

STANDARD SPECIFICATIONS and STANDARD DETAILS

MARCH 2022



CITY OF
Tulsa
A New Kind of Energy™

**CITY OF TULSA
ENGINEERING SERVICES DEPARTMENT
PAUL D. ZACHARY, DIRECTOR
2317 S. JACKSON AVE.
TULSA, OKLAHOMA 74107
(918) 596-9565**

TABLE OF CONTENTS
SPECIFICATIONS SECTIONS

DIVISION I – GENERAL SPECIFICATIONS

| <u>PART</u> | | <u>PAGE NO.</u> |
|--------------------|--|------------------------|
| 101 | Scope and Location | 1 |
| 102 | Scope, Nature, and Intent of Specifications and Drawings | 1 |
| 103 | Lines and Grades | 2 |
| 104 | Saturday, Sunday, Holiday, and Night Work..... | 2 |
| 105 | Protection of Property | 2 |
| 106 | Connections | 4 |
| 107 | References to Other Specifications | 4 |
| 108 | Protection of Materials | 5 |
| 109 | Testing | 5 |
| 110 | “Or Approved Equal” Clause | 6 |
| 111 | Dewatering..... | 6 |
| 112 | Safety..... | 6 |
| 113 | Removal of Condemned Materials and Structures | 7 |
| 114 | Removal and Salvage of Castings..... | 8 |
| 115 | Clean-Up..... | 8 |
| 116 | Placing Work in Service | 8 |
| 117 | Submittals | 9 |

DIVISION II – MATERIAL SPECIFICATIONS

| <u>PART</u> | | <u>PAGE NO.</u> |
|--------------------|---|------------------------|
| | Approved Fittings Manufacturers | 1 |
| 201 | Concrete | 4 |
| 202 | Quick-Setting Flowable Fill | 13 |
| 203 | Ductile Iron Pipe, Ductile and Cast Iron Fittings, and Valves | 15 |
| 204 | Steel Pipe and Fittings | 25 |
| 205 | Reinforced Concrete Pipe and Fittings | 29 |
| 206 | Vitrified Clay Pipe and Fittings | 31 |
| 207 | Polyvinyl Chloride (PVC) Pipe, Water Service | 32 |
| 207A | High Density Polyethylene (HDPE) Pipe, Water Service | 32 |
| 208 | Polyvinyl Chloride (PVC) Pipe, Sewer Service | 35 |
| 209 | Castings..... | 36 |
| 210 | Conduit | 37 |
| 211 | Vaults, Pits, and Manholes | 38 |
| 212 | Sand for Cushion or Backfill..... | 43 |
| 213 | Crushed Stone for Surfacing, Base Course, And Stabilization ... | 44 |
| 214 | RipRap..... | 45 |
| 215 | Corrugated Polypropylene Pipe and Fittings for Stormwater | 46 |

TABLE OF CONTENTS
SPECIFICATIONS SECTIONS

DIVISION III – CONSTRUCTION SPECIFICATIONS

| <u>PART</u> | | <u>PAGE NO.</u> |
|--------------------|---|------------------------|
| 301 | Right-Of-Way Clearing and Restoring..... | 1 |
| 302 | Excavation and Backfill, Unclassified..... | 2 |
| 303 | Mobilization/Demobilization | 4 |
| 304 | Contractor Construction Staking | 5 |
| 305 | Pipe, Vitrified Clay | 6 |
| 306 | Pipe, Reinforced Concrete..... | 7 |
| 307 | Pipe, Ductile Iron | 8 |
| 308 | Pipe, Steel | 9 |
| 309 | Polyvinyl Chloride (PVC) Pipe, Water Service | 10 |
| 310 | Locator Wire and Detectable Marking Tape..... | 11 |
| 311 | Tapping of PVC Pipe for Service Connections | 12 |
| 312 | Fittings | 13 |
| 313 | Polyvinyl Chloride (PVC) Pipe, Sewer Service | 14 |
| 314 | Manhole | 16 |
| 315 | Connection..... | 18 |
| 316 | Lamphole | 20 |
| 317 | Valve..... | 21 |
| 318 | Valve Box..... | 22 |
| 319 | Encasement, Concrete | 23 |
| 320 | Cradle, Concrete..... | 24 |
| 321 | Piers, Reinforced Concrete..... | 25 |
| 322 | Conduit, Bored..... | 26 |
| 323 | Structure, Special | 27 |
| 324 | Materials Furnished by Contractor and Installed by City | 28 |
| 325 | Sodding and Seeding | 29 |
| 326 | Street Wash Down | 30 |
| 327 | Traffic Control Devices..... | 31 |
| 328 | Bore | 32 |
| 329 | Pavement Removal and Replacement | 33 |
| 330 | Erosion Control Measures | 35 |
| 331 | Water Table Cradle..... | 36 |
| 332 | Conduit, Open Cut | 37 |
| 333 | Removal, Salvage, Abandonment of Existing Facilities | 38 |
| 334 | Construction As-Builts..... | 41 |
| 335 | Acceptance Sampling/Testing Requirements | 43 |

