

Major Revisions in January 2018 Edition of the HRSD
Design and Construction Standards

Section	Title	Revision Summary
I	Introduction	<p>Item E.1.d. – The following language has been incorporated:</p> <p>Along with each developed and published project or construction cost estimate by the FIRM, the ENR Construction Index of the month the estimate was prepared shall be documented in the footnote of the published cost estimate. HRSD desires to use the following cost estimate classes as defined by AACE International for the various stages of study and plan development:</p> <ul style="list-style-type: none"> • <u>Class 5</u>: up to 2% project definition (Initial Budget Development stage) with expected accuracy range of -20% to -50% under and +30% to +100% above calculated cost. • <u>Class 4</u>: project definition between 1% and 15% (Study or PER stage) with expected accuracy range of -15% to -30% under and +20% to +50% above calculated cost. • <u>Class 3</u>: project definition between 10% and 40% (Preliminary Design stage) with expected accuracy range of -10% to -20% under and +10% to +30% above calculated cost. • <u>Class 2</u>: project definition between 30% and 70% (Final Design stage) with expected accuracy range of -5% to -15% under and +5% to +20% above calculated cost. • <u>Class 1</u>: project definition between 70% and 100% (Bid Advertisement or Preconstruction stage) with expected accuracy range of -3% to -10% under and +3% to +15% above calculated cost.
I	Introduction	<p>Item E.1.h. – The following new requirement has been incorporated:</p> <p>h. In addition to the architectural guidelines in the HRSD Design and Construction Standards, there is a need for high level of review and buy-in at early stages of concept development for pump stations, PRS, above ground storage tanks, and buildings that HRSD will construct in the communities that we serve. The involvement of HRSD’s Architectural Review Committee will provide direction to our design engineers and architects at the earliest possible stage to help ensure our designers and staff can verify the proper land requirements and secure stakeholder buy-in for both form and function of these facilities such that these facilities can be efficiently brought to completion. The following steps are to be followed for discussed vertical construction projects:</p> <ol style="list-style-type: none"> 1) FIRM to research the current zoning, and building styles (residential, public, business) in the surrounding neighborhoods or areas within one-half mile radius of the proposed construction site. 2) FIRM to review the current architectural guidelines in Section VII Pump Stations of these Standards for best fit styles to blend into the surrounding areas where the

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		<p>facility is to be constructed or renovated.</p> <ol style="list-style-type: none"> 3) FIRM to present architectural treatment options (minimum of two) along with opinion of probable construction costs (Class 4 level) for each option to the HRSD Project Manager at the draft Preliminary Engineering Report (PER) stage for review. These architectural renderings shall be at a level of development to envision how the structure would blend into the surrounding area and what the facility would look like from the street frontage perspective. 4) HRSD Project Manager to submit the architectural rendering options to the HRSD Architectural Review Committee and the Director of Engineering for comment and direction. This committee to be comprised of the following HRSD members: General Manager, Director of Communications, Community Relations Liaison, and the department director for whom the facility is being constructed for. 5) The HRSD Architectural Review Committee to schedule a meeting within two (2) weeks of submittal of the renderings with the HRSD Project Manager and the FIRM to discuss their comments and guidance for moving forward. 6) The HRSD Project Manager and the FIRM to modify the renderings according to direction given by the HRSD Architectural Review Committee and resubmit to the Committee for concurrence within two (2) weeks of the first meeting with the Committee. 7) The accepted architectural concept by the Committee will be incorporated into the final PER by the FIRM. 8) The FIRM to base their scope of services and fee proposal for the design phase upon the final PER recommendations. 9) Depending on the locality's review and approval process regarding architectural style and landscaping, the FIRM will need to accommodate within their proposed completion schedule for additional submittals and reviews by governing bodies.
I	Introduction	<p>Item E.2. – The following language has been incorporated as new items:</p> <ol style="list-style-type: none"> e. Project and construction cost estimates during plan development shall be as described above in paragraph E.1.d. of this section. f. Vertical construction projects (pump stations, PRS, treatment plants, administrative buildings) are to be designed in a 3-D CADD format that can be viewed and reviewed by HRSD staff with NavisWorks or other non-licensed viewer software packages. The FIRM shall continue to incorporate changes proposed by the Contractor during submittal

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		reviews and Change Proposals to confirm that alternate equipment, materials, and changes from the FIRM's developed Bid Documents will not cause further conflicts. The final 3-D design files are also to be delivered to HRSD in their native software format.
I	Introduction	Item F.1.k. – The following language has been incorporated as a new item: k. Lack of consideration of how the project will negatively impact the public (noise, odors, access, etc.)
I	Introduction	Item F.2.a. – The following language has been incorporated as a new item: a. FIRM's submittal reviewers were not carefully checking that Contractor submittals were in full compliance with the Bid Documents, and the approved products and materials do not result in conflicts with other aspects of the physical space or other aspects of the Contract Documents.
I	Introduction	Item F.2.e. – The following modification has been incorporated: e. Field personnel relied on Jurisdictional/VDOT or other agency inspectors for contract item compliance when either the jurisdiction or VDOT was administering the construction contract that included impacts on HRSD facilities.
I	Introduction	Item G. – The following modification has been incorporated: Due to potential issues with the use of prohibited airspace, privacy concerns, the changing regulatory environment and the risk of injury and damages that could result from the use of AVs, HRSD requires that the use of AVs must comply with all relevant regulations, insurance requirements and policies. The use of AVs should be limited to circumstances when the AV provides HRSD with a financial, safety or functionality benefit over other reasonably available options. When the use of the AV will involve a Consultant, Contractor, or other individual, written permission from the HRSD Department Director and the HRSD General Manager will be required. The request submitted must clearly state the need and benefit afforded by using the AV, the name of the individual controlling the AV and insurance coverages. The request should note that the use of the AV and responsible individual controlling the AV will fully meet all federal, state, and local regulations relating to the use of AVs.
V	Pipelines and Appurtenances	Item B.1.l. – The following new requirement has been incorporated: 1. Installation records shall be kept in a digital spreadsheet containing X,Y,Z coordinates for top of pipe elevations at each joint, fitting, valve

