

TOWN OF APEX
STANDARD SPECIFICATIONS & STANDARD DETAILS

SUMMARY OF REVISIONS

March 23, 2021

Standard Specifications

Section 450 – Utility Trenches (new section) – List of changes attached

Section 600 – Water Distribution Systems – List of changes attached

Section 700 – Wastewater Collection Systems – List of changes attached

Section 800 – Wastewater Pumping Systems and Force Mains – List of changes attached

Standard Details

Revised Details*:

Section 600 – Water Distribution Systems

1. 600.01 1 of 2 3/4" & 1" Water Service & Meter Box
2. 600.01 2 of 2 3/4" & 1" Water Service & Meter Box
3. 600.02 1-1/2" & 2" Meter Installation & Vault
4. 600.03 1 of 2 3" & Larger Meter Installation & Vault
5. 600.04 Blow-Off Assembly
6. 600.05 Hydrant Installation
7. 600.06 Hydrant Location
8. 600.07 Yard Hydrant (non-freeze)
9. 600.08 Valve Box Installation
10. 600.12 1 of 2 Air Release Manhole for Water Mains
11. 600.13 Reaction Blocking
12. 600.15 Valve Box Marker for Unpaved Areas
13. 600.16 Post Indicator Valve
14. 600.17 Butterfly Valve with 5' Manhole Encasement

Section 700 – Wastewater Collection Systems

1. 700.03 Sanitary Sewer Service Connections
2. 700.04 1 of 3 Precast Manhole Traffic Rated
3. 700.04 2 of 3 Precast Manhole (Outfalls)
4. 700.04 3 of 3 Precast Manhole
5. 700.05 1 of 2 Manhole Ring & Cover (Type 1 - Paved Areas, H-20 Rated)
6. 700.05 2 of 2 Manhole Ring & Rotating Cover for Watertight Manholes (Type 2 - Non-Traffic Only)
7. 700.07 Drop Manhole
8. 700.10 4" Sanitary Sewer Tap & Service for Sewer Mains Over 13' Deep
9. 700.12 Doghouse Manhole Installation Over Existing Sewer Main
10. 700.13 Manhole Vent
11. 700.14 Cleanout Cover for Vehicle Traffic Areas

*All details modified to be consistent with changes in Standard Specifications.

New Details:

Section 450 – Utility Trenches

1. 450.01 Water Main Pipe Backfilling
2. 450.02 Sanitary Sewer Pipe Bedding & Backfilling
3. 450.03 Concrete Repair
4. 450.04 Trench & Pavement Repair Section for Asphalt
5. 450.05 Trench & Pavement Repair Section for Concrete
6. 450.06 Bore and Jack
7. 450.07 HDD Transition Fitting
8. 450.08 Vertical Bend
9. 450.09 Concrete Cradle
10. 450.10 Anti-Seep Collar
11. 450.11 Open Cut Ditch
12. 450.12 1 of 2 Vehicle Crossing at Stream
13. 450.12 2 of 2 Vehicle Crossing at Stream Notes
14. 450.13 Tracer Wire

Section 600 – Water Distribution Systems

1. 600.12 2 of 2 Air Release Manhole for Water Mains offset from main
2. 600.18 Sampling Station
3. 600.21 Reverse Tap
4. 600.22 Tapping Sleeve and valve
5. 600.23 Standard Stubout/Capping Detail

Section 700 – Wastewater Collection Systems

1. 700.01 Standard Typical Sewer Point Repair
2. 700.09 Manhole Step
3. 700.16 Sanitary Sewer Protection During Construction
4. 700.18 Solid Steel Riser Assembly
5. 700.19 1 of 2 Oil and Grease Structures
6. 700.19 2 of 2 Dimensions: Grease Interceptors Oil-Water-Sand Separators
7. 700.20 Typical Easement Fence Gate

