Section	Title	Revision Summary
1	Introduction	Paragraph E.2.h. – language has been added as follows: h. Attachment A to this section includes a listing of minimum required sections / chapters for a PER. The desired outcome of this effort is to facilitate focused reviews of these chapters by specific individuals and stakeholders within HRSD.
2	Architectural and Landscaping Design and Review Process	Attachment A - An updated version of the HRSD Facilities Architectural Guidelines is incorporated for this publication.
4	Monthly Project Status Reporting	Exhibit A – Clarification language has been incorporated for "Work Completed by FIRM this reporting period" and direction for the FIRM not to repeat past status items in previously submitted Progress Reports.
5	Capital Project Cost, Schedule, and Risk Reporting	This section has been modified significantly and warrants a careful review. Included in the modification are movement of previous exhibits into attachments and creation of two new attachments for project schedule and project budget requirements.
6	Drawings, Record Drawings and Valve Guides	Paragraph B.5.f. – language has been added as follows: Proposed Valve Guide locations should also be shown in this single AutoCAD file; the proposed Valve Guide locations should be represented as squares/rectangles in their true coordinate location, estimating the extent of the areas to be represented by the Valve Guide. This AutoCAD file will serve as an early coordination tool to determine eventual line number(s) and Valve Guide number(s).

Section	Title	Revision Summary
8	PER, Design, and Construction Submittal Requirements	Paragraph B.10 - language has been added as follows: 10. Soil Resistivity / Corrosivity Analyses, when performed to support project design, must be submitted in accordance with the following requirements: a. One (1) PDF file of each soil resistivity / corrosivity report, separate from the Conformed Specifications package, uploaded to Unifier. b. HRSD standard soil data spreadsheet (1) populated with analysis and result values A blank template is available by request from the GIS/CAD Division. Key required attributes include i. Date of field measurement or soil sample collection ii. Name of soil corrosivity analysis firm iii. Soil sample and field resistivity measurement locations as Virginia State Plane coordinates to an accuracy of ± 5 ft. iv. Various soil resistivity and chemistry attributes.
8	PER, Design, and Construction Submittal Requirements	Attachment C has been added to this section as an Excel template for capturing soil data as referenced in Section 8.

Section	Title	Revision Summary
9	Real Estate Acquisition and Plat Guidelines	New paragraphs D through G have been incorporated along with Attachments C through G into this section. A. Design Engineer's Estimate – when requested, the FIRM shall produce a replacement cost estimate to be used in procuring a title insurance policy for a parcel and structure. • Attachment C – Sample – Engineer's Estimate B. Justification Memorandum – when requested, the FIRM shall produce a justification memorandum to support the acquisition cost for a property or easement. The justification memorandum should consider, at a minimum, the impact of the acquisition or easement(s) on design, permitting, maintenance of traffic, construction costs, project schedule and regulatory deadlines, community, and social justice, as well as the impacts to the property owner. The memorandum should include the FIRM's recommendation statement. • Attachment D – Sample - Design Consultant • Attachment E– Sample - Real Estate Consultant C. Phase 1, Environmental Site Assessment (ESA) - for each fee simple acquisition, the FIRM shall prepare a Phase 1, ESA. This requirement can only be waived by the Director of Engineering on the recommendation of the Real Estate Manager. • Attachment F – Sample – Phase 1 ESA D. Location Map – when requested, the FIRM shall produce a Location Map for the fee simple or easement acquisition. • Attachment G – Sample – Location Map
10	Flood Elevation Requirements	This section has been modified significantly and warrants a careful review.
11	Public Communication Program	This section and attachments have been modified significantly and warrants a careful review.

Section	Title	Revision Summary
12	Preconstruction Assessment and Damage Mitigation Procedures	Paragraph B. – new requirements have been incorporated related to Stage 1, 2 and 3 as follows: Following HRSD review and acceptance of 50% design development plans and prior to the 90% design development stage, the FIRM will conduct a workshop to discuss the Stage 1 (Construction Impact Research and Evaluation) report and any recommendations for further actions in the preconstruction or construction phases that are detailed in the Stage 2 and Stage 3. Attendees at this workshop will include the HRSD Project Manager, Real Estate Manager, and other key stakeholders within HRSD. Following HRSD review and acceptance of 90% design development plans and prior to the 100% design development stage, the FIRM will conduct a workshop to discuss Stage 2 (Risk Mitigation Analysis and Bid Document Development for Contractor Actions) and Stage 3 (Specific Pre-Construction Field Surveys and Construction Activity Monitoring Programs) if recommended actions are to be incorporated into the Bid Documents for the Contractor to perform, recommended actions are to be performed and/or coordinated by the FIRM during the construction phase, and any other recommended actions to be undertaken by HRSD or a third party to monitor and/or mitigate potential construction related damages to adjacent properties. Attendees at this workshop will include the HRSD Project Manager, Real Estate Manager, and other key stakeholders within HRSD.
12	Preconstruction Assessment and Damage Mitigation Procedures	The following two new Attachments have been incorporated: Attachment H: Sample – Precondition Assessment and Damage Mitigation Report Attachment I: Sample – Precondition Assessment Field Survey Report (excerpts)

