the vessel but the CW piping on the skid does not need to be insulated.

Response: The ozone generator building is not climate controlled. Given the historically high relative humidity, ozone generator vessel and cooling water piping insulation are included in the design to mitigate nuisance condensation.

134. **Question:** 46 31 53: 2.3.B. Passage calls for sizing PSU components that are "...sized to carry not less than 120 percent of the amperes anticipated when the ozone generator is operating at its Rated Capacity". This is excessive and we ask that this be reduced to at most, 110%.

Response: Specification requirement shall stand. Safety factor ensures power supply has ample power to meet maximum rated ozone production requirements. Actual power requirements for the selected equipment will be reviewed during submittals and tested at the factory and on-site testing.

135. **Question:** 46 31 53 Par. 2.4.B..3.b.2). The delta T should be increased from 5 to 8 deg F. There is very little difference in power consumption when the delta T is 5 or 8 deg F but a requirement for a bigger pump, piping and heat exchanger.

Response: Open loop cooling water temperature was reduced to 84 deg F which may alleviate this concern. The maximum temperature drop will remain 5 deg F. See Addendum #2 Item B. 81.

136. **Question:** We are representatives of several devices that are in the Specification for the project. Can you provide a list of contacts that are bidding on the project? We are primarily interested in the Pressure, Temperature, Flow, Vacuum Relief, Level, and Concentration Analyzers. We represent Foxboro, L&J Technologies (Shand & Jurs), Schneider Electric (Process and Remote Operations), GE MDS, and Metrix Vibration. Please let me know if you need anything from us to validate our involvement. We are currently bidding through various integrators for the project.

Response: A Plan Holders List can be found on the UOSA website for this advertisement (<https://uosa.org/capital-projects-bids-rfps/>).

137. **Question:** There is conflicting information in the specifications and Drawings. The P&ID I-17 has a note stating the local control panels will be integral to the pumps (no control panel). The specs reference a skid but also state in spec 463342 section 2.3 the pumps will be supported by existing concrete pads with a frame fabricated from 1 5/8" FRP Unistrut. Drawing MD-2 is also showing concrete slab. The P&ID & spec section 2.2B4 reference pump stroke length setting and stroke setpoint. From this I'm assuming pumps need and ACC remote stroke length control. Spec section 2.B8 states manual stroke length adjustment. Specs do not call out accessories and P&ID does not show cal. column, PRV and the pressure gauge and switch are grayed out. The P&ID does show a suction accumulator and discharge dampener. Are they planning on using existing accessories? This would explain why they are not listed in the specs.

The metering pump schedule states pump discharge capacity is 14.3 GPH, and above it states operating range 0 to 121 GPH. Do we really want to oversize the pumps by that much? What is the minimum flow required. Can you confirm the following:

- a. Skids are not required.
- b. What accessories do they want with the pumps.
- c. Pumps will have NEMA 4X VFDs mounted on them. No wall mounted control panels
- d. Min and Max flow range of pump.
- e. Do pumps only need manual stroke control or is an ACC required.

Response:

- a. Correct, skids are not required.
- b. Pulsation dampener, pressure gauge, pressure gage guard, strainer
- c. Correct.
- d. 0 to 30 GPH.
- e. The pumps will only need manual stroke control.

See Addendum #2 Item B. 82.

138. **Question:** The specifications name the open loop cooling water as 89F maximum. Can you confirm if this is truly expected or if there is a safety factory padding this number? The 89F specification is typical of one equipment manufacturer and supports a sole

source bid situation for their equipment. To allow for competition, we would request 86F max open loop cooling water temperature or to at least modify section 463153 – 2.3.D to allow for PSU heat dissipation inside the ozone generation room.

Response: Maximum open-loop cooling water temperature shall be 84°F. See Addendum #2 Item B. 81.

139. **Question:** The spec and drawing do not match the UPS. The spec calls for an Eaton 9SX3000 with 2 hours of runtime at 2700W which is single-phase, but the drawing shows a 3-phase system. A 9SX3000 UPS can only provide 104 minutes of runtime, 120 minutes is not attainable. Furthermore, this UPS does not come with a maintenance bypass switch.

Response: The intention of the design is to provide the Eaton 9SX3000 UPS (which is single-phase) and single-phase UPS panelboards (as shown on E-44 and E-45).

Section 263353, Paragraph 2.2-B indicates that the minimum duration of supply shall be 120 minutes for the connected loads indicated on the drawings. The most loaded UPS is UPS 86, which sheet E-45 indicates has a connected load of 1400VA. Eaton documentation indicates that the 9SX3000 with three external battery modules will supply power for 165 minutes when outputting 1402W, which exceeds the specification requirement. The need for external battery modules is identified in Section 263353, Paragraph 2.3-E.

Section 263353, Paragraph 2.9 identifies the requirements for the external maintenance bypass switch. The specification references the Liebert/Vertiv MicroPOD, but approved equal products can be submitted. This is a separate product from the UPS which connects to the UPS via a cord and plug and the rest of the electrical system with hardwired connections.