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		and connection points. Refer to Master Specification Section 01323, <i>Record Documents</i> , for X,Y,Z accuracy requirements.
V	Pipelines and Appurtenances	Item B.3.a. – The following modifications have been incorporated: <ul style="list-style-type: none"> i. Internal Lining – The lining material for pipe and fittings shall be Permax CTF, Induron Coatings Protecto 401 or TNEMEC Series 431.
V	Pipelines and Appurtenances	Item C.1.o. – The following new requirement has been incorporated: <ul style="list-style-type: none"> iv. Threaded bells shall not be used.
V	Pipelines and Appurtenances	Item D.3.4.02.B. – The following new requirement has been incorporated: <p>Self-performing of line stops by the General contractor shall not be permitted. This includes installation of “bag stops”.</p>
V	Pipelines and Appurtenances	Item E.1.e. – The following new note has been incorporated: <p>Mainline plug valves to be installed on concrete pipe force mains may require special bedding. The FIRM to evaluate the loading, strain, and settlement potential of the valve and the connecting pipes and develop installation details, plan notes, and technical specification language as needed for the development of the Bid Documents and Drawings.</p>
VII	Pump Stations	Item C.18. – The following modifications have been incorporated: <p>When installing thermoplastic sheet liner system, ensure that it is anchored into the new concrete and protect all interior concrete surfaces except the surfaces 1’-0” below the lowest water level in the wet well, i.e. the floor and lower walls.</p>
VII	Pump Stations	Item C.18.d.ii. – The following modifications have been incorporated: <p>This testing should only be performed by a certified technician trained by the manufacturer of the sheet lining or qualified previously to do so.</p>
VII	Pump Stations	Item D.7.a. – The following new requirements have been incorporated: <ul style="list-style-type: none"> a. This applies to the following if a benchmark does not exist: <ul style="list-style-type: none"> i. Rehabilitation projects ii. Acquired assets (PS, PRS)
VII	Pump Stations	Item F.8.b. – The following new requirements have been incorporated:

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		<p>a. For close-coupled pumps, provide the following:</p> <p>i. One spare coupling for each pump.</p>
VIII	Treatment Plants	<p>Item A.9. – The following new requirement has been incorporated:</p> <p>9. Design for power failures and power failure restarts to ensure equipment fails and restarts in appropriate condition to protect personnel, facilities, and process.</p>
VIII	Treatment Plants	<p>Item C.9. Reliability and Redundancy Table – The following modifications have been incorporated for Bar Screens:</p> <p>Size to protect plant during severe storm flow conditions. Provide coarse screen bypass channel. Screenings are to be sluiced to a compactor. Dewater screenings using press or similar equipment. Discharge screenings into hoppers. Minimum two hoppers, each hopper sized for one screen. Manifold discharge screenings to multiple hoppers. Locate hoppers inside enclosed building with odor control.</p>
VIII	Treatment Plants	<p>Item C.9. Reliability and Redundancy Table – The following modifications have been incorporated for Center Flow Band Screens and Drum Screens:</p> <p>Screenings are to be sluiced to a compactor. Discharge screenings into hoppers. Minimum two hoppers, each hopper sized for one screen. Manifold discharge screenings to multiple hoppers. Locate hoppers inside enclosed building with odor control.</p>
VIII	Treatment Plants	<p>Item C.9. Reliability and Redundancy Table – The following modifications have been incorporated for Step Screens:</p> <p>Screenings are to be sluiced to a compactor. Discharge screenings into hoppers. Minimum two hoppers, each hopper sized for one screen. Manifold discharge screenings to multiple hoppers. Locate hoppers inside enclosed building with odor control.</p>
VIII	Treatment Plants	<p>Item H.1.b.ii. – The following new language has been incorporated:</p> <p>Set relative elevations of tank and pumps to allow draw off of full tank volume.</p>
VIII	Treatment Plants	<p>Item H.1.c.ii. – The following new language has been incorporated:</p> <p>Bolt critical valves directly to tank to simplify locating leaks.</p>
VIII	Treatment	<p>Item H.1.c.vii. – The following new language has been incorporated:</p>

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	Plants	Overhead chemical piping should be avoided whenever possible.
VIII	Treatment Plants	Item H.2.b.iii. – The following modifications have been incorporated: iii. Provide for continuous mixing of the storage tank. The pump should be a seal-less magnetic drive, air operated diaphragm or centrifugal type. Pump to be compatible with heat generated during dilution. Heat tracing and insulation of the tank is not required since the chemical is diluted immediately upon delivery. Insulation and heat tracing of the non-potable water piping is required for outdoor applications.
VIII	Treatment Plants	Item H.2.d.i. – The following modifications have been incorporated: i. Provide a minimum of two feed pumps for this application. Pumps should be positive displacement.
VIII	Treatment Plants	Item H.6.c. – The following new requirements have been incorporated: c. For buried applications, use PVC braided tubing encased in PVC conduit to limit accidental damage, to provide containment, and to allow for replacement of the tubing in case of a leak. Install buried utility warning tape approximately 18 inches above all installed pipelines.
VIII	Treatment Plants	Item H.7.c. – The following new requirements have been incorporated: c. For buried applications, use PVC braided tubing encased in PVC conduit to limit accidental damage, to provide containment, and to allow for replacement of the tubing in case of a leak. Install buried utility warning tape approximately 18 inches above all installed pipelines.
VIII	Treatment Plants	Item I.10/11. – The following new requirements have been incorporated: 10. Plant drains shall return upstream of influent screens. 11. For above ground tanks, consider hydraulic overload on plant gravity drain lines. Consider pumped system for tanks over 0.5 million gallons.
VIII	Treatment Plants	Item K.1.a. – The following modifications have been incorporated: a. Plant Abbreviation – Letter designation for each plant as follows: i. Army Base – AB ii. Atlantic – AT iii. Boat Harbor – BH iv. Central Middlesex - CM v. Chesapeake-Elizabeth – CE

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		<ul style="list-style-type: none"> vi. County Treatment Plant - CSY vii. James River – JR viii. King William - KW ix. Middle Peninsula – MP x. Nansemond – NP xi. Town Plant - TSY xii. Urbana - U xiii. Virginia Initiative Plant – VIP xiv. West Point - WP xv. Williamsburg – WB xvi. York River – YR
VIII	Treatment Plants	<p>Item FF. – The following new requirements have been incorporated:</p> <p>FF. Flow Metering</p> <ul style="list-style-type: none"> 1. The final effluent regulatory flow shall be metered. All flows contributing to the final effluent flow shall be appropriately accounted. 2. The permitted treatment plant flow should be a true final effluent. There should be no recycles to subtract. 3. The effluent flow meter should be a Parshall flume. <ul style="list-style-type: none"> a. Provide manual verification scale to confirm instrumentation calibration. 4. Verify downstream hydraulics do not impact meter reading at a 10-year peak hourly flow
IX	Electrical and Instrumentation	<p><u>General</u> – a significant number of changes to this section have been incorporated with respect to acceptable products and manufacturers. A careful review of this entire section is warranted.</p>
IX	Electrical and Instrumentation	<p>Pump Station – Item 5.C.1. – The following new requirement has been incorporated:</p> <ul style="list-style-type: none"> 1. See stilling well detail in Appendix G
IX	Electrical and Instrumentation	<p>Pump Station – Item 6.A.2.c. – The following modifications have been incorporated:</p> <ul style="list-style-type: none"> c. Provide thumbscrews for removable/washable filters (reusable) or thumb screws replaced by snap in grills that are removable from the front of the cabinet (reusable).
IX	Electrical and Instrumentation	<p>Pump Station – Item 6.A.2.o./p. – The following modifications have been incorporated:</p> <ul style="list-style-type: none"> o. Provide auxiliary run contacts for ventilation fan.