TABLE OF CONTENTS
SPECIFICATIONS SECTIONS

DIVISION IV – SANITARY SEWER REHAB CONSTRUCTION SPECIFICATIONS

| <u>PART</u> | | <u>PAGE NO.</u> |
|--------------------|--|------------------------|
| 400 | General Provision | 1 |
| 401 | Site Preparation | 8 |
| 402 | Restoration | 11 |
| 403 | Backfill | 19 |
| 404 | Removal, Salvage, and Abandonment of Existing Facilities | 22 |
| 405 | Pipeline and Installation | 23 |
| 406 | Pipe Reaming | 27 |
| 407 | Pipe Crushing | 32 |
| 408 | Pipe Bursting | 38 |
| 409 | Sliplining | 44 |
| 410 | Cured-in-Place Pipe..... | 55 |
| 411 | Pipeline Pressure Grouting..... | 65 |
| 412 | Point Repairs | 71 |
| 413 | Concrete Embankment | 74 |
| 414 | Clay Dam..... | 77 |
| 415 | Construction Television Inspection of Sanitary Sewer | 78 |
| 416 | Complete Manhole Replacement..... | 81 |
| 417 | Replacement of Cleanout / Lamphole and/or Cleanout / Lamphole Frame and Cover | 84 |
| 418 | Replacement of Manhole Frame and Cover, Frame Seal, Chimney, and Grade Adjustment | 87 |
| 419 | Patching, Repairs, and Plugging Lift Holes..... | 96 |
| 420 | Manhole Step Removal and Replacement..... | 98 |
| 421 | Interior Manhole Rehabilitation – Corbel (Cone) and Wall Rehabilitation, Bench and Invert, and Pipe Seal Rehabilitation | 100 |
| 422 | Manhole Testing of New and Rehabilitated Manholes | 110 |
| 423 | Obstruction Removal | 113 |
| 424 | Cured-in-Place Sectional and Spot Repair | 115 |
| 425 | Oversized Manhole Frame and Cover | 120 |
| 426 | Sealed Manhole Frame and Cover | 122 |

TABLE OF CONTENTS
SPECIFICATIONS SECTIONS

DIVISION V – WATER METER SPECIFICATIONS

| <u>PART</u> | | <u>PAGE NO.</u> |
|--------------------|--|------------------------|
| | Approved Meter and Back Flow Preventer Manufacturers..... | 1 |
| 500 | Definitions | 2 |
| 501 | Displacement Water Meters – 5/8” x 3/4”, 1”, & 1-1/2” | 4 |
| 502 | Compound Type Water Meters – 2”, 3”, 4”, 6”, & 8” | 7 |
| 503 | Turbine Water Meters – Irrigation and Special Services – 2” & 3” ... | 11 |
| 504 | Turbine Meters – Fire Service – 4”, 6”, 8”, & 10” | 14 |
| 505 | Fire Flow Meters – 4”, 6”, 8”, & 10” | 17 |
| 506 | Double Check Detector Assembly – 4”, 6”, 8”, & 10” | 20 |