Section 800 – Wastewater Pumping Stations and Force Mains

1. 800.01 Force Main Discharge Manhole
2. 800.02 Plug Valve Box Installation
3. 800.03 1 of 2 Sewage Grinder Unit (Wetwell Installation)
4. 800.03 2 of 2 Sewage Grinder Unit (Wetwell Installation)
5. 800.04 1 of 2 Standard Mag Meter Installation
6. 800.04 2 of 2 Standard Mag Meter Installation
7. 800.05 Wetwell Hatch
8. 800.06 Pump Station Access Road
9. 800.07 Typical Chain Link Fence
10. 800.08 Typical Security Double Gate

- 11. 800.09 Typical Pump Station Layout < 500 GPM
- 12. 800.10 Typical Pump Station Layout > 500 GPM
- 13. 800.11 Air Release Manhole for Sanitary Sewer Force Mains

Section 450 Summary List of Changes

451 Excavation and Preparation

A. Preparation

1. General Requirements
 - New Standard: 1(a) thru (e)

B. Trenching

1. Trench Dimensions
 - b) New Standard: Open trenches shall not exceed 100-ft.
Old Standard Removed: Section 700, page 13 of 24
 - c) New Standard
 - d) New Standard
2. Trench Protection:
 - New Standard: a) thru c).

Old Standard removed: 705 (a)

452 Pipe Laying and Backfilling

Moved from Section 700 to 450

Old Standard Removed: 706 c) Class V soil

A. General Requirements

1. Embedment Material
 - New Standard: b) thru f)
2. Pipe Laying
 - New Standard: a) thru g) and type 1, type 4, and type 5.
3. DIP Specific Installation Requirements
 - New Standard: a) and b).
4. PVC Specific Installation Requirements
 - New Standard: a) thru g).
5. Backfill
 - New Standard: a) thru i).
6. Pipe Identification and Marking
 - New Standard: a) Marking Tape; 1) thru 3).
 - New Standard: b) Tracer Wire; 1) thru 11).
 - New Standard: c) Marker Tape and Tracer Wire Testing; 1).

453 Pavement Repairs

A. Open trench Pavement Repairs

1. General Requirements

- New Standard: a) thru e).

454 Trenchless Pipe Installation

A. Design

1. General Requirements

- New Standard: a) thru f).

B. Materials

1. Encasement Pipe

- New Standard: a) thru e) and Table

2. Casing Pipe Spacers and End Closures

- New Standard: a) thru g).

3. Carrier Pipe

- New Standard: a)

4. Polyethylene (PE) Pressure Pipe

- New Standard: a) thru e).

5. Fusible Polyvinylchloride Pipe

- New Standard: a) thru h).

C. Installation

1. General Requirements

- New Standard: a) thru d).

2. Settlement Surveying

- New Standard: a) thru d).

3. Horizontal Directional Drilling

a) General

- New Standard: 1 thru 7

b) Fusible Polyvinylchloride (FPVC) Pipe

1. General

- New Standard: a) 1 thru 5.

455 External Corrosion Protection

1. General Requirements

- New Standard: a) thru g).

456 Rock Excavation

Moved from Section 700 to 450. Section includes Blasting specifications.

1. General Requirements

- New Standard: a) thru c).

Section 600 Summary List of Changes

601 Water Distribution Pipe

A. Design

1. Location
 - New Standard: Language
2. Sizing
 - New Standard: Language
3. Restraint
 - New Standard: Language a) thru f) and Restraint Table
4. Depth of Installation
 - New Standard: Language
5. Relation to Sanitary and Storm water
 - New Standard: Language a) thru c)

B. Materials

General

- New Standard: Table
1. Ductile Iron Pipe
 - New Standard: Language a) thru c).
 2. Ductile Iron Fittings
 - New Standard: Language
 3. Ductile Iron Fittings
 - New Standard: Language