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		<p>p. Provide a NEMA 12 free standing enclosure.</p>
IX	Electrical and Instrumentation	<p>Pump Station – Item 6.A.3. – The following new requirements have been incorporated:</p> <p>3. Additional Design Considerations</p> <ul style="list-style-type: none"> a. All electrical components must be NEMA only. IEC or NEMS/IEC is not acceptable. b. Filters to HVAC units must be maintained and free from dust during construction phase. c. VFD parameters must be included on as built prints (i.e. momentary power loss ride thru, energy savings, and fault reset) d. Specify coil locks (Power Quality Solutions) on control relays for power dip ride thru capabilities. e. Provide Bypass mode for critical VFD’s. Soft start or across the line depending on application. f. Specify main circuit breaker cable operators for breaker operation instead of standard door operating mechanisms. g. Provide one reset button to reset VFD and control circuit faults. h. Provide finger safe barriers for main side line breaker lugs. i. Provide enough fans to replace each fan within a VFD (spare parts) where several VFD’s of the same size and model are specified. j. Provide paper copies of VFD manuals. k. To support large and heavy VFD’s 60 HP and above, provide a pedestal with a flat plate mounted inside the enclosure for VFD to rest for easy removal. Also provide a lift table to remove VFD. l. Provide external air filter for easy access on cabinets. m. Contractor to perform static tuning for optimal performance during startup. Contractor to supply panel shop with motor data sheets including the number of poles per motor. Also, include number of motor poles on motor nameplate. n. Provide extended warranty by VFD manufacturer where replacement cost is justified. o. Need all switches to indicate when not in auto p. Need indication when control power is loss in addition to VFD fault. See Attachment C (NEW) “Variable Frequency Drive” Specs
IX	Electrical and Instrumentation	<p>Pump Station – Item 23.B. – The following modification has been incorporated:</p> <p>B. Station Bypass Alarm Systems (See new appendix H)</p>
IX	Electrical and Instrumentation	<p>Treatment Plant – Item 7.A.2.b. – The following modifications have been incorporated:</p> <ul style="list-style-type: none"> b. Provide thumbscrews for removable/washable filters (reusable) or thumb screws replaced by snap in grills that are removable from the front of the cabinet (reusable).

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IX	Electrical and Instrumentation	<p>Treatment Plant – Item 7.A.2.n./o. – The following modifications have been incorporated:</p> <ul style="list-style-type: none"> n. Provide a NEMA 12 flanged disconnect free standing enclosure. o. Provide auxiliary run contactor wired to run command for ventilation fan.
IX	Electrical and Instrumentation	<p>Treatment Plant – Item 7.A.3. – The following new requirements have been incorporated:</p> <p>3.Additional Design Considerations</p> <ul style="list-style-type: none"> a. All electrical components must be NEMA only. IEC or NEMS/IEC is not acceptable. b. Filters to HVAC units must be maintained and free from dust during construction phase. c. VFD parameters must be included on as built prints (i.e. momentary power loss ride thru, energy savings, and fault reset) d. Specify coil locks (Power Quality Solutions) on control relays for power dip ride thru capabilities. e. Specify Baker SKF EP 1000 Dynamic motor link on all motor/VFD system 100HP and above or designated as critical equipment. f. Provide Bypass mode for critical VFD’s. Soft start or across the line depending on application. g. Specify main circuit breaker cable operators for breaker operation instead of standard door operating mechanisms. h. Provide one reset button to reset VFD and control circuit faults. i. Provide finger safe barriers for main side line breaker lugs. j. Provide enough fans to replace each fan within a VFD (spare parts) where several VFD’s of the same size and model are specified. k. Provide paper copies of VFD manuals. l. To support large and heavy VFD’s 60 HP and above, provide a pedestal with a flat plate mounted inside the enclosure for VFD to rest for easy removal. Also provide a lift table to remove VFD. m. Provide external air filter for easy access on cabinets. n. Contractor to perform static tuning for optimal performance during startup. Contractor to supply panel shop with motor data sheets including the number of poles per motor. Also, include number of motor poles on motor nameplate. o. Provide extended warranty by VFD manufacturer where replacement cost is justified. p. Need all switches to indicate when not in auto. q. Need indication when control power is loss in addition to VFD fault.
IX	Electrical and Instrumentation	A new “Attachment G – Stilling Well for Level Transducer” has incorporated.
XII	Public	Item A.2. – The following new requirements have been incorporated:

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	Participation Program	<p>2. Identify project stakeholders – The FIRM shall identify and compile a list of all parties or entities that may be affected by construction activities located along the project route requiring outreach/coordination during the project. This list shall include but is not limited to: civic leagues; residents; businesses; schools; school bus routes; churches; trash collection; road detours/closures; and mass transportation routes. This initial list shall be provided to the CRL during the first design submittal (e.g.; 30% design) for review and comment.</p>
XII	Public Participation Program	<p>Item A.3. – The following modifications have been incorporated:</p> <p>3. Participate in Public Open House/Community Meetings – In a cooperative effort, HRSD will assist each locality in fulfilling their public participation guidelines. If a public meeting is required by a locality HRSD will request the locality to establish a date and time and secure a location for the meeting. Utilizing the advertisement submission schedule, ensure the specific advertisement deadlines outlined in the submission schedule will be met allowing time for public response. HRSD’s Director of Communications or the CRL, in the Director’s absence, will advertise a Willingness to Hold a Public Meeting and/or a Public Meeting for a project when a locality requests it. If an additional notification is to be mailed, at the request of the locality, the expectation will be that the locality will print and mail the project notice provided by HRSD to the addresses identified by the locality and in the locality’s records (as resident and property owner, if different). HRSD’s staff and the FIRM will attend and present the project information in an Open House format. If needed, HRSD representatives (staff and/or FIRM) will also meet with civic leagues or business associations at their request to discuss the project.</p>
XII	Public Participation Program	<p>Item A.3. – A new template is referenced in this section and appended to this section: “h. Advertisement Submission Schedule”</p>
XII	Public Participation Program	<p>Item A.5. – The following modifications have been incorporated:</p> <p>5. Distribute Project’s Introductory Notice to Neighbors – HRSD’s Director of Communications, CRL, PM and FIRM will work collectively to draft project notices to be distributed to businesses and residences potentially impacted by the work within the project limits. The FIRM is responsible for ensuring the distribution of the HRSD Communication Department’s approved notice by either the Contractor or FIRM’s staff 30 calendar days prior to Contractor mobilizing to the work site. Construction work will not be allowed by HRSD until verification of the distribution of these notifications by the FIRM. The FIRM shall log this distribution into HRSD’s Unifier software - PR Notifications located under Reports. The coordination of this effort shall occur with the CRL.</p>

