

Table of Contents

Section No.	Subject	Page No.
Forward	Chief Engineer’s Viewpoint	Forward
1.	Introduction	1-0
	I. Purpose	
	II. Expectations, Outcomes and Sustainability	
	III. Project Management	
	IV. Project Delivery Methods	
	V. Distribution	
	VI. Preparation of Design Documents	
	VII. Common Historical Issues in the Design and Construction Phase	
	VIII. Use of Autonomous Vehicles (AV)	
2.	Architectural and Landscaping Design and Review Process	2-0
	I. Introduction	
	II. Attachments	
	Attachment A – HRSD Facilities Architectural Guidelines.	A
	Attachment B – Aesthetics Consideration Log	B
	Attachment C – Address Sign Specification	C
	Attachment D – Safety Sign Specification for Buildings	D
	Attachment E – Landscaping Planting Plan Sample	E
3.	Use of Technical Memorandum for CIP Projects	3-0
	I. Introduction	
	II. Circumstances for Use	
	III. Approval for Use	
4.	Monthly Project Status Reporting	4-0
	I. Introduction	
	II. Content and Format for Engineering Service Invoice	
	III. Content and Format for Project Status Report	
	IV. Content and Format for Project Expenditure Tracking	
	V. Content and Format for Diversity Procurement Statement	
	VI. Attachments	
	Attachment A – Invoice Template	A
	Attachment B – HRSD Firm Progress Report Template	B
	Attachment C – Example Design Phase Expenditure Graph	C
	Attachment D – Diversity Procurement Statement Template (for use on non-capital project invoices)	D

Section No.	Subject	Page No.
5.	Capital Project Cost, Schedule, and Risk Reporting	5-0
	I. Introduction	
	II. FIRM's Responsibilities	
	III. Attachments	
	Attachment A – Project Budget and Schedule Estimate Report and OPCC Classification	A
	Attachment B – Project Risk Table	B
	Attachment C – Schedule Data Template	C
	Attachment D – Project Budget Estimating Template	D
6.	Drawings, Record Drawings, and Valve Guides	6-0
	I. Introduction	
	II. Drawings	
	III. Record Drawings	
	IV. Bid Documents	
	V. Valve Guides	
	VI. Standard Symbols	
7.	HRSD Building Information Model (BIM) Requirements	7-0
	I. Introduction	
	II. Level of Development (LOD) Tables	
	III. BIM Execution Plan	
	IV. Model File Creation	
	V. Shared Coordinates	
	VI. Family Creation	
	VII. Shared Parameter File	
	VIII. Contract Drawings	
8.	PER, Design, and Construction Submittal Requirements	8-0
	I. Introduction	
	II. Requirements for Submittals	
	III. Attachments	
	Attachment A – Major Submittals List	A
	Attachment B – Equipment Record Template (Excel)	B
	Attachment C – XYZ Spreadsheet	C
	Attachment D – Soil Corrosivity DB Template	D
	Attachment E – PER Minimum Required Table of Contents Chapters	E
	Attachment F – Interceptor Project GIS Deliverables Flow Chart	F
9.	Real Estate Acquisition and Plat Guidelines	9-0
	I. Introduction	

Section No.	Subject	Page No.
	II. Real Estate Schedule vs. Project Schedule	
	III. Acquisitions and Plats	
	IV. Design Engineer's Estimate	
	V. Justification Memorandum	
	VI. Phase 1, Environmental Site Assessment (ESA)	
	VII. Location Map	
	VIII. Demolition of Structures	
	IX. Attachment	
	Attachment A – Plat Template	A
	Attachment B – Project Acquisition Tracking Log	B
	Attachment C – Engineer's Estimate Template	C
	Attachment D - Sample – Justification Memo – Design Firm	
	Attachment E – Sample – Justification Memo – Real Estate Firm	D
	Attachment F – ESA Scope and Fee Template	E
	Attachment G – Sample – Phase 1 ESA	F
	Attachment H – Sample – Location Map	G
10.	Flood Elevation Requirements	10-0
	I. Introduction	
	II. Definitions	
	III. Locality Code Requirement	
	IV. Asset Protection Requirements	
	V. Locality Freeboard Requirements	
11.	Public Communication Program	11-0
	I. Introduction	
	II. Engage with Locality Staff	
	III. Alert Public Officials	
	IV. Identify Project Stakeholders	
	V. Participate in Public Open House/Community Meetings	
	VI. Virtual Presentation for Open House	
	VII. Establish a Project Webpage	
	VIII. Website Updates	
	IX. Stakeholder Updates	
	X. Distribute Project Introductory Notice to Neighbors	
	XI. Post Project Signs (If Applicable)	
	XII. Construction Updates Notices	
	XIII. Additional Notices	
	XIV. Post Variable Message Boards (VMB)	
	XV. Traffic Advisories/Media Releases	
	XVI. Response to Public and Media Inquiries	