C. Installation

- New Standard: Language 1 thru 8

602 Fire Protection

A. Fire Hydrants

1. Sizing of Mains
 - New Standard: Language
2. Location
 - Standard Revised: Language a) thru d).
 - New Standard: Language e) thru h).
3. Specifications
 - New Standard: Language
4. Installation
 - New Standard: Language

5. Depth of Bury
 - New Standard: Language
6. Hydrant Relocations
 - New Standard: Language

B. Automatic Fire Sprinkler Systems

1. General
 - New Standard: Language
2. Design
 - New Standard: Language
3. Hydraulic Design
 - New Standard: Language
4. Backflow Prevention
 - New Standard: Language
5. Post Indicator Valve (PIV)
 - New Standard: Language
6. Fire Department Connection
 - New Standard: Language
7. Dedicated Riser Room
 - New Standard: Language
8. Alarm Communication
 - New Standard: Language
9. Access
 - New Standard: Language
10. Identification
 - New Standard: Language
11. Fire Alarm Panel
 - New Standard: Language

C. Fire Protection During Construction

- New Standard: Language

603 Trenchless Pipe Installation

A. Valves

1. General
 - New Standard: Language b) thru d).
2. Combination Air Valves
 - New Standard: Language a) thru d).
3. Gate Valves, Less than 4" for Blow off Assemblies
 - New Standard: Language
4. Gate Valves, 6-inches to 12 inches

- New Standard: Language
- 5. Gate Valves, 14-inches through 48-inches
 - New Standard: Language
- 6. Butterfly Valves
 - New Standard: Language
- 7. Insertion Valves
 - New Standard: Language
- 8. Valve Boxes
 - Standard Revised: Language
- 9. Actuators
 - New Standard: Language

B. Appurtenances

1. Blowoffs
 - Standard Revised: Language
2. Reaction Blocking
 - Standard Revised: Language
3. Rodding
 - New Standard: Language and New Table
4. Wedge Action Retainer Glands
 - New Standard: Language
5. Sample Stations
 - New Standard: Language
6. Gaskets for Contaminated Installations
 - New Standard: Language a) thru c).
7. Polyethylene Wrapping
 - New Standard: Language
8. Marker Posts
 - New Standard: Language

604 Watermain Taps and Services

A. Design

- New Standard: Language 1 thru 18.

B. Materials

1. Full Body Tapping Sleeves
 - Standard Revised: Language
2. Stainless Steel Tapping Sleeves, 6-inch through 12-inch Main Lines
 - New Standard: Language and Table.
3. Stainless Steel Tapping Sleeves, 14-inch through 24-inch Main Lines
 - New Standard: Language
4. Tapping Saddles, 14-inch through 24-inch Main Lines

- New Standard: Language and Table.
- 5. Corporation Stops
 - New Standard: Language a) and b).
- 6. Service Saddles
 - Standard Revised: Language
- 7. Copper Service Tubing
 - Standard Revised: Language
- 8. Meter Boxes for $\frac{3}{4}$ and 1-inch Services
 - Standard Revised: Language
- 9. 1 $\frac{1}{2}$ and 2-inch Water Services
 - New Standard: Language
- 10. Water Services Greater than 2-inches
 - New Standard: Language
- 11. Meter Vaults
 - New Standard: Language

605 Irrigation Systems

- Standard Revised: “Private” removed. Language 1 thru 5.

606 Testing and Inspections

A. General

- New Standard: Language 1 thru 4.

B. Testing

1. Pigging of Water Mains
 - Standard Revised: Language
2. Hydrostatic Testing
 - Standard Revised: Language a) thru d).
3. Disinfection
 - Standard Revised: Language a) 1 thru 6 and Table.
4. Flushing
 - New Standard: Language a) thru d).
5. Bacteriological and Turbidity Sampling
 - Standard Revised: Language a) thru l).
6. Tracer Wire and Marker Tape Testing
 - New Standard: Language

607 Testing and Inspections

1. Joint Leaks
 - New Standard: Language
2. Line Breaks and Punctures

- New Standard: Language
- 3. Line Splits or Blow Outs
 - New Standard: Language
- 4. Asbestos Cement Pipe to PVC or Ductile Iron Pipe Transitions
 - New Standard: Language
- 5. All Water Main Point Repairs
 - New Standard: Language
- 6. Water Service Line Repairs
 - New Standard: Language a) thru c).
- 7. Abandonment of Existing Water Mains
 - New Standard: Language a) and b).