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		<p>The CRL will coordinate posting this notice to the HRSD project website.</p>
XII	Public Participation Program	<p>Item A.9. – The following language has been incorporated:</p> <p>Media guidance will be provided to the project team by the Director of Communications at the beginning of each project or as requested from the project team. HRSD wallet size media/project inquiry cards will be provided for field staff to carry and provide to the media or any public inquiry beyond their expertise or, are uncomfortable responding to.</p> <p>a. Sample – Media Card (Media/ Project Inquiries)</p>
XII	Public Participation Program	<p>Item A.10. – The following language has been incorporated:</p> <p>10. Provide Project Updates</p> <p>a. Website updates shall be completed by the 24th of each month or whenever there is significant information to share. The FIRM shall upload this information using HRSD’s Unifier software – Website Update Log located under Reports. HRSD staff will then complete the process.</p> <p>b. Website Mini Updates may be requested anytime throughout a project during sensitive and highly visible work or once reaching large milestones. These updates shall consist of several photos of the relevant work at the job site and a brief (150 words or less), non-technical, simplified explanation of the activity taking place within the photos. This is a non-technical update intended for the general public to keep them informed of the project and shall be worded so the activity can easily be understood by the public. Coordination of this effort shall take place with the CRL.</p> <p>c. Construction Update Notices/Flyers shall be developed by the FIRM, utilizing the HRSD’s approved templates, and provided to the Communications Department for review 14 calendar days prior to any work commencing in the affected area. The FIRM shall ensure the distribution of notices to all affected residences and businesses, either by the Contractor or by the FIRM, 7 calendar days prior to any construction work occurring in the affected work area. Work shall not be permitted to begin until these notices have been distributed, confirmed by HRSD and the FIRM has logged the notice into HRSD’s Unifier Software – PR Notifications located under Reports. HRSD staff will post the notices to HRSD’s website. Coordination of this effort will take place with the CRL and requires HRSD’s Communication Department’s approval and if requested, an additional 7 calendar days to prepare notices.</p>

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		<p>d. Additional Notices – Notices advising affected properties of disruptive activities such as, but not limited to: water or service disruption; smoke testing; survey work; closed circuit television (CCTV) inspections; evening construction; or loss of parking shall be distributed 7 calendar days before the work begins by either the Contractor or the FIRM. Additional notice may be required 48 hours prior, the morning of work and once completed as directed by HRSD. The FIRM shall be responsible for drafting the notices, utilizing the HRSD’s approved templates, and providing to the Communications Department for review 14 calendar days prior to the work beginning. The Contractor or the FIRM will be responsible for distribution of the notices to the public. The FIRM shall ensure no work will begin until these notices have been distributed, confirmed by HRSD and logged into HRSD’s Unifier system – PR Notifications located under Reports. Coordination of this effort shall take place with the CRL.</p> <p>e. Stakeholder Email Updates will be generated and sent monthly to identified interested parties. A list of such shall be collected and maintained by the FIRM based on the stakeholder list, public meetings, inquiring parties, etc... The FIRM shall send an email to these identified interested parties with a link to the HRSD project page once the monthly website update has been processed by HRSD staff. This activity should occur within two (2) business days of being notified by HRSD staff that the website has been updated. The FIRM shall log these email notifications using HRSD’s Unifier Software – PR Notifications located under Reports. Coordination of this effort shall take place with the CRL and after the website monthly updates have been processed.</p> <ol style="list-style-type: none"> 1) Website Update, Unifier 2) Construction Update Notices – Template 3) Additional / Specialty Notices – Templates * <ol style="list-style-type: none"> a) CCTV Notice b) CCTV Notice with cleaning and inspection c) Smoke Testing Notice and Door Knob Hanger d) Survey Notice e) Reminder Notice to Neighbors (one week/48 hour) f) Reminder Notice to Neighbors (day of work) g) Completed Work Notice to Neighbors h) Project Closeout Notice 4) Stakeholders Email Updates

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XV	PER, Design and Construction Submittal Requirements	<p>Item B.8. – The following language has been incorporated:</p> <p>Operations & Maintenance (O&M) Manuals for each project shall be submitted to HRSD’s Project Manager. Refer to Master Specification Section “01340 Submittals” contained within this manual for further information. Operation & Maintenance Manual Equipment List (Exhibit C1) shall be prepared and submitted in Excel format to HRSD at the 100% design stage. HRSD Asset Management and Operations will review and approve the proposed list of equipment that would require O&M Manual submittal. Exhibit C1 will provide HRSD with the data to populate the Computerized Maintenance Management System (CMMS) and establish the system and process hierarchy. Updated Exhibit C1 and Exhibits C2 and C3 shall be submitted in Excel format prior to substantial completion in accordance with Master Specification Section “01340 Submittals”.</p>
XV	PER, Design and Construction Submittal Requirements	<p>Attachment A – Summary of Major Submittals to HRSD – The following language has been incorporated:</p> <p>Operation & Maintenance Manual Equipment List – Exhibit C1 (Review / Approval) at 100% Design Stage.</p> <p>Equipment Record – Exhibits C2 and C3 (Review / Approve).</p> <p>Equipment Record – Exhibits C2 and C3 (approved submittals at Substantial Completion)</p>
XV	PER, Design and Construction Submittal Requirements	<p>Equipment Record Excel Template for Exhibits C1, C2 and C3 is a new addition to this section.</p>
XVII	Real Estate Acquisition and Plat Guidelines	<p>Item C.4. – The following language has been incorporated:</p> <p>4. FIRM shall provide HRSD with an electronic copy in pdf format and three paper copies of the final plats.</p>
XVIII	Flood Elevation Requirements	<p>This entire section has been updated for the latest locality requirements.</p>
XXI	Preparation of and format for Construction Addenda	<p>Item B.6. – The following revision has been incorporated:</p> <p>6. Copies of all Addenda developed by the FIRM are to be transmitted to the Contract Specialist for distribution to Plan Holders via HRSD’s Oracle ERP. Only HRSD’s Contract Specialist for a project to be procured through the Engineering Department procedures or a Procurement Analyst for a project to be procured through the</p>