Section No.	Subject	Page No.
	XVII.Attachments	
	Attachment A – Public Communication Program Checklist	A
	Attachment B – Stakeholders List Template	B
	Attachment C – Willingness to Hold Advertisement – Example	C
	Attachment D – Informational Open House Advertisement – Example	D
	Attachment E – Open House Notice to Public – Template	E
	Attachment F – Open House Requirements/Guidelines	F
	Attachment G – Open House Sign-In Sheet	G
	Attachment H – Open House Comment Card	H
	Attachment I – Open House Advertisement Submission Schedule	I
	Attachment J – Website- Project Webpage – Template	J
	Attachment K – Website- Project FAQs – Template	K
	Attachment L – Website Project Map – Template	L
	Attachment M – Stakeholders Notification Update – Template	M
	Attachment N – Project Introductory Notice – Template	N
	Attachment O – Project Sign – Template	O
	Attachment P – HRSD Project Site-Sign Specifications	P
	Attachment Q – HRSD Sign & Base Specifications – Product Sheet	Q
	Attachment R – Construction Update Notices – Template	R
	Attachment S – Emergency Repair Work Notice – Template	S
	Attachment T – Emergency Work-Pump and Haul Notice – Template	T
	Attachment U – CCTV Inspection Notice – Template	U
	Attachment V – CCTV Notice with Cleaning and Inspection – Template	V
	Attachment W – Initial Smoke Testing Notice – Template	W
	Attachment X – Reminder Smoke Testing Notice – Door Hanger – Template	X
	Attachment Y – Survey Notice – Template	Y
	Attachment Z – Survey Notices – Mailing and Tracking Log	Z
	Attachment AA – Lateral Work Notice – Template	AA
	Attachment BB – Boring Notice – Property Adjacent – Template	BB
	Attachment CC – Boring Notice – Property Access – Template	CC

Section No.	Subject	Page No.
	Attachment DD – Unplanned Power Interruption Notice – Template	DD
	Attachment EE – Unplanned Water/Sewer Service Interruption Notice – Template	EE
	Attachment FF – Project Closeout Notice – Template	FF
	Attachment GG – Media Release – Traffic Advisory Example	GG
12.	Preconstruction Assessments and Damage Mitigation Procedures	12-0
	I. Chief Engineer’s Introduction	
	II. Purpose and Process	
	III. Deliverables and Timing	
	IV. Stage 1 – Construction Impact Research and Evaluation	
	V. Stage 2 – Risk Mitigation Analysis and Recommendations	
	VI. Stage 3 – Pre-Construction Assessments, Construction Monitoring, Determination of Responsible Parties, and Bid Document Development	
	VII. Attachments	
	Attachment A – Sample - Noise and Vibration Generation and Impacts	A
	Attachment B – Sample - Noise and Vibration Generation and Impacts by Phase	B
	Attachment C – Sample – Dewatering Impacts	C
	Attachment D – Pre-Construction Conditions Assessment Communications and Contact Tracking Log	D
	Attachment E – Assessment of Pre-Existing Conditions – Right to Access Property Form	E
	Attachment F – Letter to Property Owner Template for Pre-Existing Conditions Assessment	F
	Attachment G – Preexisting Condition Assessment – Reporting Form – Template	G
	Attachment H – Sample – Precondition Assessment and Damage Mitigation Report	H
	Attachment I – Sample – Precondition Assessment Field Survey Report (excerpts)	I
	Attachment J – Template Waiver Request	J
	Attachment K – Precondition Assessment and Damage Mitigation Report Cover Sheet	K
	Attachment L – Precondition Assessment and Damage Mitigation Report – Table of Contents	L
	Attachment M – Excerpt Federal Transit Administration Vibration Impact Assessment 2018	M

