

**CITY OF INDIANAPOLIS  
DEPARTMENT OF PUBLIC WORKS  
INDIANAPOLIS SANITARY DISTRICT  
STANDARDS MANUAL**

**TABLE OF CONTENTS**

**CHAPTER 100 POLICIES AND PROCEDURES**

<b>SECTION 101 Introduction</b>		Page
101.01	Purpose.....	1-2
101.02	Sanitary Sewer Manual Organization .....	1-2
101.03	Updating.....	1-2
101.04	Abbreviations and Definitions .....	1-3
101.05	Enforcement of Standards .....	1-7
101.06	Penalties .....	1-7
 <b>SECTION 102 General - Procedures and Requirements Applicable to All Permits</b>		
102.01	Introduction .....	1-8
102.02	Applicability .....	1-8
102.03	Exemptions .....	1-8
102.04	Fees .....	1-8
102.05	Refunds.....	1-8
102.06	Expiration of Permit .....	1-8
102.07	Transfer of Permit.....	1-9
102.08	Notice of Change in Permit Information.....	1-9
102.09	Amendment of Permits and Plans .....	1-10
102.10	Revocation of Permit or Variance .....	1-10
102.11	Stop-Work Order.....	1-10
102.12	Variance Procedures .....	1-10
102.13	Appeals .....	1-11
 <b>SECTION 103 Laterals - Procedures and Requirements</b>		
103.01	Introduction .....	1-12
103.02	Responsibility.....	1-12
103.03	Applicability .....	1-12
103.04	Connection Fee and EDU Calculation.....	1-12
103.05	Submittal Requirements for a Lateral Permit.....	1-14
103.06	Who May Apply.....	1-15
103.07	Lateral Inspection Requirements .....	1-15
103.08	Enforcement of Bond .....	1-16
 <b>SECTION 104 – Sanitary Sewer Facilities - Procedures and Requirements</b>		
104.01	Introduction .....	1-17
104.02	Sanitary Sewer Approval and Construction Permit – General .....	1-17
104.03	Capacity Certification / Allocation .....	1-17
104.04	Submittal Requirements for Approval and Construction Permit.....	1-17
104.05	Who May Apply for an Approval and Obtain a Permit.....	1-20
104.06	Who Can Do the Work.....	1-20

## **SECTION 105 – Sanitary Sewer Construction Inspection and Acceptance Procedures**

105.01	Introduction .....	1-21
105.02	General Authority for Investigations and Inspections .....	1-21
105.03	Construction Inspection Requirements .....	1-21
105.04	Requirements for Project Acceptance and Dedication .....	1-22
105.05	Record (As-Built") Drawings .....	1-23
105.06	Digital Data Submission Standards .....	1-23
105.07	Dedication of Existing Private Sewers .....	1-24

## **CHAPTER 200 DESIGN**

### **SECTION 201 Lateral Design**

201.01	Introduction .....	2-2
201.02	General .....	2-2
201.03	Prohibited Connections .....	2-2
201.04	Maximum Number of Building Connections .....	2-2
201.05	Point of Connection .....	2-2
201.06	Size, Depth, and Slope of Lateral .....	2-3
201.07	Location, Length, and Spacing of Lateral .....	2-3
201.08	Cleanouts .....	2-4
201.09	Minimum Elevations for Gravity Connection .....	2-4
201.10	Connections Utilizing an Existing Lateral .....	2-4
201.11	Laterals Crossing Drainage Ways .....	2-5
201.12	Future Connections .....	2-5

### **SECTION 202 Gravity Sanitary Sewer Design**

202.01	Introduction .....	2-6
202.02	General .....	2-6
202.03	Sanitary Sewer Service Area Study .....	2-6
202.04	Design Flow .....	2-7
202.05	Pipe Size, Slope, and Depth .....	2-8
202.06	Extensions for Off-site Unsewered and/or Undeveloped Areas .....	2-9
202.07	Location of Sanitary Sewer Facilities .....	2-9
202.08	Location and Elevation of Sanitary Sewer Facilities within Special Flood Hazard Zones .....	2-10
202.09	Capacity Certification .....	2-11
202.10	Downstream Evaluation .....	2-11
202.11	Inadequate Downstream Evaluation .....	2-12
202.12	Connections to Existing Sanitary Sewers .....	2-13
202.13	Connections in the Combined Sewer Area .....	2-13

### **SECTION 203 Sewer Structures - Manholes**

203.01	Introduction .....	2-15
203.02	Location .....	2-15
203.03	Protection Against Ponding .....	2-15
203.04	Maximum Manhole Spacing .....	2-16
203.05	Manhole Dimensions .....	2-16
203.06	Drop Connections .....	2-16

### **SECTION 204 Other Requirements**

204.01	Drafting Standards .....	2-17
204.02	Easements .....	2-17

204.03	Protection of Water Supplies .....	2-18
204.04	Existing Utility Structures and Facilities .....	2-19
204.05	Utility Coordination.....	2-19
204.06	Sanitary Sewers Crossing Drainage Ways.....	2-19
204.07	Aerial Crossings and Siphons.....	2-20