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		Procurement Division of the Finance Department.
XX	Coordination of Preconstruction Phase Documents	<p>Item B. – The following new requirement has been incorporated:</p> <p>Items 1-3 below to be provided a minimum of 10 business days prior to the bid advertisement date as agreed to with the Contract Specialist. Item 4 below to be provided a minimum of 5 business days prior to the bid advertisement date as agreed to with the Contract Specialist.</p>
XXIII	HRSD Safety Program	<p>Item B.5.g. – The following new requirements have been incorporated:</p> <p>g. Security guards shall be provided if Treatment Plant gates are to be left open during normal work hours. The following are requirements and expectations of a security guard:</p> <ol style="list-style-type: none"> 1. The Security Guard is expected to be alert and awake while guarding the open gate. 2. The Security Guard is expected to check cars and trucks in and out of the plant site. 3. If the Security Guard is not on duty the plant gate will be closed and secured. 4. The Security Guard must turn unwanted site visitors away.
XXIII	HRSD Safety Program	<p>Item B.9. – The following modifications have been incorporated:</p> <p>Open excavations must have adequate fall protection for personnel if greater than 4 feet and must have adequate protection if next to areas accessed by vehicles. If an HRSD employee must enter a Contractor’s excavation and is unsure about its safety, they must contact the Safety Division immediately. Contractors are responsible for evaluating their trenches or excavations for a safe atmosphere. Contractors are responsible for identifying existing utilities in areas in which they plan to dig. Contractors are responsible for not getting too close to overhead electrical lines with construction equipment.</p>
XXIII	HRSD Safety Program	<p>Item B.11/12. – The following new requirements have been incorporated:</p> <ol style="list-style-type: none"> 11. Housekeeping – The contractor is responsible for the overall housekeeping within their work areas. <ol style="list-style-type: none"> a. All exit doors, electrical panels, fire extinguishers, emergency eyewash/showers must have clear access maintained for emergencies. b. Trash and debris must not accumulate nor impede travel on designated walkways. c. Weeds and grass must be maintained during the project by the contractor in their designated areas so as not to create fire hazard or harborage of vermin.

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		<p>12. Outside Contractor Briefing – All contractors working at an HRSD Plant or Pump Station will be given an Outside Contractor Briefing by the Plant Superintendent or HRSD Safety Division prior to starting work. The briefing will cover the following:</p> <ul style="list-style-type: none"> a. HRSD Safety Rules b. Evacuation Procedures c. Chemicals on site d. HRSD Safety Programs relevant to the work that is being done e. Personal Protective Equipment (PPE) Requirements for location.
XXV	Preconstruction Assessments and Damage Mitigation Procedures	<p>Item B.1.d. - The following new requirement has been incorporated:</p> <ul style="list-style-type: none"> d. Determination of construction zone of influence for all construction related impacts
XXV	Preconstruction Assessments and Damage Mitigation Procedures	<p>Item C.1.a. - The following new requirement has been incorporated:</p> <ul style="list-style-type: none"> a. Determination of the zone of influence throughout the full project extents
XXV	Preconstruction Assessments and Damage Mitigation Procedures	<p>Item C.3. - The following revisions have been incorporated:</p> <p>At the conclusion of this process, the FIRM shall produce a single detailed report of the findings and FIRM’s determination of construction related impacts. This report shall include for a section for each category noted in this standard section including but not limited to: noise to review with the HRSD Project Manager and CRL.</p>
XXV	Preconstruction Assessments and Damage Mitigation Procedures	<p>Item C.3.c. - The following revision has been incorporated:</p> <p>The FIRM is to evaluate settlement abatement methods and materials create action plans and identify the zone of influence specific to each project.</p>
XXV	Preconstruction Assessments and Damage Mitigation Procedures	<p>Item C.3.d. - The following revision has been incorporated:</p> <p>The FIRM shall create action plans and identify the zone of influence specific to each project.</p>
XXV	Preconstruction Assessments and Damage Mitigation Procedures	<p>Item C.3.e. - The following revision has been incorporated:</p> <p>The FIRM shall create action plans and identify the zone of influence specific to each project.</p>

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XXV	Preconstruction Assessments and Damage Mitigation Procedures	<p>Item E.2.a. - The following revisions have been incorporated:</p> <ul style="list-style-type: none"> a. Part 1 - Conduct a pre-construction condition assessment, with the Contractor's staff in attendance, after award of the construction contract and prior to any work beginning, to document the existing conditions of areas to be impacted by the work and adjacent areas which could be potentially impacted by the work. The purpose of this assessment is to provide a baseline condition on all properties documenting existing conditions prior to any construction services taking place. This effort should document the existing conditions of but not limited to: right of ways, utilities, storm drains and inlets, manholes, fire hydrants, telephone, power and light poles, medians, signage, pavement, curb and gutter, sidewalks, drainage, driveways and aprons, mailboxes, landscaping, adjacent structures, residences, commercial and industrial property and other areas to be used by the Contractor along the project alignment or in close proximity to the construction activities, within the zone of influence and any structure identified to be of significant importance (such as historical registry). Document the exterior and interior (if possible) of residences, commercial and industrial properties after obtaining the signed approval of the owner or owner's authorized agent for the property. Documentation should include detailed and identifiable video of all areas and structures within the areas identified above. Digital images of both areas in which existing deficiencies are observed and areas in fair condition shall be documented. The documentation shall also provide detailed comments to describe the location / area documented (i.e. 1st floor, living room, right wall) and any observations (i.e. step crack 4mm width and 36-inch length). Review of past surveys will be coordinated with HRSD's Community Relations Liaison (CRL) for format information upon request (a small sample is included in the attachment portion of this section. Review the limits of the proposed pre-construction survey with HRSD's Project Manager (PM) and CRL prior to beginning these assessments. The FIRM shall coordinate the assessments with all parties ensuring they are completed 30 days prior to the Contractor entering the site. The FIRM shall provide a copy of this documentation to HRSD's PM and CRL within one week of completing the field assessments for review and approval. Once approved, the FIRM will forward a copy to the Contractor for their use.
XXV	Preconstruction Assessments and Damage Mitigation Procedures	<p>Item E.3. - The following revisions have been incorporated:</p> <ul style="list-style-type: none"> a. The FIRM to incorporate into the Bid Documents the requirements and specifics of the pre-construction existing conditions assessment program for designated structures and locations.

