

HRSD Design and Construction Standards - January 2021

Table of Contents

Section No.	Subject	Page No.
Forward	Engineering Director's Viewpoint	Forward
1.	Introduction	1-1
	A. Purpose	
	B. Expectations, Outcomes and Sustainability	
	C. Project Delivery Methods	
	D. Distribution	
	E. Preparation of Design Documents	
	1. General Requirements	
	2. Study and Preliminary Engineering Report (PER)	
	3. Project Manual (Contract Requirements, Technical Specifications and Construction Drawings)	
	F. Common Historical Issues in the Design and Construction Phase	
	1. Design Phase	
	2. Construction Phase	
	G. Use of Autonomus Vehicles (AV)	
2.	Architectural and Landscaping Design and Review Process	2-1
	A. Introduction	
	B. HRSD Architectural Review Committee (ARC)	
	C. Attachments	
	Attachment A - Pump Station 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	3-1
	A. Introduction	
	B. Circumstances for Use	
	C. Approval for Use	
4.	Monthly Project Status Reporting	4-1
	A. Introduction	
	B. Content and Format for Project Status Report (Part 1)	
	C. Content and Format for Project Expenditure Tracking (Part 2)	
	Exhibit A – FIRM Progress Report Template	
	Exhibit B – Project Expenditure Tracking Template	
5.	Capital Project Cost, Schedule and Risk Reporting	5-1
	A. Introduction	
	B. Professional Services Firm (FIRM) Responsibilities	

Section No.	Subject	Page No.
	C. Exhibit A - Project Cost, Schedule and Risk Example Report	
	D. Exhibit B - OPCC and AACE Classification Report	
6.	Drawings, Record Drawings, and Valve Guides	6-1
	A. Introduction	
	B. Drawings	
	C. Record Drawings	
	D. Bid Documents	
	E. Valve Guides	
	Exhibit A: Valve Guide Format and Examples	
7.	HRSD Building Information Model (BIM) Requirements	7-1
	1.0 Introduction	
	2.0 Level of Development (LOD) Tables	
	3.0 BIM Execution Plan	
	4.0 Model File Creation	
	5.0 Shared Coordinates	
	6.0 Family Creation	
	7.0 Shared Parameter File	
	8.0 Contract Drawings	
8.	PER, Design, and Construction Submittal Requirements	8-1
	A. Introduction	
	B. Requirement for Submittals	
	1. Format for Digital Files	
	2. Seamless AutoCAD Files	
	3. Interim Record Drawings	
	4. Interim Valve Guides	
	5. Final Record Drawings	
	6. Final Valve Guides	
	7. Shop Drawings	
	8. Operation and Maintenance (O&M) Manuals	
	9. Conformed Documents	
	Attachment A – Summary of Major Submittals to HRSD	A
	Attachment B – Equipment Record Template (Excel)	B
9.	Real Estate Acquisition and Plat Guidelines	9-1
	A. Introduction	
	B. Real Estate Schedule vs. Project Schedule	
	C. Easements	
	Exhibit A – Real Estate Schedule vs. Project Schedule	
	Attachment A – HRSD Project Acquisition Tracking Log	A
	Attachment B – Plat Template	B

Section No.	Subject	Page No.
10.	Flood Elevation Requirements	10-1
	A. Introduction	
	B. Definitions	
	C. Locality Code Requirement	
	D. Steps for Determining Construction Elevation	
	E. Elevation Requirement Example	
11.	Public Participation Program	11-1
	A. Introduction	
	B. Public Participation Program	
	1. Engage with Locality Staff	
	2. Identify Project Stakeholders	
	3. Participate in Public Open House / Community Meetings	
	4. Alert Public Officials	
	5. Distribute Project Introductory Notice to Neighbors	
	6. Post Project Signs	
	7. Post Variable Message Boards (VMB)	
	8. Establish Project Website	
	9. Issue Media Releases	
	10. Response to Public and Media Inquires	
	11. Provide Project Updates	
	12. Coordination with Locality Public Information Staff	
	Attachment A - Public Participation Program – Project Manager Checklist	A
	Attachment B - Stakeholders List Template	B
	Attachment C - Sample – Willingness to Hold	C
	Attachment D - Sample - Public Meeting Advertisement	D
	Attachment E - Open House Notice to Public Template	E
	Attachment F - Public Meeting Requirements	F
	Attachment G - Sample - Project Sign-In Sheet	G
	Attachment H - Sample - Project Comment Sheet	H
	Attachment I - Advertisement Submission Schedule	I
	Attachment J - Project Introductory Notice to Neighbors – Template	J
	Attachment K – Project Introductory Notice to Neighbors (30 day) Door Hanger Template	K
	Attachment L - Sample – CIP Project Sign	L
	Attachment M - Sample - HRSD Sign Specifications	M
	Attachment N - HRSD Sign and Base Specifications	N
	Attachment O - New Project Webpage – Template	O
	Attachment P - New Project FAQs – Template	P
	Attachment Q - New Project Map - Template	Q

