

**HILLSBOROUGH COUNTY
PUBLIC UTILITIES DEPARTMENT
ENGINEERING SERVICES GROUP**

**WATER, WASTEWATER AND RECLAIMED WATER
TECHNICAL SPECIFICATIONS**

TABLE OF CONTENTS

PREFACE

REVISION PROCEDURE

TABLE OF CONTENTS

DIVISION 03 - CONCRETE

SECTION 031000 - Forms and Formwork

PART 1 ---GENERAL

- 1.1 --- Description
- 1.2 --- Reference Documents
- 1.3 --- Submittals
- 1.4 --- Related Work

PART 2 --- PRODUCT

- 2.1 --- Quality Assurance
- 2.2 --- Forms and Accessories
- 2.3 --- Product Delivery, Storage and Handling

PART 3 --- EXECUTION

- 3.1 --- Fabrication
- 3.2 --- Preparation
- 3.3 --- Installation, Removal & Reshoring
- 3.4 --- Embedded Items
- 3.5 --- Field Quality Control
- 3.6 --- Joints
- 3.7 --- Removal of Forms, Falsework & Centering

SECTION 032000 - Concrete Reinforcement

PART 1 --- GENERAL

- 1.1 --- Description

SECTION 032000 - Concrete Reinforcement (Continued)

- 1.2 --- Reference Documents
- 1.3 --- Shop Drawings and Submittals
- 1.4 --- Related Work

PART 2 --- PRODUCT

- 2.1 --- General
- 2.2 --- Quality Assurance
- 2.3 --- Material
- 2.4 --- Product Delivery, Storage and Handling

PART 3 --- EXECUTION

- 3.1 -- Cutting and Bending - Reinforcement
- 3.2 --- Bar Supports and Spacers
- 3.3 --- Steel Reinforcement
- 3.4 --- Splicing
- 3.5 --- Concrete Protection for Reinforcement
- 3.6 --- Field Quality Control

SECTION 033000 - Cast-In-Place Concrete

PART 1 --- GENERAL

- 1.1 --- Description
- 1.2 --- Reference Documents
- 1.3 --- Submittals
- 1.4 --- Related Work

PART 2 --- PRODUCT

- 2.1 --- Quality Assurance
- 2.2 --- Materials
- 2.3 --- Product Delivery, Storage, and Handling

PART 3 --- EXECUTION

- 3.1 --- Field Quality Control
- 3.2 --- Material Preparation
- 3.3 --- Conveying
- 3.4 --- Preparation for Placement
- 3.5 --- Placement
- 3.6 --- Curing and Protecting
- 3.7 --- Weather Protection
- 3.8 --- Defective Concrete
- 3.9 --- Damaged Work
- 3.10 --- Tolerance for Concrete Construction

DIVISION 33 - UTILITIES

SECTION 330523 - Horizontal Directional Drill

PART 1 --- GENERAL

- 1.1 --- Description
- 1.2 --- Reference Documents
- 1.3 --- Related Work

PART 2 --- PRODUCT

- 2.1 --- General
- 2.2 --- Polyvinyl Chloride Pipe and Couplings
- 2.3 --- Ductile Iron Pipe and Fittings

PART 3 --- EXECUTION/INSTALLATION

- 3.1 --- Description

SECTION 330524 - Boring and Jacking

PART 1 --- GENERAL

- 1.1 --- Description
- 1.2 --- Reference Documents
- 1.3 --- Shop Drawings and Submittals
- 1.4 --- Related Work

PART 2 --- PRODUCT

- 2.1 --- Pipe Casing
- 2.2 --- Carrier Pipe
- 2.3 --- Augering Fluids

PART 3 --- EXECUTION

- 3.1 --- General
- 3.2 --- Excavation
- 3.3 --- Boring & Jacking
- 3.4 --- Grouting
- 3.5 --- Loss of Ground
- 3.6 --- Tolerances
- 3.7 --- Responsibility
- 3.8 --- Installation of Pipe
- 3.9 --- Insurance Requirements and Fees
- 3.10 --- Successful Completion