Section No.	Subject	Page No.
	Attachment N – Excerpt Federal Transit Administration Noise Impact Assessment 2018	N
	Attachment O – Excerpt Federal Transit Administration Vibration Mitigation Assessment 2018	O
	Attachment P – Excerpt Federal Transit Administration Noise Mitigation Assessment 2018	P
	Attachment Q – Sample – Vibration Monitoring Program	Q
	Attachment R – Sample – Summary Assessment Memo for Public Use	R
13.	Coordination with Virginia DEQ for Certificate to Construction and Certificate to Operate	13-0
	I. Introduction	
	II. Approval CTC Process for State Water Quality Improvement Fund (WQIF) Projects	
	III. Abbreviated Administrative Process for Non-WQIF Projects	
	IV. Approval Process for Non-WQIF Projects that Involve Greater than 25% Capacity Increase or Decrease	
	V. Online Resources within DEQ for Approval Process	
	VI. Attachments	
	Attachment A – Sample Letter – Pressure Reducing Pumping Stations	A
	Attachment B – Sample Letter – Pumping Station Replacement	B
	Attachment C – Sample Letter – New or Replacement Pipeline	C
14.	Coordination of Preconstruction Phase Item	14-0
	I. Introduction	
	II. Coordination with Engineering Contract Specialist	
	III. Coordination with the Design and Construction Director and Project Manager	
	IV. Attachments	
	Attachment A – Sample Bid Recommendation Letter	A
15.	Preparation of and Format for Construction Addenda	15-0
	I. Introduction	
	II. Guidelines and Specific Requirements	
	III. Attachments	
	Attachment A – Addendum Template	A
16.	Preparation of and Format for Conformed Documents	16-0
	I. Introduction	

Section No.	Subject	Page No.
	II. Specifications	
	III. Drawings	
	IV. Format and Number of Conformed Documents	
17.	Tracking of Construction Phase Milestones and Performance Metrics	17-0
	I. Introduction	
	II. Completion and Submittal of Construction Milestones Tracking Form	
	III. Performance Metrics	
	IV. Attachments	
	Attachment A – Milestone Tracking Form	A
18.	Expectations for Construction Administration and Construction Inspection	18-0
	I. Introduction	
	II. Organization of This Section	
	III. General Expectations	
	IV. Preconstruction	
	V. General Procedures	
	VI. Tie-In, Shutdown and Diversion Procedures	
	VII. Line Stop Procedures	
	VIII. Trenchless Crossing Procedures	
	IX. Damage Assessment and Claims Procedures	
	X. Training	
	XI. Record Keeping	
	XII. Staffing	
	XIII. Verification	
19.	Use of Air Vent Proving Tool (“Whammy Rod”)	19-0
	I. Introduction	
	II. FIRM Responsibilities and Procedures	
20.	Condition Assessment Protocol	20-0
	I. Introduction	
	II. Pre-Planning Phase	
	III. PER and Design Phase	
	IV. Pipe Coupon Data Collection Form	
	V. Technical Specifications	
	VI. Condition Assessment Guidelines	
	VII. Attachments	
	Attachment A – Coupon Data Collection Form	A

Section No.	Subject	Page No.
21.	Regulatory Reporting Requirements for Spills	21-0
	I. Introduction	
	II. Procedures	
	III. Contact Information	
22.	HRSD Safety Programs	22-0
	I. Introduction	
	II. Safety Programs	
	III. Attachments	
	Attachment A – Asbestos Checklist	A
23.	VDOT 2026 Work Area Protection Manual (WAPM) 11.0 Requirements	23-0
	I. Introduction	
	II. Training Requirements for Construction Inspectors	
	III. Personal Protective Equipment (PPE) Requirements	
	IV. Attachments	A
	Attachment A – Personal Protective Equipment Requirements for Work Zone Operations	
24.	Pipelines and Appurtenances	24-0
	I. Introduction	
	II. General	
	III. Force Main	
	IV. Line Stops	
	V. Valves	
	VI. For exposed service applications	
	VII. For buried service applications	
	VIII. Gravity Interceptors and Manholes	
	IX. Attachments	
	Attachment A – Report of Hydrostatic Pressure Test	A
	Attachment B – As Built Asset Locations X, Y, Z Template	B
25.	Checklist for Line Stop Installations	25-0
	I. Introduction	
	II. Completion and Submittal of Checklist for Line Stop Installations	
	III. Attachments	
	Attachment A – Checklist for Line Stop	A
26.	Checklist for Tie-Ins to Existing Interceptor Force Mains	26-0
	I. Introduction	