DIVISION VI – TRAFFIC SPECIFICATIONS – MATERIALS

| <u>PART</u> | | <u>PAGE NO.</u> |
|--------------------|---|------------------------|
| 601 | Pull Boxes..... | 1 |
| 602 | Electrical Conduit..... | 4 |
| 603 | Signal Pole Footings | 12 |
| 604 | Loop Detectors | 15 |
| 606 | Pre-Emption and Signal Priority Systems | 21 |
| 607 | Power Supplies..... | 23 |
| 608 | Traffic Signs..... | 27 |
| 609 | NOT USED | |
| 610 | Traffic Signal Controller Cabinet Assembly..... | 29 |
| 611 | Electrical Conductors Traffic Signal | 40 |
| 612 | Cabinet Bases, Aprons, and Guards | 44 |
| 613 | Pedestrian Push Button | 46 |
| 614 | LED Traffic Signal Heads and Pedestrian Signal Heads | 48 |
| 615 | Base Covers | 54 |
| 616 | Mast Arm Brackets | 55 |
| 617 | Signal Poles and Mast Arms..... | 56 |
| 618 | Bonding..... | 60 |
| 619 | Temporary Signals..... | 62 |
| 620 | Video Detection System..... | 64 |
| 621 | Highway, Street, and Pedestrian Lighting | 66 |
| 622 | Wireless Traffic Signal Communications System..... | 78 |
| 623 | Battery Backup | 80 |
| 624 | Remove and Reset Existing Traffic Signal Controller Assembly..... | 83 |
| 625 | Removal of Traffic Items | 84 |
| 626 | Traffic Signal Construction and Operation | 86 |
| 627 | Pre-Qualification for Traffic Operations Materials | 93 |
| 628 | Signal and Lighting Project Contractor Experience Requirements | 98 |

TABLE OF CONTENTS
SPECIFICATIONS SECTIONS

DIVISION VII – STREETScape SPECIFICATIONS

| <u>PART</u> | | <u>PAGE NO.</u> |
|--------------------|---------------------------------------|------------------------|
| 800 | Decorative Lighting | 1 |
| 810 | Brick Unit Pavers | 19 |
| 811 | Interlocking Concrete Pavers..... | 32 |
| 812 | Stamped Concrete Finishing..... | 43 |
| 820 | Streetscape Amenities | 55 |
| 830 | Structural Soil | 65 |
| 831 | Trees, Shrubs, and Ground Cover | 72 |
| 832 | Sodding..... | 78 |
| 833 | Landscaping Maintenance | 84 |
| 840 | Underground Sprinkler System..... | 89 |

DIVISION VII – ORDINANCE 24616

Adoption of ODOT “Standard Specifications for Highway Construction” 2019 Edition, by City of Tulsa.

STANDARD DETAILS INDEX
(found in small book)

| | |
|------|---|
| 101 | Fire Proof Area |
| 102 | Project Sign |
| 103 | Guidelines for Blasting Sign |
| 301 | NOT USED |
| 302 | Conduit for Future Service Lines |
| 303 | NOT USED |
| 304 | Bedding Detail – Rigid Pipe |
| 304A | Trench Detail – Waterline |
| 305 | Bedding Detail – Flexible Pipe |
| 306 | NOT USED |
| 307 | Bore/Open Cut Conduit Detail |
| 308 | Combination Air Vacuum / Air Relief, Check Valves, and Vaults |
| 309 | Fire Hydrant |
| 310 | Blowoff Hydrant |
| 311 | Sampling Tap on 4” – 12” Water Lines |
| 312 | Frame and Lid for Water Vaults |
| 313 | Valve Box |
| 314 | Manhole Steps |
| 315 | Thrust Blocks and Trench Conditions |
| 316 | HDPE Tee Details |
| 317 | HDPE – Ductile Iron Fitting Details 1 of 2 |
| 318 | HDPE – Ductile Iron Fitting Details 2 of 2 |