SECTION 331001 - Water Mains and Appurtenances

PART 1 --- GENERAL

- 1.1 --- Description
- 1.2 --- Reference Documents
- 1.3 --- Shop Drawings and Submittals
- 1.4 --- Related Work

PART 2 --- DESIGN

- 2.1 --- Line Sizing Criteria
- 2.2 --- Line Routing
- 2.3 --- Depth of Cover
- 2.4 --- Protection of Potable Water Systems
- 2.5 --- Cross-Connection Control
- 2.6 --- Meters and Metering Assemblies
- 2.7 --- Service Connections
- 2.8 --- Fire Hydrant Spacing, Location & Flow
- 2.9 --- Valves and Valve Location
- 2.10 --- Pipe, Fittings, & Appurtenances
- 2.11 --- Blow-Off Assembly

PART 3 --- PRODUCTS

- 3.1 --- Pipe Material
- 3.2 --- Ductile Iron Pipe & Fittings
- 3.3 --- Polyvinyl Chloride Pipe & Fittings
- 3.4 --- Gaskets
- 3.5 --- Polyethylene (PE) Pipe and Tubing
- 3.6 --- Valves and Appurtenances
- 3.7 --- Meter Specifications
- 3.8 --- Fire Hydrants
- 3.9 --- Backflow Prevention Assemblies

PART 4 --- CONSTRUCTION

- 4.1 --- Work at Highway or Railroad Crossings
- 4.2 --- Preconstruction Pipe Inspection/Certification
- 4.3 --- Installation
- 4.4 --- Trench Excavation
- 4.5 --- Handling & Cutting Pipe
- 4.6 --- Fusion Process
- 4.7 --- Pipe Laying
- 4.8 --- Installing Joints
- 4.9 --- Installing Appurtenances
- 4.10 --- Water Service Connections
- 4.11 --- Polyethylene (PE) Tube Encasement/Polywrap

SECTION 331001 - Water Mains and Appurtenances (Continued)

- 4.12 --- Backfill/Compaction
- 4.13 --- Temporary Water Service for Construction
- 4.14 --- Flushing & Cleaning
- 4.15 ---- Hydrostatic & Leakage Test
- 4.16 --- Disinfecting Water Systems
- 4.17 --- Connection to Existing Water Mains

PART 5 --- PRESSURE TESTING FORMS

SECTION 331002 - Water Exhibits

SECTION 333001 - Gravity Wastewater Sewers & Appurtenances

PART 1 --- GENERAL

- 1.1 --- Description
- 1.2 --- Reference Documents
- 1.3 --- Shop Drawings and Submittals
- 1.4 --- Related Work

PART 2 --- DESIGN

- 2.1 --- Flow Criteria
- 2.2 --- Minimum Line Size
- 2.3 --- Alignment
- 2.4 --- Depth of Cover
- 2.5 --- Slope
- 2.6 --- Horizontal Separation
- 2.7 --- Crossings
- 2.8 --- Gravity Laterals
- 2.9 --- Wastewater Manholes
- 2.10 --- Manhole Frames and Covers
- 2.11 --- Connections to Gravity Systems
- 2.12 --- Waterproof and Protective Coatings

PART 3 --- PRODUCTS

- 3.1 --- Material
- 3.2 --- PVC Pipe and Fittings
- 3.3 --- Manholes
- 3.4 --- Manhole Frames and Covers
- 3.5 --- Mortar for Pipe and Manhole Riser
- 3.6 --- Brick
- 3.7 --- Waterproof and Protective Coatings
- 3.8 --- Gaskets

SECTION 333001 - Gravity Wastewater Sewers and Appurtenances (Continued)