Section	Title	Revision Summary
13	Coordination with Virginia Department of Environmental Quality (DEQ)for Certificate to Construct and Certificate to Operate	VDEQ revised the process for contractors to receive tax exemption status for qualifying sanitary sewer projects by now having HRSD as the system owner prepare the documentation and letters regarding tax exemption. HRSD Engineering Contract Specialist are coordinating this process for HRSD projects.
16	Preparation of and format for Conformed Documents	Paragraph B.7. - language has been added as follows: HRSD uses the EJCDC C-520 form for typical Design-Bid-Build project delivery.
17	Tracking of Construction Phase Milestones and Performance Metrics	Attachment A – this table has been updated.
18	Expectations for Construction Administration and Construction Inspection	Paragraph J. Training – a new requirement has been added as follows: Certified Electrical Inspector – Master certification required for all inspector(s) overseeing electrical related work.
20	Condition Assessment Protocol	This section has been modified significantly and warrants a careful review. A new Coupon Data Collection Form is included as Attachment A.
23	VDOT 2011 Work Area Protection Manual (WAPM) Requirements	Attachment A Personal Protective Equipment for Work Zone Operations has been updated.

Section	Title	Revision Summary
24	Pipelines and Appurtenances	The following edits to Paragraph B.1.k. have been incorporated: k. When existing pipe is to be abandoned, consider the need to abandon in place and/or remove if required by the locality or governing authority. For pipe abandoned in place the following shall apply: i. All pipe diameters, ensure all sources of flow have been eliminated and dewater in accordance with local, state or federal guidelines ii. For pipe up to and including 12" diameter, seal ends using a mechanical plug or cap specifically designed for the pipe being abandoned. iii. For pipe greater than 12" diameter, fill pipe with lightweight cellular concrete (flowable fill). Fill shall have a minimum compressive strength of 25 lb/cu ft wet cast density yielding a minimum compressive strength of 70 psi at 28 days. Higher densities may be required by the locality or governing authority.
24	Pipelines and Appurtenances	The following edits to Paragraph C.1.n.v. have been incorporated: v. In the case of existing unrestrained pipe at tie-in locations, on a case-by-case basis the design team shall carefully consider the application of thrust restraint to the unrestrained pipe.
24	Pipelines and Appurtenances	The following language has been deleted from Paragraph E.1.f.i.2): Valves in accordance with Section 4.4.8.1.1 of AWWA C500 will not be allowed.

Section	Title	Revision Summary
25	Checklist for Line Stop Installations	Attachment A – this form has been modified to add the following under the Installation Procedures section: Tag pipe coupon and complete Coupon Data Collection Form

Section	Title	Revision Summary
30	Pump Stations	The following edits to Paragraph C.3. have been incorporated: 3. Pump station shall be designed in accordance with the HRSD HGL Policy. Pump selection shall be based on the following flow and pressure conditions provided by HRSD and general requirements: a. Operating range flows and pressures i. Dry weather minimum ii. Dry weather maximum iii. Wet weather maximum b. Pump stations shall be designed with provisions to accommodate future growth based on development trends. c. Under typical operating conditions for variable speed drives (VFDs), pumps shall be capable of maintaining wet well level or pressure set point without cycling on/off. d. Pumps shall operate within the pump's preferred operating range (POR) in accordance with the HRSD HGL Policy. e. In the case where a bypass pumping system is required, the design and operation of the pumping system, whether portable pumps or portable pumps in conjunction with permanent station pumps, will not exceed pump station design capacity.

Section	Title	Revision Summary
30	Pump Stations	The following edits to Paragraphs C.7 and C.8. have been incorporated: 7. Provide a slope on the pump room floor that will convey seepage from pump packing and drainage from wash down to a sump. Provide Zoeller Model 137D sump pump unless this standard model will not meet the flow or pressure condition and in this case, obtain approval for a deviation from HRSD's Project Manager. 8. Provide a toilet and sink in a separate room within the pump station. Provide a wash basin in the pump station.
30	Pump Stations	The following requirement has been added as Paragraph C.21: 21. Physical Modeling shall be completed on all new or full replacement pump stations and a determination shall be documented in the PER regarding the decision to pursue physical modeling on an existing pump station rehabilitation project.
30	Pump Stations	The following requirement has been added as Paragraph D.10: 10. Underground fuel storage tank replacement should be evaluated at existing stations when the tank age exceeds thirty years and major site work is being performed.
30	Pump Stations	The following requirement has been added as Paragraph H.1.f.ii: ii. Sizing Check Valve: To reduce O&M requirements, the valve shall preferably be sized to match the pump discharge nozzle size. Engineer shall confirm the selected check valve and size are in accordance with the check valve manufacturer's recommendations for use and flow ranges and evaluate impact on pump selection and performance.

