



# **STANDARD SPECIFICATIONS AND CONSTRUCTION DETAILS**

Edition: December 30, 2016  
Revised: V2.0 May 1, 2017  
Revised: V2.1 December 15, 2017  
Revised: V3.0 January 1, 2019

Town of Fuquay-Varina  
Engineering Department  
401 Old Honeycutt Road  
Fuquay-Varina, NC 27526  
Phone: 919-567-3911  
Fax: 919-552-7481  
[www.fuquay-varina.org](http://www.fuquay-varina.org)

I hereby certify that these  
Standard Specifications and  
Details for the Town of Fuquay-  
Varina were prepared under my  
direct supervision.



Tracy A. Stephenson, P.E.  
Director of Engineering

A handwritten signature of Tracy A. Stephenson in cursive script.

**TABLE OF CONTENTS (PAGE 1 OF 7)**

<b>SECTION 010 INTRODUCTION</b>			
	010.01	General Information	010-1
Text	010.02	Jurisdiction	010-1
	010.03	Amendment and Adoption Procedures	010-1
	010.04	Disclaimer	010-2
<b>SECTION 020 DEFINITIONS AND ABBREVIATIONS</b>			
	020.01	General	020-1
Text	020.02	Definitions	020-1
	020.03	Abbreviations	020-3
<b>SECTION 030 INSTRUCTIONS, SUBMITTALS AND PERMITS</b>			
	030.01	Instructions for the Design Professional	030-1
Text	030.02	Instructions for Submittal	030-2
	030.03	Plan Requirements	030-4
	030.04	Permits	030-12
Details	030.01	Project Identification Sign Style 1	
	030.02	Project Identification Sign Style 2	
<b>SECTION 040 GENERAL PROVISIONS</b>			
	040.01	General	040-1
	040.02	Approved Manufacturers List Procedures	040-1
	040.03	Pre-Construction Meetings	040-2
	040.04	Inspections	040-2
	040.05	Acceptance Procedures	040-3
	040.06	Construction Site Safety	040-4
Text	040.07	Construction Entrance	040-5
	040.08	Earthwork	040-5
	040.09	Maintenance of Traffic	040-6
	040.10	Materials	040-7
	040.11	Concrete	040-8
	040.12	Retaining Walls	040-9
	040.13	Exterior Garbage Receptacles/Dumpsters	040-9
<b>SECTION 050 ENVIRONMENTAL</b>			
	050.01	General	050-1
	050.02	Erosion and Sedimentation Control	050-1
Text	050.03	Clearing and Grubbing	050-4
	050.04	Tree Protection and Preservation	050-4
	050.05	Riparian Buffers	050-6
Details	070.01	(Future As-needed)	

**TABLE OF CONTENTS (PAGE 2 OF 7)**

<b>SECTION 060</b>		<b>STREETS</b>	
	060.01	General	060-1
	060.02	Traffic Impact Analysis	060-3
	060.03	Street Classifications	060-5
Text	060.04	Street Design	060-10
	060.05	Access and Intersection Design	060-14
	060.06	Sight Distance	060-16
	060.07	Materials and Pavement Design	060-19
	060.08	Construction and Inspection	060-21
	060.01	Street Classifications	060-24
	060.02	Curve Controls	060-26
Tables	060.03	Sight Distances for Street Crossing	060-27
	060.04	Stopping Sight Distances for Level and Wet Conditions	060-27
	060.05	Adjustment Factors for Stopping Sight Distances on Grade	060-28
	060.01	Trench and Pavement Repair	
Details	060.02	Street Type 1 - Alleys	
	060.03	Street Type 2 and 3- Cul-de-Sacs	
	060.04	Street Type 4 thru 8 - Residential	
	060.05	Street Type 9 – Throughfares with no Divided Median	
	060.06	Street Type 9 thru 11 – 4 Lane Divided Roadways	
	060.07	Roundabout	
	060.08	Roundabout Hardscape	
	060.09	Concrete Scoring – Splitter Island	
	060.10	Vehicular Concrete Pavement at Roundabout	
	060.11	Bollard Posts	
	060.12	End of Road Markers (Dead End)	
	060.13	End of Road Marker Signs	
	060.14	Pavement Widening Taper and Markings	
	060.15	Street Cross Section Showing Utilities	
	060.16	Method For Obtaining Superelevation	
<b>SECTION 070</b>		<b>LIGHTING, STREET SIGNAGE, STREET MARKING</b>	
	070.01	Lighting Standards	070-1
Text	070.02	Street Signage	070-9
	070.03	Street Marking	070-9
Tables	070.01	Light Levels for Open Outdoor Parking Facilities	070-10
Details	070.01	(Future As-needed)	