STANDARD DETAILS INDEX
(found in small book)

| | |
|------|---|
| 319 | HDPE Splice and Fire Hydrant Detail |
| 320 | HDPE Realignment Details |
| 321 | HDPE Wall Anchor Details |
| 351 | Bedding Detail PVC Flexible Sanitary Sewer Pipe |
| 352 | Frame and Lid for Manholes |
| 353 | Frame and Lid for 4' I.D. Sanitary Manhole |
| 354 | Frame and Lid for 5' I.D. and Larger Sanitary Manhole |
| 355 | Brick Manhole (Special Approval Only) |
| 356 | Sanitary Sewer Manhole with Taper |
| 357 | Sanitary Sewer Manhole with Flat Slab Top |
| 358 | Pre-Cast Sanitary Sewer Manholes |
| 359 | NOT USED |
| 360 | Frame and Lid for Lampholes |
| 361 | In-Line Tees for Service Connection |
| 362 | Riser Detail |
| 363 | Riser Detail with Sloped Trench |
| 364 | Sanitary Sewer Combination Air Relief Valve Installation |
| 365 | Go, No-Go Deflection Testing Mandrel |
| 366 | Manhole Step Location and Invert Details |
| 367 | Water Table Cradle |
| 401 | Manhole Grade Adjustment |
| 401A | Concrete Collar for Partial Manhole Replacement |
| 402 | Cover, Frame, and Frame Seal Repair |
| 403 | Special Detail for Interior Coating System |
| 404 | Step Removal |
| 405 | Rubber Seal at Manhole |
| 406 | Shallow Flattop Manhole |
| 407 | Bench and Invert Rehabilitation |
| 408 | Excavation and Restoration at Grade and Above Grade Construction |
| 409 | Concrete Manhole Collar |
| 410 | Corbel (Cone) Replacement |
| 411 | Chemical Pressure Grouting – Precast Manhole |
| 412 | Chemical Pressure Grouting – Brick Manhole |
| 413 | Patch Hole and Plug Lift Hole |
| 414 | Manhole Adjusting Ring |
| 415 | Clay Dam |
| 501 | Standard Meter Settings for 5/8" x 3/4" and 3/4" Water Service |
| 501A | Standard Meter Settings for 5/8" x 3/4" and 3/4" Water Service (AquaPEX Blue) |
| 502 | Standard Meter Settings for 1" Water Service |
| 502A | Standard Meter Settings for 1" Water Service (AquaPEX Blue) |
| 503 | Standard Meter Settings for 1-1/2" Water Service |
| 504 | Standard Meter Settings for 2" Water Service |
| 505 | Meter Can with Rim and Lid 3/4", 1", and 1-1/2" Water Meter Can Installation |
| 506 | Meter Can with Rim and Lid 1-1/2" Water Meter Installation |

STANDARD DETAILS INDEX
(found in small book)

| | |
|------|--|
| 507 | Meter Can with Rim and Lid 2" Water Meter Installation |
| 508 | Offset Plug |
| 509 | Typical Utility Crossing of Raw Water Flowlines (RWF) |
| 701 | Residential Concrete Driveway Concrete Street |
| 702 | Residential Concrete Driveway Asphalt Street |
| 703 | Residential Asphalt Driveway Concrete Street |
| 704 | Residential Asphalt Driveway Asphalt Street |
| 705 | Residential Drive No Curb |
| 706 | Commercial Driveway |
| 707 | Commercial Driveway |
| 708 | Commercial Asphalt Driveway |
| 709 | Parking Lots |
| 710 | Temporary Commercial Driveway (No Curb) |
| 711A | Access Management |
| 711B | Residential Driveway Access Management |
| 712 | Radius Protector |
| 713 | Pavement Removal and Replacement |
| 714 | Pavement Cuts |
| 715 | HWY-PVT-RPL for State Highways that are Arterial Streets |
| 751 | Pipe Bedding Detail for Storm Sewer |
| 752 | Frame and Lid for Stormwater Manholes |
| 753 | Frame and Lid for 4' and 5' I.D. Stormwater Manhole |
| 754 | Frame and Lid for 6' and 8' I.D. Stormwater Manhole and Junction Boxes |
| 755 | Configurations of Cast Iron Curb Inlets |
| 756 | Private Storm Sewer Connected to Public Storm Sewer |
| 757 | Public or Private Storm Sewer Connected to Public Storm Sewer |
| 758 | Residential Storm Water Curb Opening |
| 793 | Residential Drive Asphalt or Concrete No Curb |
| 800 | Street Light Standard Acorn Pole and Fixture |
| 801 | Blue Dome Pole and Fixture |
| 802 | Street Light Standard Type Ball Field |
| 803 | Street Light Standard Lighting Controller and Schematic |
| 804 | Pole Base Details for Standards 800, 801, 802 |
| 805 | Shallow Light Pole Base Detail |
| 806 | Street Light Standard – River Parks Pole and Fixture |
| 810 | Brick Paver Sidewalk |
| 811 | Concrete Paver Sidewalk |
| 812 | Permeable Pavement with Full Exfiltration to Soil Subgrade |
| 813 | CBD Curb Cut |
| 814 | Bike Corral Detail |
| 815 | Parking Lot Screen Trellis |