## CHAPTER 300 MATERIALS

### SECTION 301- General

301.01	Introduction .....	3-2
301.02	General for All Materials .....	3-2
301.03	Material Markings .....	3-2
301.04	Certification of Materials .....	3-2
301.05	Handling, Storage, and Color .....	3-2

### SECTION 302 - Sanitary Sewer Pipe Material

302.01	Introduction .....	3-3
302.02	Allowable Pipe Materials .....	3-3
302.03	Polyvinyl Chloride Pipe (PVC) .....	3-4
302.04	Closed Profile Large Diameter PVC .....	3-5
302.05	Centrifugally Cast Fiberglass Reinforced Polymer Mortar Pipe .....	3-6
302.06	Reinforced Concrete Pipe (RCP) .....	3-8
302.07	Ductile Iron Pipe (DIP).....	3-10
302.08	Prestressed Concrete Cylinder Pipe (PCCP).....	3-11

### SECTION 303 – Laterals

303.01	Introduction .....	3-13
303.02	Lateral Materials .....	3-13
303.03	Controlled Settlement (Slip) Joints .....	3-13

### SECTION 304 – Force Main Material

304.01	Introduction .....	3-14
304.02	Allowable Force Main Material .....	3-14
304.03	Polyvinyl Chloride (PVC) Pipe .....	3-14
304.04	High Density Polyethylene (HDPE) Pipe .....	3-15
304.05	Ductile Iron Pipe (DIP).....	3-16
304.06	Prestressed Concrete Cylinder Pipe (PCCP).....	3-17

### SECTION 305 - Manhole Material and Appurtenances

305.01	Introduction .....	3-18
305.02	Precast Sanitary Manholes.....	3-18
305.03	Drop Manholes .....	3-19
305.04	Monolithic (Cast-In-Place) Sanitary Sewer Structures .....	3-19
305.05	Concrete Bases .....	3-19
305.06	Flow Channels and Bench Walls.....	3-19
305.07	Manhole Adjusting Rings.....	3-19
305.08	Steps .....	3-19
305.09	Sewer Pipe to Manhole Connectors .....	3-20
305.10	Manhole Chimney Seal .....	3-20
305.11	Casting, Frames and Covers.....	3-20

## CHAPTER 400 INSTALLATION

### SECTION 401 Installation Requirements Applicable to Sanitary Sewer, Force Mains and Laterals

401.01	Introduction .....	4-2
401.02	Workmanship .....	4-2
401.03	Trench Box and Sheeting .....	4-3
401.04	Trench Dewatering .....	4-4
401.05	Trench Installations.....	4-4
401.06	Bedding and Backfill Requirements.....	4-5
401.07	Locating (Tracer) Wire .....	4-7
401.08	Abandoning Sanitary Sewer Facilities .....	4-8
401.09	Embankment Installations .....	4-9

### SECTION 402 – Installation Requirements Specific Laterals

402.01	Introduction .....	4-10
402.02	General Requirements.....	4-10
402.03	Lateral Stubs.....	4-10
402.04	Controlled Settlement Joint.....	4-10
402.05	Saddle Connections to Sewers.....	4-11
402.06	Connections to Brick Sewers.....	4-11
402.07	Connections to Pressure-rated PVC Pipe .....	4-11

### SECTION 403 – Installation of Precast Manholes, Wet Wells, Valve Vaults, or Other Appurtenant Structures

403.01	Introduction .....	4-12
403.02	Bedding.....	4-12
403.03	Backfilling.....	4-12
403.04	Placement of Manhole Sections .....	4-12
403.05	Placement of Adjusting Rings .....	4-12
403.06	Butyl Rubber Backplaster .....	4-12
403.07	Internal Manhole Chimney Seal .....	4-12
403.08	Connections to Manholes .....	4-13
403.09	Groundwater Monitoring Points .....	4-13

### SECTION 404 - Trenchless Installation

404.01	Introduction .....	4-14
404.02	General Requirements .....	4-14
404.03	Auger Boring and Pipe Jacking .....	4-14
404.04	Horizontal Directional Drilling (HDD) .....	4-17
404.05	Pipe Bursting (Lateral Rehabilitation Only) .....	4-20

### SECTION 405 – Erosion Control, Site Restoration and Safety

405.01	Introduction .....	4-22
405.02	General Requirements .....	4-22
405.03	Erosion Control .....	4-22
405.04	Site Restoration .....	4-22
405.05	Final Cleanup.....	4-22
405.06	Traffic Control .....	4-22
405.07	Trench Safety Systems .....	4-22