Section No.	Subject	Page No.
	Attachment R - Wet Weather/Locality Program Neighborhood Map - Template	R
	Attachment S - Sample – Media Release – Traffic Advisory	S
	Attachment T - Sample – Media Cards (Media/Project Inquiries)	T
	Attachment U - Sample - Website Update (Unifier)	U
	Attachment V - Construction Update Notices – Template	V
	Attachment W - Construction Update Notices – Door Hanger Template	W
	Attachment X - CCTV Inspection Notice to Neighbors - Template	X
	Attachment Y - CCTV Cleaning and Inspection Notice to Neighbors - Template	Y
	Attachment Z - Smoke Testing Notice - Template	Z
	Attachment AA – Smoke Testing Notice – Door Knob Hanger Template	AA
	Attachment BB - Survey Notice to Neighbors - Template	BB
	Attachment CC - Reminder Notice to Neighbors (one week/48 hours) - Template	CC
	Attachment DD - Reminder Notice to Neighbors (day of work) - Template	DD
	Attachment EE - Completed Work Notice to Neighbors - Template	EE
	Attachment FF - Project Closeout Notice - Template	FF
	Attachment GG - Survey Notices – Mailing and Tracking Log – Template	GG
	Attachment HH - Stakeholder Email Update - Template	HH
12.	Preconstruction Assessments and Damage Mitigation Procedures	12-1
	A. Introduction	
	B. Organization of Section	
	1. Stage 1 – Construction Impact Research and Evaluation	
	a. Research and Investigations during Design Phase	
	b. Determinations during the Design Phase	
	c. Potential of Construction Related Impacts	
	i. Noise Generation and Impacts	
	ii. Vibration Impacts	
	iii. Dewatering Impacts on Ground and Structure Settlement	
	iv. Construction Impacts on Existing Topography, Hard Surfaces, Hydrology, and Construction Travel Routes	

Section No.	Subject	Page No.
	v. Dust, Odor, and Other Emissions Beyond Construction Zone	
	vi. Jurisdictional Limitations, Requirements, or Ordinances	
	d. Determination of construction zone of influence for all potential construction related impacts	
	2. Stage 2 – Risk Mitigation Analysis and Bid Document Development for Contractor Actions	
	a. Noise Impacts, Restrictions, and Abatement	
	b. Vibration Impacts, Abatement, and Monitoring	
	c. Groundwater Dewatering Requirements	
	d. Pre-Construction Surveys and Assessments within Construction Corridors and Impact Areas	
	e. Fugitive Emissions Controls and Restrictions	
	3. Stage 3 – Specific Pre-Construction Field Surveys and Construction Activity Monitoring Programs	
	a. Responsibilities of the FIRM	
	b. Responsibilities of the Contractor	
	c. Identification of Other Party Responsibilities	
	Attachment A - Sample – Vibration Generation and Impacts (diagram and impact table) / Noise and Vibration Impacts (combined map)	A
	Attachment B - Sample – Noise Generation and Impacts (diagram and impact table)	B
	Attachment C - Sample – Dewatering Impacts	C
	Attachment D - Pre-Construction Conditions Assessment Communications and Contact Tracking Log Template	D
	Attachment E - Right to Access Property Form Template	E
	Attachment F - Assessment of Pre-Existing Conditions Request Letter Template	F
	Attachment G - Pre-Existing Condition Assessment Reporting Form Template	G
13.	Coordination with Virginia DEQ for Certificate to Construction and Certificate to Operate	13-1
	A. Introduction	
	B. Approval CTC Process for State Water Quality Improvement Fund (WQIF) Projects	
	C. Abbreviated Administrative Process for Non-WQIF Projects	
	D. Approval Process for Non-WQIF Projects that Involve Greater than 25% Capacity Increase or Decrease	
	E. Relocation, Replacement-In-Kind, Maintenance or Emergency Projects	