PART 4 ---CONSTRUCTION

- 4.1 --- Work at Highway or Railroad Crossings
- 4.2 --- Preconstruction Pipe Inspection/Certification
- 4.3 --- Installation
- 4.4 --- Trench Excavation
- 4.5 --- Handling and Cutting Pipe
- 4.6 --- Pipe Laying
- 4.7 --- Installing Joints
- 4.8 --- Installing Manholes
- 4.9 ---- Gravity Laterals
- 4.10 --- Sleeves
- 4.11 --- Backfill/Compaction
- 4.12 --- Connections to Gravity Systems
- 4.13 --- Taking Existing Wastewater Systems out of Service
- 4.14 --- Inspection and Testing

PART 5 --- WASTEWATER PEAKING FACTOR

PART 6 --- TELEVISIONING OF LINES

SECTION 333002 - Wastewater Force Mains and Appurtenances

PART 1 --- GENERAL

- 1.1 --- Description
- 1.2 --- Reference Documents
- 1.3 --- Shop Drawings and Submittals
- 1.4 --- Related Work

PART 2 --- DESIGN

- 2.1 --- Flow Criteria
- 2.2 --- Minimum Line Size
- 2.3 --- Line Routing
- 2.4 --- Depth of Cover
- 2.5 --- Horizontal Separation
- 2.6 --- Vertical Crossings
- 2.7 --- Valves
- 2.8 --- Pipe, Fittings, and Appurtenances
- 2.9 --- Connections to County Systems

PART 3 --- PRODUCTS

- 3.1 --- Material
- 3.2 --- Polyvinyl Chloride Pipe and Fittings

SECTION 333002 - Wastewater Force Mains and Appurtenances (Continued)

- 3.3 --- Ductile Iron Pipe and Fittings
- 3.4 --- Gaskets
- 3.5 --- Valves and Appurtenances

PART 4 --- CONSTRUCTION

- 4.1 --- Work at Highway or Railroad Crossings
- 4.2 --- Preconstruction Pipe Inspection/Certification
- 4.3 --- Installation
- 4.4 --- Trench Excavation
- 4.5 --- Handling and Cutting Pipe
- 4.6 --- Fusion Process
- 4.7 --- Pipe Laying
- 4.8 --- Installing Joints
- 4.9 --- Installing Appurtenances
- 4.10 --- Polyethylene Tube Encasement/Polywrap
- 4.11 --- Backfill/Compaction
- 4.12 --- Flushing and Cleaning
- 4.13 --- Hydrostatic and Leakage Test
- 4.14 --- Connections to Existing System

PART 5 --- WASTEWATER PEAKING FACTORS

PART 6 --- PRESSURE TESTING FORMS

SECTION 333003 - Wastewater Pumping Station

PART 1 --- GENERAL

- 1.1 --- Description
- 1.2 --- Reference Documents
- 1.3 --- Shop Drawings and Submittals
- 1.4 --- Tools and Spare Parts
- 1.5 --- As-Built/Record Drawings
- 1.6 --- Related Work

PART 2 --- DESIGN AND CONSTRUCTION STANDARDS

- 2.1 --- Siting Requirements
- 2.2 --- Horizontal Separation
- 2.3 --- Crossings
- 2.4 --- Flow
- 2.5 --- Total Dynamic Head (TDH)
- 2.6 --- System Head versus Pump Capacity Analysis
- 2.7 --- Electrical Classification
- 2.8 --- Pumps

SECTION 333003 - Wastewater Pumping Station (Continued)

- 2.9 --- Wet Wells
- 2.10 --- Piping Design
- 2.11 --- Station Access

PART 3 --- PRODUCTS

- 3.1 --- Wet Well
- 3.2 --- Discharge Piping and Appurtenances
- 3.3 --- Wastewater Pumps
- 3.4 --- Potable Water Service
- 3.5 --- Pumping Station Controls
- 3.6 --- Remote Telemetry and Appurtenances
- 3.7 --- Conduit Systems
- 3.8 --- Wiring Systems
- 3.9 --- Pressure Taps and Pressure Measuring Systems
- 3.10 --- Level Measuring System
- 3.11 --- Level Detection Switches