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		<ul style="list-style-type: none"> b. Maintain the HRSD Approved Pre-Construction Conditions Assessment Communications and Contact Tracking Log, using HRSD’s template to include each verified property owner and address contacted, method of contact, and number of contact attempts with dates to gain access permission. Three, certified return receipt attempts for each property are the minimum standard. c. Use HRSD’s Approved Assessment of Pre-Existing Conditions Request Letters to gain permission to enter the property for this assessment <ul style="list-style-type: none"> i. Letter to Business - Template <ul style="list-style-type: none"> i. To include Right to Access Property Form - Template ii. Letter to Private Property (residential) – Template <ul style="list-style-type: none"> i. To include Right to Access Property Form - Template d. Use HRSD’s Right to Access Property form, have this document signed by the property owner or verifiable authorized agent, and provide a copy to property owner for their records prior to entering private property. e. Provide video, still photographs and describe the particulars of each noted crack or defect. Included in the description should be the length and width of each crack. <ul style="list-style-type: none"> i. Photographs and videos should be taken with a high pixel camera with “Exchange Image File Format” (EXIF) the date stamp should be present on all files. ii. A ruler or other measurement device should be included in the photograph and video next to the observed crack or defect. iii. Log the conditions using the HRSD approved Pre-Existing Condition Assessment – Report On-Site Form and gaining a signature from the property owner after completion. f. Document via a sketch of each room of the building interior and/or exterior where a crack or defect is observed. g. FIRM shall prepare an overall summary report of each property visited and provide to HRSD’s CRL for review. This process shall be completed and reviewed prior to the contractor entering the work site. *Note – all documentation sent out to the public shall be approved by the Communications Department prior to distribution or use. Coordinate this effort with the CRL.
XXV	Preconstruction Assessments and Damage Mitigation Procedures	<p>Item E.4.h. - The following revision has been incorporated:</p> <ul style="list-style-type: none"> h. Specify locations throughout the project extents for a vibration monitoring program.
XXV	Preconstruction	The following new template forms and logs have been incorporated into

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	Assessments and Damage Mitigation Procedures	<p>this section:</p> <ul style="list-style-type: none"> • Pre-Construction Conditions Assessment Communications and Contact Tracking Log • Assessment of Pre-Existing Conditions Request Letter; to include Right to Access Property Form - Template • Pre-Existing Condition Assessment – Reporting Form - Template
XXVIII	Expectations for Construction Administration and Construction Inspection	<p>Item C, General Expectations - The following revisions have been incorporated:</p> <p>Inspectors to be courteous and helpful to the public at all times. If representatives from the Media or other interested parties ask questions or enter the work zone, inform HRSD Project Manager, Community Relations Liaison and/or Director of Communication as soon as possible. Inspectors are not to represent HRSD with the Media or other similar groups/individuals.</p>
XXVIII	Expectations for Construction Administration and Construction Inspection	<p>Item E, General Procedures - The following revisions have been incorporated:</p> <p>FIRM and Inspectors to conduct substantial completion and final inspections(s), prepare punch list(s) and establish warranty period(s).</p>
XXVIII	Expectations for Construction Administration and Construction Inspection	<p>Item E, General Procedures - The following revisions have been incorporated:</p> <p>Inspectors and FIRM to carefully review Contractor payment claims and reject / return to Contractor if supporting material is not complete (diversity statement, X-Y-Z table of installed pipe, and other contract requirements).</p>
XXVIII	Expectations for Construction Administration and Construction Inspection	<p>Item E, General Procedures - The following revisions have been incorporated:</p> <p>Inspectors, FIRM and Contractor to coordinate work schedule, sequence of construction, and timely notifications to residents in affected areas in advance of work commencing. Efforts may involve door hangers. Advanced notification efforts are intended to minimize complaints from residents and businesses about lack of awareness of project schedules and impacts.</p>
XXVIII	Expectations for Construction Administration and	<p>Item E, General Procedures - The following revisions have been incorporated:</p> <p>Inspectors to be aware of all work performed for others by the Contractor outside the limits of the project when and only if prior</p>

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	Construction Inspection	approval granted by HRSD's Project Manager for the Contractor to perform this work.
XXVIII	Expectations for Construction Administration and Construction Inspection	Item J, Training - The following new requirement has been incorporated: Inspectors to have both NAASCO ITCP inspector certifications for CIPP and Manhole Rehabilitation project work.
XXXV	Standard Details	Revisions have been made to the following listed standard details from the 2016 publication: <ol style="list-style-type: none"> 1. Air Vent 11A. Valve Box and Riser for Mainline and/or Connection Valves 11B. Valve Box and Riser for Bypass Valves 14. Steel Casing Pipe Detail 18. Sanitary Sewer Straddle Manhole 25. Precast Concrete Shallow Manhole with Extended Base 27. Precast Concrete Manhole with Extended Monolithic Base 32. Cathodic Protection Isolation
XXXV	Standard Details	The following detail has been removed from the previous publication: <ul style="list-style-type: none"> • Eccentric Plug Valve Detail (formerly #35)
XXXV	Standard Details	The following listed new standard details are being introduced in this publication: <ol style="list-style-type: none"> 35. Recovery Sheet Template 36. Sanitary Sewer Service Connection Alternate 37. House Lateral Cleanout Alternate 38. Sanitary Service Lateral Cleanout Frame and Cover 39. Sanitary Service Lateral Cleanout Frame and Cover for Heavy Loads 40. Sanitary Sewer Service Connection 41. Dual Sanitary Sewer Service Connection 42. Manhole Insert
XXXVI	Master Specification Sections Overview	Item A. Introduction – The new language has been incorporated: These Sections are intended to be used primarily for interceptor system projects.
XXXVI	01010 – Summary of Work	Item 1.6.B. - The following revisions have been incorporated: B. Contractor is responsible for coordinating access and obtaining written

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		authorization from all property owners to enter their sites.
XXXVI	01010 – Summary of Work	<p>Item 1.6.C.1 - The following new requirements have been incorporated:</p> <ol style="list-style-type: none"> 1. Housekeeping – The Contractor is responsible for the overall housekeeping within their work areas. <ol style="list-style-type: none"> a. All exit doors, electrical panels, fire extinguishers, emergency eyewash/showers must have clear access maintained for emergencies. b. Trash and debris must not accumulate nor impede travel on designated walkways. c. Weeds and grass must be maintained during the project by the contractor in their designated areas so as not to create fire hazard or harborage of vermin.
XXXVI	01010 – Summary of Work	<p>Item 1.6.D. - The following revisions have been incorporated:</p> <p>Contractor shall immediately move any stored materials or equipment under Contractor’s control that interfere with operations of the Owner, Locality, or property owner or are of public nuisance or potential harm to the public.</p>
XXXVI	01010 – Summary of Work	<p>Item 1.6.E. - The following new requirements have been incorporated:</p> <p>The Contractor shall not park, stage, or engage in any construction related activities on private property or outside of locality rights of way or HRSD easements without obtaining signed authorization from the property owner. The Contractor is responsible for securing all additional staging areas as required for the duration of the Contract. All costs, contingencies, permits, and agreements related to the acquisition and use of any proposed staging area shall be the Contractor’s responsibility. Contractor is responsible for preparation and restoration of areas used to the satisfaction of the property owner. Parking facilities for Contractor’s personnel shall also be the Contractor’s responsibility.</p> <ol style="list-style-type: none"> 1. The Contractor shall provide HRSD a listing of all property owners and locations the Contractor negotiated staging areas with and copies of such signed authorizations by the property owner. The referenced authorization shall include a detailed description of work to occur on the private property and an expectation of restoration of the property and photos of the conditions prior to entry. The Contractor shall provide this information to HRSD prior to entering the site.
XXXVI	01010 – Summary of Work	<p>Item 1.6.G.1 - The following new requirements have been incorporated:</p> <ol style="list-style-type: none"> 1. Security guards shall be provided if Treatment Plant gates are to be left open during normal work hours. The following are requirements and expectations of a security guard:

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		<ul style="list-style-type: none"> a. The Security Guard is expected to be alert and awake while guarding the open gate. b. The Security Guard is expected to check cars and trucks in and out of the plant site. c. If the Security Guard is not on duty the plant gate will be closed and secured. d. The Security Guard must turn unwanted site visitors away.
XXXVI	01010 – Summary of Work	<p>Item 1.9. “No Unauthorized Work” has been incorporated as follows.</p> <p>The Contractor shall not undertake additional or ‘side work’ not defined within the Contract Documents for residents or businesses as part of or during the active HRSD project, without explicit written authorization from HRSD’s Project Manager.</p>
XXXVI	01040 – Coordination	<p>Item 1.2.B. – The following revisions and new requirements have been incorporated:</p> <p>B. The Contractor shall coordinate with the Engineer and HRSD’s Project Manager regarding HRSD notifications by letter or door hangers within the designated distribution areas for all easement owners, property owners, residents, businesses, and facilities that may be affected by the construction operations.</p> <ul style="list-style-type: none"> 1. Contractor is responsible for coordinating schedule and shall provide a firm start schedule 45 calendar days prior to staging or entering the work site to allow for HRSD’s Community Relations Liaison to design all project notifications for the public. 2. Contractor to assist or distribute the HRSD, designed and approved, Project Introductory Notifications. Distribution of these notifications shall occur 30 calendar days in advance of any staging or commencement of work, to all easement owners, property owners, residents, businesses, and facilities that may be affected by the construction activities as within the project limits. The Contractor shall not be permitted to commence work until these distributions have been completed and confirmed by the Engineer or HRSD Project Manager. 3. Contractor shall for the entire duration of this project distribute project update notices (as designed and approved by HRSD) to all business, residence or facility within the upcoming work zone, 7 calendar days in advance of commencing work. The Contractor shall not be permitted to commence work until these distributions have been completed and confirmed by the Engineer or HRSD Project Manager. 4. Contractor will distribute Additional Notices (as designed and approved by HRSD) for work such as but not limited to:

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		<p>detours or street closures, service interruptions or shut offs, and night work a minimum of 48 hours prior to the scheduled work or as defined by the HRSD Community Relations Liaison. The Contractor shall not be permitted to commence work until these distributions have been completed and confirmed by the Engineer or HRSD Project Manager.</p> <ol style="list-style-type: none"> 5. Contractor shall distribute project closeout notices to all easement owners, property owners, residents and businesses that may be affected by the construction operations by letter or door hangers within the project limits. 6. Contractor shall notify the HRSD Project Manager and HRSD Community Relations Liaison of the scheduled dates for distributing each notice such that HRSD can perform timely website updates. 7. The Contractor shall keep a copy of each notice on site to provide or review with the public as needed.
XXXVI	01060 – Special Conditions	<p>Item 1.2.E.1. – The following revisions have been incorporated:</p> <ol style="list-style-type: none"> 1. Agenda will include, but will not necessarily be limited to, the following: <ol style="list-style-type: none"> a. Designation of responsible personnel. b. Subcontractors. c. Coordination with other Contractors. d. Contractor's preliminary Construction Schedule. Note – the preliminary construction schedule to be used for initial project information on HRSD’s construction web page. e. Use of Unifier Enterprise Project Management System and Enterprise Resource Planning (ERP). f. Preconstruction assessments and surveys g. Public Notifications: coordination of schedule, planning and confirmation of distributions (30 and 7 day notices, additional specialty notices- 48 hours, and project closeout notice). h. Personal/ Private Property Claims Process: notification and tracking; insurance update; and items discussed directly with the Contractor or Engineer’s Resident Project Representative. Note – Contractor must notify Engineer, HRSD Project Manager and HRSD Community Relations Liaison within 24 hours of knowledge of any incident. All claims are to be resolved by the Contractor within 60 days of the Contractor’s notification of the incident. i. Processing of Shop Drawings and distribution of Submittals. j. Processing of Requests for Information (RFI), Field

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		<ul style="list-style-type: none"> Orders, Work Change Directives, and Change Orders. k. Requirements for copies of Contract Documents. l. Processing and Schedule of Payments, Materials and Supplies. m. Use of premises. n. Land use agreements / signed authorizations obtained by Contractor o. Contractor’s safety responsibilities. p. Security q. Housekeeping. r. Field Offices. s. Record Drawings. t. Critical work sequencing. u. Develop emergency contact list for key individuals involved with project v. HRSD Operational Support Requirements w. Other project related items.
XXXVI	01060 – Special Conditions	<p>Item 1.3.F. – The following new requirements have been incorporated:</p> <p>F. Internet Service:</p> <ol style="list-style-type: none"> 1. The Contractor is responsible for obtaining at his own expense sufficient internet capabilities to enable daily and necessary email and electronic submittals or transmittals throughout the duration of this construction phase.
XXXVI	01060 – Special Conditions	<p>Item 1.4. – The following revisions have been incorporated:</p> <p>1.4 DOCUMENTATION OF SITE CONDITIONS <i>{Engineer to specify requirements in the Contract Documents for Contractor based upon their determination of project zone of construction activity influence and direction from HRSD’s Project Manager and Community Relations Liaison.}</i></p> <ol style="list-style-type: none"> A. Documentation of Site Conditions as detailed in this section shall be completed and submitted to the Engineer for upload to HRSD’s Unifier Enterprise Project Management System for review 30 calendar days prior to mobilizing to the work site. B. Contractor shall coordinate preconstruction photographing and video recording schedules with Owner, Engineer and <i>{insert jurisdictional owner as needed}</i>. C. Contractor shall coordinate with the Engineer the documentation, through photographs and video recording, the existing conditions of the project site and structures along the project route to include but not limited to: roadways, curb and gutter, medians, sidewalks, driveways and aprons, other utilities and structures within the construction activities zone. D. Photographs: <ol style="list-style-type: none"> 1. Digital preconstruction photographs of the project site. At a minimum, photographs are to be taken at each roadway intersection, all driveways, and a minimum of