Section No.	Subject	Page No.
	F. Online Resources within DEQ for Approval Process Exhibits A thru D – Template Letters to DEQ	
14.	Coordination of Preconstruction Phase Issues	14-1
	A. Introduction	
	B. Coordination with Engineering Contract Specialist	
15.	Preparation of and Format for Construction Addenda	15-1
	A. Introduction	
	B. Guidelines and Specific Requirements	
	C. Exhibit A - Addendum Template	
16.	Preparation of and Format for Conformed Documents	16-1
	A. Introduction	
	B. Specifications	
	C. Drawings	
	D. Format and Number of Conformed Documents	
17.	Tracking of Construction Phase Milestones and Performance Metrics	17-1
	A. Introduction	
	B. Completion and Submittal of Construction Milestone Tracking Form	
	C. Performance Metrics	
	Attachment A - Active Construction Project Tracking Form	A
18.	Expectations for Construction Administration and Construction Inspection	18-1
	A. Introduction	
	B. Organization of Section	
	C. General Expectations	
	D. Preconstruction	
	E. General Procedures	
	F. Tie-In, Shutdown, and Diversion Procedures	
	G. Line Stop Procedures	
	H. Trenchless Crossing Procedures	
	I. Damage Assessment and Claims Procedures	
	J. Training	
	K. Record Keeping	
	L. Staffing	
	M. Verification	
19.	Use of Air Vent Proving Tool	19-1
	A. Introduction	

Section No.	Subject	Page No.
	B. FIRM Responsibilities and Procedures	
20.	Condition Assessment Protocol	20-1
	A. Introduction	
	B. Condition Assessment During PER Phase	
	C. Condition Assessment During Design Phase	
	D. Technical Specifications	
	E. Data Collection Forms	
21.	Regulatory Reporting Requirements for Spills	21-1
	A. Introduction	
	B. Procedures	
	C. Contact Information	
22.	HRSD Safety Programs	22-1
	A. Introduction	
	B. Safety Programs	
	1. Hazard Communication Program	
	2. Hot Work Permit Program	
	3. Lock Out / Tag Out Program	
	4. Confined Space Entry Program	
	5. Plant Access Procedures for Contractors	
	6. NFPA 70E	
	7. Fall Protection	
	8. Correction of Safety Issues	
	9. Excavations and Trenching	
	10. Fire Protection Systems	
	11. Housekeeping	
	12. Outside Contractor Briefing	
	13. Asbestos Awareness Program	
	14. Weapons Policy	
	15. Use of HRSD Equipment	
	Attachment A - Asbestos Checklist	A
23.	VDOT 2011 Work Area Protection Manual (WAPM) Requirements	23-1
	A. Introduction	
	B. Training Requirements for Construction Inspectors	
	C. Personal Protective Equipment (PPE) Requirements	
24.	Pipelines and Appurtenances	24-1
	A. Introduction	
	B. General	
	1. Design Specifics	