Section 700 Summary List of Changes

701 Gravity Sewer

A. Design

1. Main Location
 - New Standard and Revised: Language a) thru w).
2. Main Size, Slope, and Design Criteria
 - New Standard: Language a) thru n) and Table.

B. Materials

- New Standard and Revised: Language and Table.
1. Ductile Iron Pipe
 - New Standard and Revised: Language and Tables.
 2. Solid Wall PVC Pipe
 - New Standard and Revised: Language

C. Sewer Main Installation

1. General Requirements
 - New Standard: Language a) thru h).

702 Pump Station Site and Structures

A. Design

1. Manhole Location, Siting and Design
 - New Standard and Revised: Language a) thru m).
2. Manhole Sizing
 - New Standard and Revised: Language a) and Table.

B. Materials

1. Concrete Manholes
 - New Standard and Revised: Language a) thru g).
2. Manhole Frame and Cover Materials
 - New Standard and Revised: Language a) thru e).

C. Installation

1. General Requirements
 - Standard Revised: Language a) thru h).
2. Manholes Subject to Inundation
 - Standard Revised: Language a) thru c).
3. Manholes Located on Large Collection Mains

- New Standard: Language
- 4. Force Main Discharge Manholes
 - Standard Revised: Language
- 5. Epoxy Coating
 - New Standard: Language a) and b).
- 6. Labeling
 - New Standard: Language a)

703 Service Connections

A. Design

1. General Requirements
 - New Standard and Revised: Language a) thru j).

B. Materials

1. Pipe Materials
 - Standard Revised: Language a) thru c).
2. Sewer Service Fittings, New Construction
 - New Standard and Revised: Language a) thru d).
3. Service Saddle Connections, Existing Sewer Mains
 - New Standard and Revised: Language a) and b).

C. Installation

1. General Requirements
 - New Standard and Revised: Language a) thru g).

704 Testing and Inspections

A. General

- Standard Revised: Language

B. Sewer Main and Service Connection Testing

1. Visual Testing and Observation
 - New Standard: Language a) and b).
2. Air Testing
 - Standard Revised: Language a) thru c) and Table.

3. Infiltration Tests
 - Standard Revised: Language a) thru c).
4. Deflection Testing for Flexible Pipe
 - Standard revised: Language a) thru c) and Table.
5. Video Assessment and Cleaning
 - Standard Revised: Language a) and g).
6. Marker Tape Testing
 - New Standard: Language

C. Manhole Testing

1. Vacuum Testing
 - Standard Revised: Language a) thru d).
2. Holiday Testing of Lines Manholes
 - New Standard: Language

705 Aerial Crossings

A. Design

- New Standard: Language

B. Pipe Materials

1. Ductile Iron Pipe
 - New Standard: Language
2. PVC Pipe
 - New Standard: Language
3. Steel Pipe
 - New Standard: Language

C. Installation

- New Standard: Language

706 Repairs, Modifications, and Abandonment

A. Sewer Main Repairs

1. Vitrified Clay Pipe
 - New Standard: Language
2. PVC Pipe
 - New Standard: Language
3. ABS / PVC Truss Pipe
 - New Standard: Language
4. Asbestos Cement Pipe
 - New Standard: Language

B. Installation

1. Paragraph
 - New Standard: Language
2. Paragraph

- New Standard: Language

C. Draining Sewer Mains

- New Standard: Language

D. Abandonment of Existing Sewer Mains

- New Standard: Language 1 and 2

Section 800 Summary List of Changes

801 Pump Station General

A. Design Requirements

- Standard Revised: Language 1 thru 9.