Section No.	Subject	Page No.
	II. Completion and Submittal of “HRSD Checklist for Tie-Ins to Existing Interceptor Force Mains”	
	III. Attachments	
	Attachment A – Checklist for Tie-Ins	A
27.	Trenchless Crossing Installations	27-0
	I. Introduction	
	II. General Evaluation Criteria	
	III. Trenchless Pipe Installations	
	IV. Subsurface Investigations	
28.	Checklist for Trenchless Crossing Operations	28-0
	I. Introduction	
	II. Completion and Submittal of Checklist for Trenchless Crossing Operations	
	III. Attachments	
	Attachment A – HRSD Checklist for Trenchless Crossing Operations	A
29.	Rehabilitation of Sanitary Sewer Systems	29-0
	I. Introduction	
	II. General Evaluation Criteria	
	III. Sanitary Sewer System Rehabilitation	
30.	Deep Excavation Support Systems	30-0
	I. Introduction	
	II. Technical Codes, Standards, and Regulations	
	III. Excavation Support System Design	
	IV. Miscellaneous	
31.	Pump Stations	30-0
	I. Introduction	
	II. Description of Operations	
	III. General	
	IV. Site Issues and Layout	
	V. Masonry	
	VI. Equipment	
	VII. Conveying Systems	
	VIII. Mechanical	
	IX. Electrical & Instrumentation	
	X. Attachments	
	Attachment A – PS Substantial Completion Checklist	A
	Attachment B – Temporary Portable Pump Alarms	B

Section No.	Subject	Page No.
32.	Treatment Plants	32-0
	I. Purpose	
	II. Abbreviations	
	III. Sewage Treatment Design & Operation	
	IV. SWIFT Facilities Design & Operation	
	V. Solids Handling Design & Operation	
	VI. Access to Unit Processes and Equipment	
	VII. Sampling	
	VIII. Chemical Containment	
	IX. Chemical Feed Systems	
	X. Drain Systems	
	XI. Emergency Eyewash and Showers	
	XII. Equipment Numbering Sequences	
	XIII. Equipment Spare Parts	
	XIV. Miscellaneous Pump Items	
	XV. Noise Abatement for Installed Stationary Equipment	
	XVI. Non-Potable Water Systems	
	XVII. Odor Control and Room Ventilation	
	XVIII. Pipe Insulation & Heat Tracing	
	XIX. Primary and Secondary Clarifiers	
	XX. Process Air Piping	
	XXI. Process Flow Splitting	
	XXII. Scum Handling, Piping and Pumping	
	XXIII. Grit, Septage and Grease, and Biosolids	
	XXIV. Site Lighting	
	XXV. Slide and Sluice Gates	
	XXVI. Solids Piping	
	XXVII. Travel Path (Walkway) Alignment	
	XXVIII. Yard Piping	
	XXIX. Functional Descriptions	
	XXX. Operational Technical Information System (OTIS)	
	XXXI. Equipment Startup, Training, and Turnover	
	XXXII. Flow Metering	
33.	Electrical and Instrumentation	33-0
	I. Introduction	
	II. General	
	III. Pump Station and Interceptor Systems	
	IV. Treatment Plant	
	V. Quick Manufacturers Reference Guide	
	VI. Attachments	
	Attachment A – Arch Flash Mitigation & Power Study Specifications	A