Section No.	Subject	Page No.
	2. Corrosion Prevention	
	3. Protective Linings	
	4. Bid Document Development	
	C. Force Mains	
	1. Design Specifics	
	2. Hydrostatic Pressure Test Procedures	
	D. Line Stops	
	1. Guidelines for Use	
	2. Design Considerations	
	3. Qualifications to be Incorporated Into Bid Documents	
	4. Liquidated Damages	
	E. Valves	
	1. Gate Valves and Plug Valves	
	2. Disposition of Existing Inline Valves to be Abandoned	
	3. Automatic Air Release Valves	
	F. Gravity Interceptors and Manholes	
	Attachment A – Report of Hydrostatic Pressure Test	A
25.	Checklist for Line Stop Installations	25-1
	A. Introduction	
	B. Completion and Submittal of Checklist for Line Stop Installations	
	Attachment A – Checklist for Line Stop Installation Form	A
26.	Checklist for Tie-Ins to Existing Interceptor Force Mains	26-1
	A. Introduction	
	B. Completion and Submittal of Checklist for Tie-Ins to Existing Interceptor Force Mains	
	Attachment A - HRSD Checklist for Tie-Ins to Existing Interceptor Force Mains	A
27.	Trenchless Crossing Installations	27-1
	A. Introduction	
	B. General Evaluation Criteria	
	C. New Trenchless Pipe Installations	
	1. Horizontal Directional Drilling (HDD)	
	2. Jack & Bore and Microtunneling	
	3. Ground Penetrating Radar (GPR) Use	
28.	Checklist for Trenchless Crossing Operations	28-1
	A. Introduction	
	B. Completion and Submittal of Checklist for Trenchless Crossing Operations	

Section No.	Subject	Page No.
	Attachment A – HRSD Checklist for Trenchless Crossing Operations	A
29.	Rehabilitation of Sanitary Sewer Systems	29-1
	A. Introduction	
	B. General Evaluation Criteria	
	C. Sanitary Sewer System Rehabilitation	
	1. Cleaning	
	2. Closed-Circuit Television Video (CCTV)	
	3. Diversion Pumping	
	4. Gravity Sewer Rehabilitation	
	a. Cured In Place Pipe (CIPP)	
	b. Folded and Reformed Liners	
	c. Formed In Place Pipe (FIPP)	
	d. Sliplining	
	e. Pipe Bursting	
	5. Lateral Reinstatement	
	6. Manhole Rehabilitation	
	7. Post Construction & Rehabilitation Evaluation for Gravity Sewer Mains and Manholes	
30.	Pump Stations	30-1
	A. Introduction	
	B. Description of Operations	
	1. Wet Well Pump Station	
	2. Pressure Reducing Station	
	C. General	
	D. Site Issues and Layout	
	E. Masonry	
	F. Equipment	
	G. Conveying Systems	
	H. Mechanical	
	I. Electrical & Instrumentation	
	Attachment A - Pump Station Substantial Completion Checklist	A
	Attachment B - Temporary Portable Pump Alarms and Setup Standards	B
31.	Treatment Plants	31-1
	A. Purpose	
	B. Abbreviations	
	C. Sewage Treatment Design and Operation	
	D. Solids Handling Design and Operation	
	E. Access to Unit Processes and Equipment	

Section No.	Subject	Page No.
	F. Sampling	
	G. Chemical Containment	
	H. Chemical Feed Systems	
	I. Drain Systems	
	J. Emergency Eyewash and Showers	
	K. Equipment Numbering Sequences	
	L. Equipment Spare Parts	
	M. Miscellaneous Items	
	N. Noise Abatement	
	O. Non-Potable Water Systems	
	P. Odor Control and Room Ventilation	
	Q. Pipe Insulation and Heat Tracing	
	R. Primary and Secondary Clarifiers	
	S. Process Air Piping	
	T. Process Flow Splitting	
	U. Scum Handling, Piping and Pumping	
	V. Grit, Septage and Grease, and Biosolids	
	W. Site Lighting	
	X. Slide and Sluice Gates	
	Y. Solids Piping	
	Z. Travel Path (Walkway) Alignment	
	AA. Yard Piping (Greater than 24 Inch in Diameter)	
	BB. Functional Descriptions	
	CC. Operational Technical Information System (OTIS)	
	DD. Equipment Startup, Training, and Turnover	
	EE. Flow Metering	
32.	Electrical and Instrumentation	32-1
	A. Introduction	
	B. General	
	C. Pump Station and Interceptor Systems Table	
	D. Treatment Plant Table	
	Exhibit A “HRSD Arc Flash Mitigation Workshop”	
	Exhibit B “Load Bank Connections”	
	Exhibit C “Variable Frequency Drive”	
	Exhibit D “HRSD Lighting Guidelines”	
	Exhibit E “HRSD Electric Motor Specifications”	
	Exhibit F “Stilling Well for Level Transducer Pumping Stations or Treatment Plants”	
	Exhibit G “Temporary Portable Pump Alarms and Setup Schedule”	
	Exhibit H “SCADA / MMP Site”	
	Exhibit I “Future SWIFT Design”	