B. Warranty

- Standard Revised: Language

C. Submittals

1. Design Report

- New Standard: Language a).

2. Project Review Submittals

New Standard: Language a) and b).

3. Pre-Approved Equal Submittals

New Standard: Language a) thru d).

4. Testing Results Submittals

New Standard: Language a) thru c).

5. Operation and Maintenance Manuals (O&M)

Standard Revised: Language a) thru c).

802 Pump Station Site and Structures

A. General

- New Standard: Language 1 thru 5.

B. Site Work

- New Standard: Language 1 thru 8.

C. Structures

1. General

- Standard Revised: Language a) thru e).

2. Wet Well

- Standard Revised: Language a) thru m).

3. Valve / Meter Vaults

- New Standard: Language

4. Manholes

- Standard Revised: Language

5. Buildings

- New Standard: Language a) thru d).

D. Piping and Valves

- Standard Revised: Language 1) thru 11).

E. Electrical - General

- Standard Revised: Language 1) thru 9).

803 Pump Station Equipment

A. Pumps

1. General

- New Standard and Revised: Language a) thru f).

2. Submittals

- New Standard and Revised: Language a) and b).

3. Quality Assurance

- New Standard: Language a) 1 thru 6.

4. Materials

- New Standard and Revised: Language a) thru j).

5. Pumps

- New Standard and Revised: Language a) thru g).

6. Pump Motors

- New Standard and Revised: Language a) thru o).

7. Appurtenances

- New Standard: Language a) thru g).

8. Shop Painting

- New Standard: Language a) thru c).

B. Pump Control Systems

- Standard Revised: Language 1 thru 28.

C. Alarm Dialer / Scada / Telemetry

- Standard Revised: Language 1 and 2.

D. Grinders

1. General
 - New Standard and Revised: Language a) thru h).
2. Submittals
 - New Standard: Language
3. Quality Assurance
 - New Standard: Language a) thru d).

E. Generators

1. General
 - New Standard and Revised: Language a) thru i).
2. Submittals
 - New Standard: Language a).
3. Quality Control
 - New Standard: Language a).
4. Generator Equipment
 - New Standard and Revised: Language a) thru n).

F. Automatic Transfer Switch

1. Standard Revised: Language
2. General
 - New Standard and Revised: Language a) thru i).
3. Sequence of Operation
 - New Standard: Language a) thru i).
4. Construction and Performance
 - New Standard and Revised: Language a) thru l).

804 Odor / Chemical Facilities

- New Standard: Language 1 thru 3.

805 Inspections, Testing, and Training

A. Inspections

- New Standard: Language 1 and 2.

B. Testing

1. General

- New Standard: Language a) thru l).

2. Pump Testing

- New Standard: Language a) thru c).

3. Grinder Testing

- New Standard: Language a) thru c).

4. Generator Testing

- New Standard: Language a) thru c).

5. Automatic Transfer Switch Testing

- New Standard and Revised: Language a) and b).

6. Control System Testing

- New Standard: Language a).

7. Structure Testing

- New Standard: Language a) thru d).

C. Operator Training

- New Standard and Revised: Language 1 thru 7.

806 Force Main General

- New Standard and Revised: Language 1 thru 4.

807 Wastewater Force Mains

A. Design

- New Standard and Revised: Language 1 and 14.

B. Materials

1. Pipe Materials

- New Standard and Revised: Language a) thru g) and Tables.

2. Manhole Materials

- New Standard and Revised: Language a) thru e).

C. Installation

1. General

- New Standard: Language 1 and 2.

D. Valves and Appurtenances

1. Pipe Materials

- New Standard: Language 1 thru 10.

808 Force Main Inspections and Testing

A. Inspections

- New Standard: Language 1 and 2.

B. Testing

1. General

- New Standard and Revised: Language a) thru c).

2. Force Main Testing

- New Standard and Revised: Language a).