Section No.	Subject	Page No.
	Attachment B – Load Bank Connections	B
	Attachment C – Variable Frequency Drive Specs.	C
	Attachment D – Lighting Policy	D
	Attachment E – HRSD Electric Motor Specifications	E
	Attachment F – Temporary Portable Pump Alarms & Setup Standards	F
	Attachment G – SCADA Site Drawings	G
	Attachment H – SWIFT Requirements	H
	Attachment I – Ductbank Directions	I
	Attachment J – Dominion Energy Coordination	J
	Attachment K – SCADA Flowchart	K
	Attachment L – Remote Switch Operator	L
	Attachment M – Remote Open-Close Operator Panel	M
	Attachment N – Ultrasonics Technical Information	N
	Attachment O – Limitorque	O
	Attachment P – Waterpilot FMX-21 Technical Information	P
	Attachment Q – Strategic Automation Configuration Guide	Q
	Attachment R – Controlwave & Telog Wiring Details	R
	Attachment S – Solids Treatment Processes	S
	Attachment T – Wet Well Pump Wiring Electrical Backboard Detail	T
	Attachment U – Antenna Installation Detail	U
	Attachment V – Intrinsic Safety Panel Details	V
	Attachment W – Actuator Vault Electrical Backboard Detail	W
	Attachment X – Wet Well Instrumentation Installation Detail	X
	Attachment Y – Collections Systems	Y
	Attachment Z – Liquid Streaming	Z
	Attachment AA – Hydrogen Sulfide Mitigation for Electrical Room	AA
	Attachment BB – Backup Battery Systems	BB
	Attachment CC – Cable Routing Disconnect	CC
	Attachment DD – Manufacturers List	DD
	Attachment EE – Conductors Colors	EE
34.	IT Infrastructure Hardware and Third-Party System Integration	34-0
	I. Introduction	
	II. General	
	III. OT Cybersecurity Requirements	
	IV. Attachments	
	Attachment A – IT Infrastructure Hardware Guidelines	A

Section No.	Subject	Page No.
	Attachment B – Third-Party Control Network Integration Guidelines	B
	Attachment C – Operational Technology (OT) Cybersecurity Standards	C
	Attachment D – Operational Technology (OT) Cybersecurity Standards Supporting Guidance	D
	Attachment E – Physical Security Infrastructure Standards	E
35.	Miscellaneous	35-0
	I. Introduction	
	II. Site	
	III. Concrete	
	IV. Masonry	
	V. Metals and Plastics	
	VI. Thermal and Moisture Protection	
	VII. Doors and Hardware	
	VIII. Painting and Coatings	
	IX. Architectural / Structural	
	X. Interior Finishes	
	XI. Miscellaneous Accessories	
	XII. Attachments	
	Attachment A – Door Typical Drawings	
36.	Standard for Capital Improvement Projects that Involve Construction Dewatering Activities	36-0
	I. Introduction	
	II. Background	
	III. Requirements	
	IV. Receiving Sewer System	
	V. Contacts	
	VI. Attachments	
	Attachment A – Anticipated Schedule from Initial Investigation to General Permit Acquisition	A
	Attachment B – Contaminated Identification Table	B
37.	Standard Details	37-0
	I. Introduction	
	II. Listing of Standard Details	
	Attachment A – 100 Series	A
	Attachment B – 200 Series	B
	Attachment C – 300 Series	C
	Attachment D – 400 Series	D

Section No.	Subject	Page No.
	Attachment E – 500 Series	E
	Attachment F – 600 Series	F
	Attachment G – 700 Series	G
38.	Suggested Division 1 Items	38-0
	I. Introduction	
	II. Table of Division 1 Items for FIRM Consideration	
39.	Front End Documents	39-0
	I. Introduction	
	II. Responsibilities of the FIRM	
	III. Standard Front-End Documents	
	IV. Specific Documents Requiring FIRM Input	
	V. Attachments	
	Attachment A – EJCDC 2018 Front End Documents	A
	Attachment B – Table of Contents	B
	Attachment C – Tax Exemption Procedure for Pollution Control Equipment	C
40.	Construction Administration Forms/Format	40-0
	I. Introduction	
	II. Contract Administration Forms	
41.	Master Specification Sections Overview	41-0
	I. Introduction	
	II. Listing of Master Specification Sections	
42.	VDEQ Project Funding	42-0
	I. Introduction	
	II. Program Compliance	
	III. DEQ Final Inspection/Evaluation Items	
	IV. Checklists	
	Checklist A – Categorical Exclusion Checklist: HRSD Project Manager and/or Engineer	
	Checklist B – Preliminary Engineering Report for Conveyance Projects	
	Checklist C – Preliminary Engineering Report for Treatment Projects	
	Checklist D – Plans and Specifications: HRSD Contract Specialist	
	Checklist E – Map to Closing: HRSD Project Manager	
	Checklist F – Checklist for Project Completion and Final Disbursement	