STANDARD DETAILS INDEX
(found in small book)

| | |
|-----|---|
| 820 | Bench |
| 821 | Bollard – Cast |
| 822 | Bollard – Surface Mounted |
| 823 | Bollard – Removable |
| 824 | Bike Rack |
| 825 | Trash Receptable |
| | |
| 830 | Tree Well Without Tree Grate |
| 831 | Structural Soil |
| 832 | Tree Grate Frame and Concrete Base |
| 833 | ADA Tree Grate Set |
| 834 | Tree Well with Grate |
| | |
| 840 | Irrigation Enclosure |
| 841 | Backflow Preventer Installation |
| 842 | Automatic Controller Installation |
| 843 | Remote Control Valve Installation |
| 844 | Drip Line with Check Valve Two Ring Detail |
| 845 | Drip Line with Check Valve Three Ring Detail |
| 846 | Drip Line with Check Valve Multiple Shrub Ring Detail |
| 847 | Drip Line with Check Valve Slope Layout, 1 Valve |
| 848 | Drip Line with Check Valve Center Feed Layout |
| 849 | Manual Tree Irrigation |
| 850 | Manual Tree Irrigation (Vertical) |

STANDARD DRAWINGS INDEX
(found in large book)

| | |
|------|---|
| 126 | Standard Silt Fence and Construction Entrance |
| 325 | Ball Valve Vault Standard For 16" & 24" Lines Under H-20 Loading |
| 326 | Ball Valve Vault Standard For 30" thru 48" Line Under H-20 Loading |
| 327 | Combination Air Vacuum/Relief Valve Vault for 2" ARV Less Than 5 lbs. in Weight |
| 328 | Standard 4", 6", and 8" Air Valve Assembly On 16" thru 48" Main |
| 329 | Standard 8" and 12" Blowoff Assembly |
| 330 | Cathodic Protection |
| 331 | Details for 6' – 8' Sanitary Sewer Manholes |
| 525 | 3" Meter Standard and Vault Assembly |
| 526 | 3" Meter with Pressure Sustaining Valve Assembly and Vault |
| 527 | 4" Meter Assembly and Vault |
| 528 | 4" Meter with Pressure Sustaining Valve Assembly and Vault |
| 529 | 6" Meter Standard and Vault Assembly |
| 530 | 6" Meter with Pressure Sustaining Valve Assembly and Vault |
| 531 | 8" Meter Standard and Vault Assembly |
| 532 | 8" Meter with Pressure Sustaining Valve Assembly and Vault |
| 533 | 10" Meter Standard and Vault Assembly |
| 534 | 10" Meter with Pressure Sustaining Valve Assembly and Vault |
| 550 | Backflow Prevention Options Index |
| 551 | 4", 6", 8" Detector Check Assembly and Meter Can |
| 552 | 4" – 10" Detector Check Assembly and Vault |
| 553 | 4" – 10" Double Check Detector and Vault Assembly |
| 601 | Pull Box Installation |
| 602 | Conduit Installation |
| 603 | Signal Pole Footing Details |
| 604A | Installation of Detectors |
| 604B | Detector Wire Installation |
| 605 | NOT USED |
| 606 | Emergency Pre-Emption Detail |
| 607A | Traffic Signal Service Pole and Service to Signal Standard |
| 607B | Traffic Signal Pedestal Service |
| 608A | Street Name Signs |
| 608B | Traffic Signs |
| 609 | NOT USED |
| 610A | 332 Controller Cabinet Detail |
| 610B | 336S Controller Cabinet Detail |
| 610C | 332 Cabinet Wiring |
| 611A | Pole Wiring Detail |
| 611B | Downtown Pedestal Wiring Detail |
| 611C | Pole Wiring Detail |
| 612 | Cabinet Guard Detail |
| 613 | Pedestal and Mast Arm Pole Details |