**TABLE OF CONTENTS (PAGE 3 OF 7)**

<b>SECTION 080 CURB AND GUTTER, DRIVEWAYS, SIDEWALKS, AND GREENWAYS</b>			
	080.01	General	080-1
	080.02	Materials	080-2
Text	080.03	Design Requirements	080-2
	080.04	Construction Methods	080-4
	080.05	Inspection	080-5
	080.01	Method of Removing Existing Curb	
	080.02	Shoulder Section	
	080.03	Concrete Curb and Gutter	
Details	080.04	Curb Drain	
	080.05	Driveway Apron (Combination Curb and Gutter)	
	080.06	Driveway Apron (Valley Type Curb and Gutter)	
	080.07	Concrete Sidewalk	
	080.08	Method of Ending Curb and Gutter	
	080.09	Curb Ramps	
	080.10	5ft Boardwalk Detail for Sidewalk	
	080.11	8ft Raised Boardwalk Greenway Trail	
	080.12	10ft Asphalt Greenway Trail	
	080.13	Groundwater Mitigation for Greenway Trails	
<b>SECTION 090 PARKING</b>			
	090.01	Parking Lots and Off Street Parking	090-1
Text	090.02	On-Street Parking	090-2
	090.03	Loading Space Requirements	090-2
	090.04	Handicap Parking	090-2
Details	090.01	(Placeholder for Future)	
<b>SECTION 100 PIPING SYSTEMS GENERAL</b>			
	100.01	Underground Location System	100-1
	100.02	Piping System Materials	100-3
Text	100.03	Trenching and Installation	100-12
	100.04	Separation Distances	100-18
	100.05	Easements	100-20
	100.01	Pressure Class & Depth for DIP Pipes	100-22
	100.02	Manhole Sizing Guide	100-22
	100.03	Bedding Material Classifications	100-22
	100.04	COR-TEN Rod Requirements	100-23
Tables	100.05	Minimum Wall Thickness of Steel Encasement Pipe	100-23
	100.06	Minimum Allowable Steel Encasement Pipe Diameter Per Carrier Size	100-24
	100.07	Utility Easement Width Requirements	100-24
	100.08	Stormwater Easement Width Requirements	100-25
	100.09	Allowable Pipe Material	100-25
	100.01	Carrier Pipe	
Details	100.02	Carrier Pipe Under Railroad	

**TABLE OF CONTENTS (PAGE 4 OF 7)****SECTION 110 STORMWATER MANAGEMENT AND COLLECTION SYSTEMS**

	110.01	Definitions	110-1
Text	110.02	Stormwater Calculation Procedures	110-2
	110.03	Stormwater Collection Systems	110-4
	110.04	Stormwater Management	110-9
	110.01	I-D-F Table	110-16
Details	110.01	Precast Concrete Catch Basins	
	110.02	Concrete Block or Brick Catch Basins	
	110.03	Flume	
	110.04	Median Curb Inlet	
	110.05	Median Curb Inlet (Flow From Both Directions)	
	110.06	Yard Inlet with Concrete Slab	
	110.07	Yard Inlet with Grate and Frame	
	110.08	Reinforced Concrete Headwall with Wingwalls	
	110.09	Brick Headwall with Wingwalls	

**SECTION 120 WATER DISTRIBUTION SYSTEMS**

	120.01	General	120-1
Text	120.02	Design and Installation	120-1
	120.03	Valves and Appurtenances	120-3
	120.04	Water Service Taps	120-6
	120.05	Irrigation Systems	120-8
	120.06	Testing and Inspections	120-9
	120.07	Repair and Rehabilitation	120-11
	Tables	120.01	Water Meter Sizing
120.02		Maximum Leakage Allowed with Hydrostatic Testing	120-13
120.03		Required Hypochlorite Concentration	120-14
Details	120.01	Branch Water Services	
	120.02	¾" Inch and 1 Inch Water Service and Meter Box Installation	
	120.02.01	¾" Inch and 1 Inch Water Meter Box Table	
	120.03	1.5 Inch and 2 Inch Water Service and Meter Box Installation	
	120.04	2 Inch Meter Setter with High Bypass	
	120.05	3 Inch and 4 Inch Meter and Vault Installation	
	120.05.01	6 Inch and 8 inch Meter Bypass Detail	
	120.05.01.01	6 Inch and 8 inch Meter Vault	
	120.06	2 Inch Blow-Off Assembly	
	120.07	Hydrant Installation	
	120.08	Hydrant Location	
120.09	Hydrant Location for Parking Lot		
120.10	Hydrant Location without Curb and Gutter		
120.11	Valve Box Installation		

**TABLE OF CONTENTS (PAGE 5 OF 7)**

120.12	Butterfly Valve with Manhole Around Actuator
120.13	4 Inch Thru 24 Inch Tapping Sleeve and Valve Assembly
120.13.01	Reverse Tap
120.14	Reaction Blocking
120.15	Thrust Collar
120.16	Valve Rodding
120.17	HDPE MJ Capping Assembly
120.18	Air Release Valve For Water Mains
120.19	Reduced Pressure Zone Backflow Preventer
120.20	Residential Irrigation RPZ Installation
120.21	Commercial Irrigation RPZ Installation
120.22	Outdoor RPZ Cover
120.23	Optional Arrangement of Double Check Valve Assembly
120.24	Combined Fire and Domestic Water Service