Section No.	Subject	Page No.
	Attachment A – Electrical Standards Update Summary	A
33.	Information Technology Infrastructure Hardware	33-1
	A. Introduction	
	B. General	
	C. Specific Requirements	
34.	Miscellaneous	34-1
	A. Introduction	
	B. Site	
	1. Site Drainage	
	2. Landscaping	
	3. Plant Material	
	4. Concrete Curb and Gutter	
	5. Sidewalks	
	C. Concrete	
	D. Masonry	
	E. Metals and Plastics	
	1. Hand / Guard Rails and Stair Systems	
	2. Hatches	
	3. Grating	
	F. Thermal and Moisture Protection	
	1. Roofing	
	G. Doors and Hardware	
	1. General	
	2. Pump Stations	
	3. Treatment Plants	
	H. Painting and Coatings	
	1. Painting and Coating Systems	
	2. Piping and Equipment Identification	
	3. Limits of Coatings in Covered Tanks	
	4. Pump Stations	
	I. Architectural / Structural	
35.	Standard for Capital Improvement Projects that Involve Construction Dewatering Activities	35-1
	A. Introduction	
	B. Background	
	C. Requirements	
	D. Receiving Sewer System	
	E. Contacts	
	Attachment A – Anticipated Schedule from Initial Investigation to General Permit Acquisition	A

Section No.	Subject	Page No.
	Attachment B – Contaminated Identification Table	B
36.	Standard Details	36-1
	A. Introduction	
	B. Listing of Standard Details	
	1. Series 100: Miscellaneous	Series 100 Details
	100 - Standard Cover Sheet	
	101 - Exterior Bollard Detail	
	102 - Bollard Location Detail	
	103 - Load Test Hinged Bank Box	
	104A/B - Flush-mount Groundwater Monitoring Well	
	105 - Recovery Sheet Template	
	2. Series 200: Collection Systems and Appurtenances	Series 200 Details
	200A/B - Precast Concrete Manhole with Extended Monolithic Base	
	201 - Precast Concrete Shallow Manhole with Extended Base	
	202A/B - Sanitary Sewer Straddle Manhole	
	203 - Connection into Existing Manholes	
	204 - Manhole Invert Shaping	
	205 – Precast Concrete or Brick Manhole Inside Gravity Drop Connection to Existing Manhole	
	206 – Precast Concrete Outside Drop Manhole	
	207 - Precast Concrete or Brick Manhole Inside Force Main Drop Connection to Existing Manhole	
	208 – Precast Concrete Sanitary Sewer Manhole Adjustment	
	209 - Manhole Insert	
	226 – Service Lateral and Gravity Main Connection to Existing Stub-out	
	227 - Standard Manhole Frame and Cover	
	228 - Manhole Frame and Cover – Watertight	
	229A/B – Sanitary Sewer Lateral Installation	
	230 – Sanitary Sewer Service Connection for New Developments or Existing Gravity Mains	
	231 – Sanitary Service Lateral Deactivation	
	232 – Alternate Service Lateral Connection to Existing Gravity Sewer Main	
	233 – Permanent Sewer Lateral Deactivation at HRSD Manhole	
	251 – Sanitary Sewer Service Clean Out Frame and Cover (Non-Traffic Rated)	

