

**CITY OF ANN ARBOR PUBLIC SERVICES DEPARTMENT  
STANDARD SPECIFICATIONS**

<u>DIVISION NO.</u>	<u>DIVISION NAME</u>
I	<a href="#"><u>General Specifications</u></a>
II	<a href="#"><u>Design Standards</u></a>
III	<a href="#"><u>Materials Standards</u></a>
IV	<a href="#"><u>Utility Installation, Construction, and Repair</u></a>
V	<a href="#"><u>Street Construction and Repair</u></a>
VI	<a href="#"><u>Streetlight Installation and Construction</u></a>
VII	<a href="#"><u>Soil Erosion and Sedimentation Control</u></a>
VIII	<a href="#"><u>Landscaping and Restoration</u></a>
IX	<a href="#"><u>Pay Items</u></a>
X	<a href="#"><u>Standard Details</u></a>

**DIVISION I**  
**GENERAL SPECIFICATIONS**

**1. General**

1A.	Definitions.....	I-1
1B.	Specifications .....	I-5
1C.	Project Schedule.....	I-5
1D.	Permits .....	I-6
1E.	Inspections and City Departments Involvement.....	I-10
1F.	Hours of Work .....	I-13
1G.	Working in the Rain .....	I-14
1H.	Work in Right-of-Way .....	I-14
1I.	Traffic and Pedestrian Control and Access .....	I-17
1J.	Material Delivery and Handling.....	I-18
1K.	Rock .....	I-19
1L.	Easements and Right-of-Way.....	I-20
1M.	Excavated Material and Backfill Material.....	I-20
1N.	Existing Utilities, Structures, Features, and Site Conditions .....	I-20
1O.	Contractor's Drawings.....	I-21
1P.	Records and Measurements.....	I-21
1Q.	Elevations, Lines, and Grades .....	I-22
1R.	Property Markers/Monuments/Benchmarks.....	I-23
1S.	Sales Tax (Applicable to City Projects) .....	I-23
1T.	Temporary Facilities .....	I-24
1U.	Protection of Property and Safety .....	I-25
1V.	Protection of Trees .....	I-26
1W.	Good Will.....	I-26
1X.	Guarantee .....	I-26
1Y.	Quality of Materials and Equipment Furnished .....	I-27
1Z.	Quantities and Unit Prices (Applicable to City Projects).....	I-27
1AA.	Pre-Construction Meeting .....	I-27
1BB.	Daily Reports .....	I-27
1CC.	Soil Erosion Control.....	I-28
1DD.	Drainage Maintenance .....	I-28
1EE.	On Street Parking-No Parking Zones - Parking Enforcement .....	I-28
1FF.	Dust and Noise Control.....	I-29

**2. Control of Materials and Material Testing**

2A.	General .....	I-29
2B.	Basis for Acceptance or Rejection of Materials .....	I-29
2C.	Weighman .....	I-29
2D.	Use of State Tested Materials.....	I-29
2E.	Mix Designs .....	I-30
2F.	Suppliers Lists.....	I-30
2G.	Certification .....	I-30

**DIVISION II**  
**DESIGN STANDARDS**

**1. General**

1A.	Content of Plans and Specifications.....	II-1
1B.	Construction Plan Review/Approval .....	II-3
1C.	Easements .....	II-4

**2. Sanitary Sewer Design**

2A.	Capacity Design .....	II-5
2B.	Size, Grade and Materials .....	II-6
2C.	Information Required .....	II-7
2D.	Sewer Depth and Location .....	II-7
2E.	Manholes.....	II-8
2F.	Sewer Leads .....	II-9
2G.	Interceptors .....	II-10

**3. Storm Sewer Design**

3A.	Capacity Design .....	II-10
3B.	Size, Grade and Materials .....	II-11
3C.	Information Required .....	II-11
3D.	Sewer Depth and Location .....	II-12
3E.	Manholes.....	II-12
3F.	Inlets .....	II-13
3G.	Footing Drains/Sump Pump Discharges/Downspouts.....	II-13
3H.	Siltation/Soil Erosion Control .....	II-14

**4. Storm Water Retention/Detention**

4A.	General .....	II-14
4B.	Location .....	II-14

**5. Water Main Design**

5A.	General .....	II-14
5B.	Sites .....	II-15
5C.	Appurtenances.....	II-16
5D.	Hydrants.....	II-16
5E.	Domestic Service Connections.....	II-18
5F.	Fire Service Connections .....	II-19
5G.	Meters .....	II-20
5H.	Tapping Sleeves and Valves .....	II-21
5I.	Maximum Hydrant Lead Lengths and Dead-End Main Lengths .....	II-22

**6. Streetlights**

6A.	General .....	II-23
6B.	Poles, Cable and Conduit .....	II-23
6C.	Photocells .....	II-23
6D.	Handholes .....	II-23
6E.	Disconnect Cabinet .....	II-24
6F.	Transformer.....	II-24
6G.	Luminaire .....	II-24

## **7. Street Design**

7A.	General .....	II-25
7B.	Classification of Streets.....	II-25
7C.	Right-of-Way and Street Width .....	II-26
7D.	Vertical Alignment.....	II-26
7E.	Horizontal Alignment.....	II-27
7F.	Sight Distance .....	II-28
7G.	Intersections .....	II-29
7H.	Cul-de-Sacs .....	II-30
7I.	Pavement Design.....	II-30
7J.	Utility Locations .....	II-32