Section	Title	Revision Summary
30	Pump Stations	The following requirements have been added as Paragraph I.5.b.iii: iii. Wet well levels to be monitored by means of level sensors or bubbler system. If a bubbler system is used, a differential pressure transmitter should be installed. A bypass manifold around the transmitter and maintenance ports on both the low and high side of the transmitter should be incorporated into the pressure assembly.
30	Pump Stations	The following requirements have been added as Paragraph I.9: 9. Provide a single four-gang lockable 20-amp, 120-volt GFCI outlet outside the station near the wet well for a portable light or other use. The need for permanent lighting in the wet well should be discussed in the preliminary engineering phase.
30	Pump Stations	The following additional language has been added to Paragraph I.12: Refer to the Temporary Pump Enclosure detail in Section 36 - Standard Details, Series 700 in this standards manual for guidance.

30	Pump Stations	The following requirements have been added as Paragraphs I.14 thru I.17: 14. When developing a new or modifying an existing functional description, Engineer shall follow the format of an existing and similar functional description provided by the Project Manager. The draft functional description shall be provided to the HRSD team for review in tracked changes. 15. HRSD's sole source vendor, Emerson, shall be used for the following on new or replacement stations: a. Furnish a new PLC control panel for installation by the General Contractor. General Contractor shall terminate wires at control cabinet and conduct loop checks. b. Configure the existing SCADA software to operate the station remotely. c. Configure the existing data historian, graphics, alarm screens, trend screens and reports on the SCADA system. d. Lead site acceptance test with support from the General Contractor. General Contractor shall be responsible for testing all systems and equipment to be controlled by the PLC control panel ahead of the final site acceptance test. e. Provide information regarding SCADA equipment that has been allocated to the project site. 16. HRSD's preferred vendor shall conduct a Cellular Performance Survey of new property, provide instructions regarding the placement and type of cellular

Section	Title	Revision Summary
		antenna (i.e. unidirectional or omnidirectional), and configure the wireless router and system switch. HRSD Project Manager to coordinate vendor activity through the Electrical and Instrumentation Division. General Contractor shall provide and install antenna and may be responsible for installing router and switch. 17. Engineer to provide details in the contract documents regarding SCADA Antenna Installation and Radio Communication System Grounding. Refer to Section 36 - Standard Details, Series 700 in this standards manual for guidance.
32	Electrical and Instrumentation	This section has been updated extensively and warrants a careful review for new, changed, and deleted requirements.

Section	Title	Revision Summary
33	Information Technology Infrastructure Hardware	Paragraph C. - language has been added as follows: 12. For telco. rooms requiring one or more network equipment racks, such racks shall be the four-post tapped rail type, black in color, measure 84”H x 36”D, and accept standard 19” wide equipment . An example of such a rack would be the Chatsworth Products #15218-703. A minimum 3’ perimeter is required around the rack for access. The rack shall be fastened to the floor using Tapcon® concrete anchors, or equivalent. The equipment rack shall be bonded to the building ground bus bar. 13. For server closets or small server rooms, the equipment cabinet shall be fully enclosed on two sides with lockable doors front and back, black in color, measure 44U x 30”W x 45”D, and utilize a square punched hole rail system capable of accepting standard cage nut hardware kits and standard 19” wide equipment. An example of such a cabinet would be the Eaton Paramount #JW843045. A minimum 3’ perimeter is required around the cabinet for access. Single, standalone, cabinets shall be fastened to the floor using Tapcon® concrete anchors, or equivalent. Two or more cabinets side-by-side can be ganged together if anchoring to the floor is not feasible or practical. The equipment cabinet shall be bonded to the building ground bus bar. 14. Power for either racks or cabinets shall be provided via PDU’s made by the manufacturer of the cabinet, if possible, and neatly and securely integrated within the rack/cabinet.
34	Miscellaneous	Paragraph G.3. - language has been added as follows: d. At all office spaces provide a vision glass in the office entry door unless a door sidelight or a borrowed light (interior window) is provided.