STANDARD DRAWINGS INDEX
(found in large book)

| | |
|------|--|
| 614A | Traffic Signals and Accessories |
| 614B | Signal Head Wiring |
| 615 | NOT USED |
| 616 | Mast Arm Brackets |
| 617A | Signal Poles and Mast Arms |
| 617B | Single Mast Arm Details |
| 618 | Bonding Diagram |
| 619 | NOT USED |
| 620 | NOT USED |
| 621A | Lighting Controller Details |
| 621B | Lighting Wiring Details |
| 629A | Solar Powered School Flasher Detail |
| 629B | Electric Powered School Flasher Detail |
| | |
| 725 | Standard Pavement Patch and Repair |
| 726 | Asphalt Pavement Standard Details for Alleys, Residential, and Collector Streets |
| 727 | Concrete Pavement Standard Details for Alleys, Residential, and Collector Streets (1 of 2) |
| 728 | 22' Asphalt Speed Hump |
| 729 | Concrete Pavement Standard Details for Alleys, Residential, and Collector Streets (2 of 2) |
| 730 | Standard Asphalt Pavement Cut and Repair |
| 731 | Standard Concrete Pavement Cut and Repair |
| 732 | All-Weather Parking Surfaces for Light Duty Residential Parking |
| 733 | Standard Pavement Rehabilitation for Utility Construction |
| | |
| 761 | Standard Inlets and Grates w/Access Manhole Back of Curb |
| 762 | Precast Standard Inlets and Grates w/Access Manhole Back of Curb |
| 763 | Standard Masonry Stormwater Inlets (for rehab and reference only) |
| 764 | Standard Reinforced Concrete Stormwater Inlets |
| 765 | Standard Stormwater Frames |
| 766 | Standard Stormwater Grates |
| 767 | Standard Cast Iron Curb |
| 768 | Standard Recessed Curb Inlet |
| 769A | Recessed Curb Inlet RCI 0648 – 6" Throat, RCI 1048 – 10" Throat |
| 769B | Recessed Curb Inlet RCI 0696 – 6" Throat, RCI 1096 – 10" Throat |
| 770 | Standard Drop Inlet 15", 18", and 24" |
| 771 | Standard Drop Inlet 30", 36", and 42" with no Access Manhole |
| 772 | Standard Drop Inlet 48" Pipe |
| 773 | Standard Three Way Drop Inlet 48" Pipe |
| 774 | Standard Masonry Manhole and Junction Box (for rehab and reference only) |
| 775 | Standard Precast Concrete Stormwater Manhole |
| 776 | Standard Pipe Headwalls 15" to 42" |
| 777 | NOT USED |
| 778 | Grouted RipRap Protection for Existing Headwall (for reference only) |
| 779 | Standard Energy Dissipator |

STANDARD DRAWINGS INDEX
(found in large book)

| | |
|--------|--|
| 780 | Standard Baffle Block Energy Dissipator |
| 781A-D | Semi-Elliptical Storm Sewer (for rehab and reference only) |
| 782 | Standard Low-Flow Concrete Channel Typical Layout (for rehab and reference only) |
| 783 | Concrete Lined Channel (for rehab and reference only) |
| 784 | Vertical Wall Channel (for rehab and reference only) |
| 785 | Standard Dikes and Swales |
| 786 | NOT USED |
| 787 | Sidewalk Grate for Tree Well |
| 788 | Single Pole Gate |
| 789 | Double Pole Gate |
| 790 | Standard Sidewalk Ramp |
| 791 | Special Type I Drop Inlet |
| 792 | Special Type II Drop Inlet |