## CHAPTER 500 LIFT STATIONS AND LOW PRESSURE SYSTEMS

### SECTION 501 Requirements Common to Both Lift Stations and Low Pressure Systems

501.01	Introduction .....	5-2
501.02	General .....	5-2
501.03	Justification .....	5-2

### SECTION 502 Lift Station Design

502.01	Introduction .....	5-3
502.02	General .....	5-3
502.03	Submittal Requirements for Approval and Construction Permit .....	5-3
502.04	Lift Station Service Area .....	5-3
502.05	Lift Station Location.....	5-3
502.06	Lift Station Type .....	5-4
502.07	Pumping Capacity.....	5-5
502.08	Initial Pumping Capacity .....	5-5
502.09	Total Dynamic Head Calculations.....	5-5
502.10	Pump Selection .....	5-7
502.11	Variable Speed Pumping Systems .....	5-7
502.12	Wet Well Sizing.....	5-7
502.13	Operating Set Points.....	5-9
502.14	Valve and Meter Vaults.....	5-9
502.15	Force Main Design.....	5-9
502.16	Buoyancy .....	5-10
502.17	Connections to Wet Well.....	5-10

### SECTION 503 Lift Station Equipment and Operating Requirements

503.01	Introduction .....	5-11
503.02	General .....	5-11
503.03	Equipment Vendors.....	5-11
503.04	Submittal Requirements: Pre-Construction .....	5-11
503.05	Power Requirements .....	5-11
503.06	Pump Equipment.....	5-11
503.07	Lift Station Components.....	5-13
503.08	Control System Requirements – Level 3 Lift Stations .....	5-14
503.09	Control System Requirements – Level 2 Lift Stations .....	5-23
503.10	Operation and Maintenance Manuals.....	5-35
503.11	Spare Parts.....	5-35
503.12	Station Warranty .....	5-35

### SECTION 504 – Low Pressure Pump Stations and Appurtenances

504.01	Introduction .....	5-36
504.02	General .....	5-36
504.03	Submittal Requirements for Approval and Construction Permit .....	5-36
504.04	Low Pressure System Service Area .....	5-36
504.05	Responsibility.....	5-36
504.06	System Design and Layout.....	5-37
504.07	Maximum Connections to Grinder Pump Units.....	5-38
504.08	Grinder Pump Types.....	5-38
504.09	Grinder Pump Equipment .....	5-38

## CHAPTER 600 TESTING

### SECTION 601 General

601.01	Introduction .....	6-2
601.02	General Testing Requirements.....	6-2

### SECTION 602 Gravity Sanitary Sewer Testing Requirements

602.01	Introduction .....	6-3
602.02	General Requirements .....	6-3
602.03	Low Pressure Air Test .....	6-3
602.04	Joint Test .....	6-5
602.05	Water Infiltration Test .....	6-6
602.06	Mandrel Deflection Test for Flexible Pipe.....	6-7
602.07	Air Test or Mandrel Test Failures .....	6-8

### SECTION 603 Force Main Testing Requirements

603.01	Introduction .....	6-9
603.02	General Requirements .....	6-9
603.03	Hydrostatic Leak Test.....	6-9

### SECTION 604 Manhole Testing Requirements

604.01	Introduction .....	6-10
604.02	General Requirements.....	6-10
604.03	Leakage .....	6-10
604.04	Negative Air (Vacuum) Test.....	6-10
604.05	Chimney Seal Leakage Test.....	6-13

### SECTION 605 Lift Station Testing

605.01	Introduction .....	6-15
605.02	General Requirements.....	6-15
605.03	Wet Well Leakage Testing.....	6-15
605.04	Lift Station Testing .....	6-15

## APPENDICES

Appendix A – Fees .....	A-1
Appendix B – Average Daily Flow Estimates.....	B-1
Appendix C – Forms	
Air Test Data Sheet.....	C-1
Sewer Manhole Test Report .....	C-2
Sewer Force Main Test Report – Hydrostatic Leak Test .....	C-3
Sewer Force Main Test Report - Alternate Test Method .....	C-4

## DETAILS

- 100.01 Terms Used in Trench Detail
  
- 200.01 Minimum Elevations for Gravity Connection
  
- 300.01 Standard Manhole for Pipe Sizes 8" – 24" (Straight Through)
- 300.02 Manhole Base, Riser and Reducer Cap for Pipes 21" – 48"
- 300.03 Special Manhole, 48" – 144" Sewers
- 300.04 Internal Drop Manhole
- 300.05 Precast Drop Manhole
- 300.06 Sanitary Sewer Doghouse Manhole
- 300.07 Standard Manhole Benches
- 300.08 Adjusting Ring
- 300.09 Sanitary Sewer Manhole Frame and Cover – Standard Manhole
  
- 400.01 Flexible Pipe Bedding and Backfill Requirements
- 400.02 Semi-Rigid Pipe Bedding and Backfill Requirements
- 400.03 Rigid Pipe Bedding and Backfill Requirements
- 400.04 Acceptable Methods of Capping an Abandoned Sewer Lateral
- 400.05 Service Connection for Shallow Sewers (Less than 15' deep)
- 400.06 Service Connection for Deep Sewers (15' deep and Over)
- 400.07 Controlled Settlement Joint Installation
- 400.08 Concrete Collar Detail
  
- Level 3 Lift Station Standard Details
- Level 2 Lift Station Standard Details
- Low Pressure System Standards Details