**SECTION 130 CROSS CONNECTION CONTROL**

	130.01	Approved Backflow Prevention Assemblies	130-1
Text	130.02	Installation of Assemblies	130-3
	130.03	Facilities Requiring Protection	130-4
	130.04	Testing and Test Equipment	130-4
Tables	130.01	Required Approved Backflow Prevention Devices for Various Facilities	130-5

**SECTION 140 FIRE PROTECTION**

	140.01	Fire Hydrants	140-1
	140.02	Fire Flow Requirements	140-4
Text	140.03	Projects that Require Water Based Fire Protection Systems	140-4
	140.04	Lock Box Requirements	140-5
	140.05	Fire Access and Fire Lanes	140-6
	140.06	Fire Safety During Construction	140-10
Tables	140.01	Single and Two-Family Required Fireflow	140-11
	140.02	Comm/Multi Fam/Ind Required Fireflow	140-12
Details	140.01	Fire Truck Turnaround	
	140.02	Post Indicator Valve	
	140.03	Non-Freeze Hydrant	
	140.04	Flush Fire Department Connection	
	140.05	Yard Fire Department Connection	
	140.06	Detached Fire Department Connection	
	140.08	Sprinkler Riser	
	140.08	NFPA 13 Sprinkler Riser	
	140.09	Fire Department Connection Hot Box Requirements	
	140.10	Hot Box Requirements	

**TABLE OF CONTENTS (PAGE 6 OF 7)**

<b>SECTION 150</b>		<b>WASTEWATER COLLECTION SYSTEMS</b>	
Text	150.01	General	150-1
	150.02	Design and Installation	150-1
	150.03	Manholes	150-3
	150.04	Service Connections	150-5
	150.05	Grease Traps	150-7
	150.06	Testing and Inspections	150-9
	150.07	Repair and Rehabilitation	150-11
Tables	150.01	Flow Factors	150-12
	150.02	Peaking Factors	150-12
	150.03	Minimum Slope	150-13
	150.04	Maximum Allowable Flow Deflection	150-13
	150.05	Low Pressure Air Test Times	150-14
	150.06	Mandrel Criteria	150-15
	150.07	Manhole Vacuum Testing	150-15
Details	150.01	Sanitary Sewer Tap and Service	
	150.02	Deep Sanitary Sewer Tap and Service	
	150.03	Sanitary Sewer Lateral Connections	
	150.04	Precast Concrete Manhole	
	150.04.01	Doghouse Manhole	
	150.05	Manhole Ring and Cover	
	150.06	Inside Drop Manhole	
	150.07	Outside Drop Manhole	
	150.08	Manhole Service Connection	
	150.09	Concrete Encasement for Stream Crossing	
	150.09.01	Concrete Cradle for Pipe Crossings	
	150.10	Aerial Sewer Crossing	
	150.11	Manhole Vent	
	150.12	Bedding Flexible & Semi-Rigid Sanitary Sewer	
	150.13	Cleanout Cover Assembly in Traffic Area	
	150.14	High Velocity Manhole Invert	
	150.15	Precast Concrete Grease Interceptor	
150.16	Manhole Vacuum Testing		
150.17	Low Pressure Air Test Table		
<b>SECTION 160</b>		<b>WASTEWATER PUMPING SYSTEMS</b>	
Text	160.01	General	160-1
	160.02	Submittals	160-3
	160.03	Site	160-5
	160.04	Structures	160-6
	160.05	Piping and Valves	160-8
	160.06	Electrical – General	160-10
	160.07	Pumps	160-11
	160.08	Pump Control Systems	160-16
	160.09	Alarm Dialers / SCADA / Telemetry	160-20
	160.10	Grinders	160-20



**TABLE OF CONTENTS (PAGE 7 OF 7)**

	160.11	Generators	160-28
	160.12	Automatic Transfer Switches	160-35
	160.13	Odor Control / Chemical Facilities	160-38
	160.14	Force Mains	160-39
	160.15	Testing and Inspections	160-40
	160.16	Training	160-44
Tables	160.01	Minimum UL Listed Withstand and Close Into Fault Ratings	160-45
Details	160.01	Pump Station Site Layout	
	160.02	Pump Station Sign	
	160.03	Combination Air Release and Vacuum Valve For Sewer Force Mains	
	160.04	Force Main Connection to Manhole	

**SECTION 170 LANDSCAPING**

Text	170.01	General	170-1
	170.02	Visual Buffer Requirements	170-1
	170.03	Plant Selection	170-3
	170.04	Landscape Installation and Maintenance	170-4
Details	170.01	Tree Planting	
	170.02	Tree Planting In Sidewalk Within ROW	

**SECTION 180 APPENDIX**

Text	180.01	Approved Manufacturers and Devices Lists	
	180.02	Inspection Forms and Checklists	
	180.03	Permits and Agreement Forms	
	180.04	Policies	
	180.05	Miscellaneous	
	180.06	LDO-Form Based Code Street Assemblies	
Details	A.01	Fire Truck Access Left Turning Radius	
	A.02	Fire Truck Access Right Turning Radius	