Section No.	Subject	Page No.
	252 – Sanitary Sewer Service Clean Out Frame and Cover (Traffic Rated)	
	253 – Tracer Wire Locator Box	
	276 – Vacuum Air Intake Valve	
	277 – Lateral Connection to Existing Vacuum Valve Pit	
	278 – Vacuum System Division Valve	
3.	Series 300: Interceptors and Appurtenances	Series 300 Details
	300 - Connection to Existing HRSD Valve (No Potential for Additional Development)	
	301 - Connection to Existing HRSD Valve (Additional Development is Possible)	
	302 - Connection to Existing HRSD Valve (Additional Development is Imminent)	
	303 – New Wet Taps (No Potential for Additional Development)	
	304 – New Wet Taps (Additional Development is Possible)	
	305 – New Wet Taps (Additional Development is Imminent)	
	306A – 2” Private Force Main Connection to Existing 2” HRSD Force Main Stub	
	306B – Valve Vault for 2” HRSD Valve	
	306C – Vault Lid for 2” HRSD Valve	
	307 – Lawnes Point Private Connection Detail	
	308 – Private Force Main to HRSD Asset	
	309 – New Grinder Pit Connection to Existing HRSD Force Main	
	326 – Horizontal Gate Valve	
	327 – Vertical Gate Valve	
	328 - Valve Box and Riser for Mainline Valve	
	329 – Valve Box and Riser for Bypass Valves	
	330 – Valve Riser Adjustment	
	331A/B - Roadside Ditch – Valve Box	
	332 – Tracer Wire Locator Box	
	351 – Manual Air Vent	
	352A/B - Air Release Valve Box Adjustment	
	353 - Roadside Ditch – Air Vent	
	354 - Air Vent Frame and Cover	
	355 – Standard Air Vent Detail for Future Automatic Air Release Valves	
	376 - Tapping Saddle for Cast Iron, Ductile Iron, Reinforced Concrete and PVC Pipes	
	377 - Tapping Saddle for Concrete Cylinder Pipe	
	378A/B - Steel Casing Detail	

Section No.	Subject	Page No.
	379 - Ductile Iron MJ Spigot to Concrete Transition Adapter (Male)	
	380 - Ductile Iron MJ Spigot to Concrete Transition Adapter (Female)	
	381 - Pressure Sensor Installation	
	382 - Concrete Cylinder Pipe Line Stop Detail	
	383 - Ductile / Cast Iron Line Stop Detail	
	4. Series 400: Pump Stations and PRS	Series 400 Details
	400A/B - Small Communities Sample Design Detail - Submersible Pump Station	
	401A/B - Underground Storage Tank	
	402A/B - Underground Fuel Tank	
	5. Series 500: Cathodic Protection for Pipes	Series 500 Details
	500A/B - Cathodic Protection Test Station and Terminal Board Wiring	
	501 - Cathodic Protection Isolation Detail	
	502 - Anode Test Station	
	503 - Monitoring Test Station	
	504 - Monitoring Test Station (with Riser)	
	505 - Isolation Flange Test Station	
	506 - Isolation Flange Test Station (with Riser)	
	507 - Anode Header Cable Splice - Wye Type	
	508A - Typical Thermite Weld Procedures on Bonding Plate	
	508B - Typical Royston Handy Cap IP™ Installation	
	509 - Isolating Flange Kit	
	510 - Typical Bonding Plate	
	511 - Copper Wire to Pipe Pin Brazing Procedures	
	521 - Ductile Iron Pipe Galvanic System AC Ground Mat	
	522 - Ductile Iron Pipe Galvanic System Insulating Corporation	
	523 - Ductile Iron Pipe Galvanic System Main Bonding	
	6. Series 600: Cathodic Protection for Buildings	Series 600 Details
	600 - Installation of Discrete Galvanic Anodes	
	601 - Installation of Distributed Galvanic Anodes	
	602 - Distributed Galvanic Anodes at Top of Wall	
	603 - Installation of Drilled-in Galvanic Anodes	
	604 - Conductive Mortar Bridge for use with High Resistivity Repair Mortars	
	605 - Typical Galvanic Anode Layout	
	606 - Typical Galvanic Anode Connections	