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		<p>two pictures at the front of each property. Digital photos are to be labeled with the location, time and date that the photograph was taken.</p> <p>2.Furnish jump or external drive copy of digital photographs to the Engineer and Owner.</p> <p>E. Video Recording: <i>1. {Specify format on jump or external drive if applicable}</i></p> <p>F. Property / Structure preconstruction assessment and surveys. <i>{Engineer, HRSD Project Manager and Community Relations Liaison to determine if detailed structural assessment and documentation of visible defects to be required on certain projects or certain properties}</i></p> <p>1.Examination of Adjacent Facilities and Properties: <i>{Engineer to specify requirements for Contractor based upon direction from HRSD’s Project Manager and Community Relations Liaison}</i></p> <p>a. Before start of Work at the site, Contractor shall make a thorough examination of the existing conditions including buildings, structures and other improvements in the vicinity of the Work which could be damaged by construction activities. The Engineer or Engineer’s Resident Project Representative shall accompany the Contractor during this examination.</p> <p>b. Periodic reexamination shall be performed to include cracks in structures, settlement, leakage and similar conditions.</p> <p>c. Record and submit documentation of observations made during examination inspections to the Engineer.</p> <p>G. Vibration Monitoring Program. <i>{Engineer, HRSD Project Manager and Community Relations Liaison to determine if a detailed vibration monitoring program baseline is required for certain properties and active monitoring as construction is ongoing in the vicinity.}</i></p>
XXXVI	01060 – Special Conditions	<p>Item 1.5.F.1. – The following revisions have been incorporated:</p> <p>1. Agenda will include but not necessarily be limited to the following:</p> <p>a. Revisions and/or corrections to previous meeting summaries.</p> <p>b. Administrative Items.</p> <p>c. New agenda items to be discussed.</p> <p>d. Public notifications coordination, planning and confirmation of distributions (30 and 7 day notices, additional specialty notices- 48 hours, and project closeout notice).</p> <p>e. Land use agreements / signed authorizations obtained by Contractor.</p> <p>f. Public Relations Items: Property owner, jurisdictional or</p>

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		<p>other lodged complaints concerns or issues, discussed directly with the Contractor or Engineer’s Resident Project Representative.</p> <ul style="list-style-type: none"> g. Status of project related damage claims h. Updated overall construction schedule to completion for each progress meeting available for viewing and discussion. i. 30-day look ahead construction schedule. j. Progress since last meeting. k. Planned progress for next meeting and milestone work. l. Schedule assessment (delay or float). m. Discussion of potential obstacles or hindrances. n. Shop drawings and review of shop drawing log. o. Coordination with Owner and other Contractors. p. Project safety. q. Testing. r. Subcontractors. s. Other business and planned visitors. t. Confirmation of up to date As-Built drawings
XXXVI	01060 – Special Conditions	<p>Item 1.6.A. – The following revisions have been incorporated:</p> <p>A. Contractor shall coordinate with HRSD Project Manager and make satisfactory and acceptable arrangements with the owner of, or the agency or authority having jurisdiction over, any damaged property concerning its repair, replacement, or payment of costs incurred in connection with any damage.</p>
XXXVI	01060 – Special Conditions	<p>Item 1.10. – The following new requirements have been incorporated:</p> <p><i>D. {Insert any planned or known work or special events occurring within the project limits that may affect Contractor scheduling, at no additional cost to HRSD.}</i></p> <p><i>E. {Insert any time or date restrictions from any school on which work will occur on school property. When possible, this work shall occur while school is not in session, during overnight hours, weekends or school closures and holidays.}</i></p>
XXXVI	01270 – Measurement and Payment	<p>Item 1.1.C. – The previous paragraph that started with “Engineer’s estimated quantities for unit price pay items,...” has been deleted.</p>
XXXVI	01323 – Record Documents	<p>Item 1.1.D.4.b. – The following revisions have been incorporated:</p> <ul style="list-style-type: none"> b. Records kept in a digital spreadsheet containing X,Y,Z coordinates for top of pipe elevations at each joint and at all fittings, valves, air vents and connection points. Accuracy must be sub-foot for horizontal (X, Y) and 0.1’ for vertical (Z). An updated spreadsheet

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		must be provided with each Contractor pay application. The Digital spreadsheet shall be directly compatible with ArcGIS software without requiring any additional re-formatting, such as a Shapefile, Personal Geodatabase, File Geodatabase, or properly formatted Excel or CSV files.
XXXVI	01323 – Record Documents	Item 1.1.E.1.b. – The following new requirements have been incorporated: b. Final Record Drawings in the form of redlined plans shall be provided to the Engineer at the time a request for Final Inspection is made. 1) The final completion version digital spreadsheet containing X,Y,Z coordinates of the installed pipe and all appurtenances as detailed in Paragraph 1.1.D.4.b of this Section to be submitted as part of the Final Record Drawings submittal requirements.
XXXVI	01340 – Submittals	Item 1.2.C.2.n. – The following new requirements have been incorporated: n. X,Y,Z Table for buried pipe installation (submitted monthly with Contractor’s payment request).
XXXVI	01340 – Submittals	Item 1.4.C.6.b.1).d). – The following revisions have been incorporated: d) Utilize digital copies (in Excel format) of Exhibits C1, C2, and C3 to transmit the Equipment Record(s).
XXXVI	01340 – Submittals	<i>General Comment</i> – the Engineer to coordinate within this Technical Specification the need for and number of paper versions in addition to digital version submittals.
XXXVI	01520 – Maintenance of Pipeline Operations	Item 1.3.C.8. – The following revision has been incorporated: 8. Mobile phone contacts (local phone number) for Contractor personnel, HRSD key personnel, Locality operations personnel, and other identified key stakeholders.
XXXVI	02510 – Ductile Iron Pipe	Item 2.1.A.3. – The following revisions have been incorporated: 3. Lining Material: a. Induron Coatings, Inc., Protecto 401. b. Permox CTF c. TNEMEC Series 431
XXXVI	02510 – Ductile Iron Pipe	Item 2.2.A.2.f. – The following new requirement has been incorporated: f. Threaded bells shall not be used.
XXXVI	02531 – Line	Item 1.1.A. – The following new requirement has been incorporated:

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	Stops / Bypass on Sanitary Sewer Force Main Systems	Contractors shall utilize a qualified Line Stop subcontractor. Contractors shall not self-perform line stops.
XXXVI	02610 – Valves	Item 2.1.B.1.e. – The following revisions have been incorporated: e. U.S. Pipe Valve and Hydrant.
XXXVI	02610 – Valves	Item 2.2.B.1. – The following revisions have been incorporated: 1. Subject to compliance with the Contract Documents, the following manufacturers are acceptable: d. Clow. e. Mueller. f. M&H.
XXXVI	02710 – Contaminated Groundwater Management	Item 2.4.A. – The following revision has been incorporated: A. Information regarding the location and nature of known or suspected groundwater contamination from previous studies is provided to assist the Contractor in calculating the quantity and cost for managing contaminated groundwater during construction dewatering activities. <i>{Note to Engineer: make a recommendation on whether costs associated with the proper management of contaminated groundwater shall be included in the lump sum bid for this project, covered under an allowance, or included as specific unit price items in the Measurement and Payment section of the Bid Documents}.</i>