PART 4 --- CONSTRUCTION

- 4.1 --- Site Work
- 4.2 --- Wet Wells
- 4.3 --- Piping and Equipment
- 4.4 --- Electrical
- 4.5 --- Remote Telemetry Units and Appurtenances
- 4.6 --- Site Paving and Fencing
- 4.7 --- Final Inspection and Testing

PART 5 --- WASTEWATER PEAKING FACTORS

**PART 6 --- WASTEWATER PUMPING STATION CONSTRUCTION STARTUP
PROCEDURE**

SECTION 333005 - Pump Station Control and SCADA Requirements

SECTION 333006 - Sewer Exhibits

SECTION 339001 - Reclaimed Water Mains and Appurtenances

PART 1 --- GENERAL

- 1.1 --- Description
- 1.2 --- Reference Documents
- 1.3 --- Shop Drawings and Submittals
- 1.4 --- Related Work

SECTION 339001 - Reclaimed Water Mains and Appurtenances (Continued)

PART 2 --- DESIGN

- 2.1 --- Line Sizing Criteria
- 2.2 --- Line Routing
- 2.3 --- Depth of Cover
- 2.4 --- Separation of Reclaimed Water, Potable Water and Wastewater Lines
- 2.5 --- Cross Connection Control
- 2.6 --- Golf Courses and Other Major Users
- 2.7 --- Meters and Metering Assemblies
- 2.8 --- Service Connections
- 2.9 --- Valves and Valve Location
- 2.10 --- Pipe, Fittings, and Appurtenances
- 2.11 --- System Identification and Signage
- 2.12 --- Hose Bibb Assembly
- 2.13 --- Blow-Off Assembly

PART 3 --- PRODUCTS

- 3.1 --- Pipe Material
- 3.2 --- Ductile Iron Pipe and Fittings
- 3.3 --- Polyvinyl Chloride Pipe and Fittings
- 3.4 --- Gaskets
- 3.5 --- Polyethylene (PE) Pipe and Tubing
- 3.6 --- Valves and Appurtenances
- 3.7 --- Meter Specifications
- 3.8 --- Backflow Prevention Assemblies
- 3.9 --- Hose Bibb Assembly

PART 4 --- CONSTRUCTION

- 4.1 --- Work at Highway and Railroad Crossings
- 4.2 --- Preconstruction Pipe Inspection/Certification
- 4.3 --- Installation
- 4.4 --- Trench Excavation
- 4.5 --- Handling and Cutting Pipe
- 4.6 --- Fusion Process
- 4.7 --- Pipe Laying
- 4.8 --- Installing Joints
- 4.9 --- Installing Appurtenances
- 4.10 --- Golf Courses and Other Major Users
- 4.11 --- Service Connections
- 4.12 --- Hose Bibb Connection Assembly
- 4.13 --- Installing Back-Flow Prevention Devices
- 4.14 --- Polyethylene Tube Encasement/Polywrap
- 4.15 --- Backfill/Compaction

- 4.16 --- Temporary Potable Water Service for Construction
- 4.17 --- Flushing and Cleaning
- 4.18 --- Hydrostatic and Leakage Test
- 4.19 --- Connection to Existing Reclaimed Water Mains

PART 5 --- PIPE SIZING CRITERIA

- 5.1 --- Design Standard for Reclaimed Water Distribution Systems
- 5.2 --- Residential Subdivisions
- 5.3 --- Commercial Developments

PART 6 --- PRESSURE TESTING FORMS

SECTION 339002 - Reclaimed Water Exhibits

- APPENDIX A - Standard Abbreviations**
- APPENDIX B - List of Materials and Approved Manufacturers**
- APPENDIX C - “For Future Use”**
- APPENDIX D - Separation Criteria for Potable Water, Wastewater, & Reclaimed Water Lines**