Section No.	Subject	Page No.
	626 – Removal of Unsound Concrete Typical Section	
	627 – Concrete Rebuild Typical Section	
	628 – Concrete Rebuild to Provide Minimum Cover Typical Section	
	629 – Removal of Unsound Concrete Typical Corner Section	
	630 – Concrete Rebuild Typical Corner Section	
	631 – Reinforcing Section Loss Table	
	632 – Lap Splice – Option 1	
	633 – Lap Splice Lengths – Option 1	
	634 – Mechanical Splice – Option 2 Typical Removal Section	
	635 – Mechanical Splice – Option 2 Typical Rebuild Section	
	636 – Weld Splice – Option 3	
	637 – Weld Splice Details A – Option 3	
	638 – Weld Splice Details B – Option 3	
	639 – Supplemental Reinforcement Requirements	
	640 – Adhesive Grouted Dowel Layout	
	641 – Typical Concrete Rebuild Section at Embed Plate	
	642 – Shallow Depth (2” Max) Concrete Rebuild Horizontal	
	643 – Shallow Depth (2” Max) Concrete Rebuild Vertical	
	644 – Partial Depth Core Hole Concrete Rebuild	
	645 – Full Depth Core Hole Concrete Rebuild	
	646 A/B – Typical Spall Repair with Exposed Reinforcing Steel	
	651 – Typical Sealant Details	
37.	Suggested Division 1 Items	37-1
	A. Introduction	
	B. Table of Division 1 Items for FIRM Consideration	
38.	Front End Documents	38-1
	A. Introduction	
	B. Responsibilities of the FIRM	
	C. Standard Front End Documents	
	1. Project Specification Cover	
	2. Table of Contents	
	3. Advertisement for Bids	
	4. Instruction to Bidders	
	5. Questionnaire	
	6. Bid Bond	
	7. Agreement	
	8. Performance Bond	
	9. Payment Bond	
	10. Escrow Agreement	

Section No.	Subject	Page No.
	11. General Conditions of the Construction Contract	
	12. Supplementary Conditions	
	D. Specific Documents Requiring FIRM Input	
	1. Advertisement for Bid	
	2. Instructions to Bidders	
	3. Agreement	
	4. Supplementary Conditions	
	Attachment A – EJCDC Front End Documents (PDF)	A
39.	Construction Administration Forms/Format	39-1
	A. Introduction	
	B. Contract Administration Forms	
	1. Sample Bid Recommendation Letter	A
	2. Notice of Award	B
	3. Notice to Proceed	C
	4. Emergency Contact List	D
	5. Field Order	E
	6. Request for Proposal	F
	7. Work Change Directive	G
	8. Change Order	H
	9. Application for Payment	I
	a. Summary Sheet	
	b. Schedule of Values – Lump Sum	
	c. Schedule of Values – Unit Price	
	d. Stored Materials Inventory	
	e. Diversity Procurement Statement	
	10. Certificate of Substantial Completion	J
	11. Notice of Acceptability	K
	12. Warranty Memorandum	L
40.	Master Specification Sections Overview	40-1
	A. Introduction	
	01010 – Summary of Work	01010
	01040 - Coordination	01040
	01060 – Special Conditions	01060
	01270 – Measurement and Payment	01270
	01323 – Record Documents	01323
	01340 – Submittals	01340
	01520 – Maintenance of Pipeline and Pumping Operations	01520
	01560 – Environmental Protection and Special Controls	01560
	01650 – Facility and System Start-up	01650
	02510 – Ductile Iron Pipe	02510
	02520 – Polyvinyl Chloride Pipe	02520

Section No.	Subject	Page No.
	02530 - High Density Polyethylene (HDPE) Pipe and Fittings	02530
	02531 – Line Stops on Sanitary Sewer Force Main Systems	02531
	02610 – Valves	02610
	02710 – Contaminated Groundwater Management	02710
	02761 – Television Inspection of Pipelines	02761
	02773 – Ultrasonic Pipeline Inspection	02773
	02774 – Condition Assessment Data Collection for Pipelines Being Repaired Or To Be Abandoned	02774
	03700 – Concrete Rebuild	03700
	03800 – Embedded Galvanic Anodes for Concrete Rebuild	03800
	07160 – Reactive Waterproofing	07160
	07900 – Joint Sealants and Expansion Joint Systems	07900
	09900 – Protective Coatings	09900
	13110 – Cathodic Protection	13110
41	VDEQ Virginia Clean Water Revolving Loan Fund (VCWRLF)	41-1
	A. Introduction	
	B. Attachments	
	Attachment A - Initial Meeting Review of VCWRLF Program Requirements & Procedures	A
	Attachment B - Map to Loan Closing and Closeout Wastewater Projects	B
	C. Additional Resources	