Section	Title	Revision Summary
34	Miscellaneous	Paragraph G.4 – language has been added as follows: 4. Electronic Entry-Access Control a. Entry access control needs at HRSD facilities (at interior doors, exterior doors, site gates, etc.) shall be coordinated with HRSD for the specific requirements of the facility. b. Across HRSD, a certified security vendor/company named CTSI is currently used to purchase and install HRSD's security system equipment for entry access control. The primary method of electronic entry-access control is via employee-assigned ID proximity cards which operate card/badge readers (aka: proximity readers). The model prox reader that HRSD currently uses is HID Corp PN 5365EGP00-N 1001, with an 8- reader controller board that interfaces with their rack-mounted CCURE Security System. HRSD's I.T. services office coordinates electronic access control systems. c. See the typical door access-control diagram at the end of this section.
36	Standard Details	The Series 700: Electrical and Instrumentation Details have been added. These details are listed below: 700 Wet Well Pump Wiring Electrical Backboard Detail 701A/B Antenna Installation Detail 702A/B Intrinsic Safety Panel 703 Temporary Pump Enclosure Detail 704 Actuator Vault Electrical Backboard Detail 705 Instrument Vault Electrical Plan 706 Actuator Vault Electrical Plan 707A/B Wet Well Instrumentation Installation Detail

Section	Title	Revision Summary
38	Front End Documents	Attachment A EJCDC 2018 Documents – this section has been updated and warrants a careful review. Two noteworthy changes in the Supplementary Conditions (C-800) appear below: *4.04 Progress Schedule* SC-4.04 Add new subparagraphs immediately after Paragraph 4.04.A.1: a. Contractor shall prepare and provide to Engineer a 4-week look ahead schedule for discussion at each monthly construction progress meeting. b. Contractor shall update and recalculate every 90 calendar days the master construction schedule that will be submitted to the Engineer for discussion at the next upcoming monthly construction progress meeting. SC-7.17 Add new paragraph immediately after Paragraph 7.17.E: F. *Standard of Care:* All Work performed pursuant to the Contract Documents shall be consistent with the Contractor's highest and best work, which shall be at least as good as the standard of care, skill, attention, priority, and judgement provided by first class, experienced Contractors in the greater Hampton Roads area (the "Standard of Care"). The Contractor shall supervise and direct the Work in accordance with the Standard of Care.
39	Construction Administration Forms / Formats	Paragraph B.9 has been updated as follows: 9. Application for Payment a. Summary Sheet b. Schedule of Values – Lump Sum c. Schedule of Values – Unit Price d. Stored Materials Inventory e. Diversity Procurement Statement f. Diversity Procurement Statement starting *July 1, 2023* g. WIFIA Requirement Only: HRSD Contractor Progress Report

Section	Title	Revision Summary
40	01060 Special Conditions	Paragraph 1.5.F. – new requirements regarding construction progress schedules are incorporated as follows: h. Updated overall construction schedule to completion (update required every 90-calendar days) for viewing and discussion. i. 4-week look ahead construction schedule updated and discussed each meeting.
40	02510 Ductile Iron Pipe and Fittings	Paragraph 2.2.C. has been edited as follows: C. Saddles for Air Vents: 1. Smith Blair Service Saddle with 2-inch threaded outlet (Mueller CC threads). 2. Smith Blair Models a. Style 366 for pipe 18-inche in diameter and larger b. Style 313 for pipe less than 18-inch diameter 3. JCM Industries a. Style 418 for pipe 24-inches and larger b. Style 404 for pipe less than 24-inch diameter
40	02520 Polyvinyl Chloride Pipe	Paragraph 2.2.D. has been edited as follows: C. Saddles for Air Vents: 1. Smith Blair Service Saddle with 2-inch threaded outlet (Mueller CC threads). 2. Smith Blair Models a. Style 366 for pipe 18-inche in diameter and larger b. Style 313 for pipe less than 18-inch diameter 3. JCM Industries a. Style 418 for pipe 24-inches and larger b. Style 404 for pipe less than 24-inch diameter
40	02610 Valves	Paragraph 2.2.D. has been edited as follows: a. Valves shall conform to AWWA C500. b. Seats in the body shall be replaceable without removing the valve from the pipeline. c. Discs shall be cast or ductile iron and bronze faced. d. Discs may be free to revolve 360 degrees. e. Valve to be furnished with bronze rollers, bronze or stainless-steel tracks and bronze scrapers.

Section	Title	Revision Summary
40	02610 Valves	Paragraph 2.6.B. has been edited as follows: 1. Mueller 2” Corporation Stop model # H10045N 2. A.Y. McDonald model #731488 3. Cambridge Brass model #301NL-A7F7 4. No other products nor manufacturers are acceptable