## **8. Drive Approaches, Sidewalks, and Bikepaths**

8A.	Drive Approaches .....	II-32
8B.	Sidewalks and Access Walks .....	II-33
8C.	Bike Paths .....	II-34
8D.	Lawn Extensions .....	II-35

**DIVISION III**  
**MATERIALS STANDARDS**

**1. General**

1A.	Cement and Lime .....	III-1
1B.	Aggregates & Soil Materials .....	III-1
1C.	Steel Reinforcement .....	III-1
1D.	Structural Steel.....	III-2
1E.	Miscellaneous Metal Products .....	III-2
1F.	Portland Cement Concrete .....	III-2
1G.	Flowable Fill .....	III-3
1H.	Other Materials .....	III-4

**2. Utilities**

2A.	Concrete Pipe and Fittings .....	III-4
2B.	High Density Polyethylene Smooth Interior Pipe .....	III-6
2C.	Vitrified Clay Pipe and Fittings .....	III-8
2D.	Polyvinyl Chloride Pipe and Fittings .....	III-9
2E.	Sewer Service Leads, Risers and Fittings .....	III-10
2F.	Cast Ductile Iron Pipe and Fittings .....	III-11
2G.	Valves .....	III-13
2H.	Fire Hydrants.....	III-14
2I.	Tapping Sleeves and Valves .....	III-14
2J.	Casing Pipe .....	III-15
2K.	Corrugated Metal Pipe .....	III-15
2L.	Pipe for Edge, Bank, and Foundation Drains .....	III-16
2M.	Manholes and Drainage Structures.....	III-17
2N.	Cured-In Place Pipe (CIPP).....	III-18

**3. Bituminous Mixtures**

3A.	General .....	III-18
3B.	Aggregate.....	III-19
3C.	Blending Aggregates.....	III-19
3D.	Bituminous Material.....	III-19
3E.	Composition of Bituminous Mixture.....	III-20

TABLE A-Master Gradation Range for Bituminous Mixtures..... III-20

TABLE B-Mix Design Criteria for Dense-Graded Aggregates..... III-21

TABLE C-Uniformity Tolerance Limits for  
Bituminous Mixture .....

III-22

**4. Streetlights**

4A.	General .....	III-23
4B.	Raceway System .....	III-23
4C.	Wire and Cable .....	III-23
4D.	Cable Connectors .....	III-24
4E.	Tape .....	III-24
4F.	Disconnect Cabinet .....	III-24
4G.	Lighting Fixtures.....	III-24
4H.	Poles and Foundations.....	III-25
4I.	Handholes .....	III-26
4J.	DDA Streetlights.....	III-26

**5. Soil Erosion & Sedimentation Control**

5A.	Temporary Seeding .....	III-27
5B.	Soil Erosion Control Silt Fence.....	III-27

**6. Landscaping & Restoration**

6A.	Plant Material.....	III-29
6B.	Planting and Backfill Soil Material .....	III-30
6C.	Staking (Support) and Wrapping Material .....	III-30
6D.	Miscellaneous Landscaping Materials .....	III-30
6E.	Seeding, Sodding and Restoration Materials.....	III-31
6F.	Chain Link Fence .....	III-31

**DIVISION IV**  
**UTILITY INSTALLATION, CONSTRUCTION AND REPAIR**

**1. General**

1A.	Scope .....	IV-1
1B.	Material Handling .....	IV-1
1C.	Pavement Removal.....	IV-2
1D.	Excavation.....	IV-2
1E.	Laying Pipe .....	IV-6
1F.	Making Joints.....	IV-7
1G.	Backfilling.....	IV-10
1H.	Manholes, Inlets, Gate Wells and Structures .....	IV-13
1I.	Backfilling Around Manholes, Inlets, Fire Hydrants Gate Wells and Structures.....	IV-15
1J.	Bores .....	IV-15
1K.	River and Stream Crossings .....	IV-18
1L.	Restoration of Damaged Surfaces and Property.....	IV-21
1M.	Replacement of Pavement and Road Surfaces .....	IV-21
1N.	Turf Restoration and Clean-Up .....	IV-22

**2. Sewer Construction**

2A.	Drop Connections .....	IV-22
2B.	Concrete Cradle and Encasement for Sewers.....	IV-22
2C.	Cutting Pipe .....	IV-23
2D.	Service Lead Connections and Fittings .....	IV-23
2E.	Riser Pipe for Service Leads .....	IV-24
2F.	Abandonment of Sewer.....	IV-24
2G.	Cured-In-Place Pipe (CIPP) for Existing Sewers .....	IV-24
2H.	Sewer Testing.....	IV-26
2I.	Sewer Repairs .....	IV-30

**3. Water Main Construction**

3A.	Connection to Existing Water Mains .....	IV-31
3B.	Oversized Water Mains.....	IV-32
3C.	Permissible Deflection at Joints .....	IV-33
3D.	Cutting Pipe .....	IV-33
3E.	Setting Water Main Fittings and Accessories .....	IV-33
3F.	Anchorage for Water Main Fittings and Accessories.....	IV-34
3G.	Abandonment of Water Main.....	IV-34
3H.	Water Main Testing .....	IV-34

**DIVISION V**  
**STREET CONSTRUCTION AND REPAIR**

**1. General**

1A.	Scope .....	V-1
1B.	Edge Drain Installation .....	V-1
1C.	Part Width Construction.....	V-2
1D.	Turf Restoration and Clean-Up .....	V-2

**2. Pavement Removal**

2A.	Bituminous Pavement Cutting and Removal.....	V-2
2B.	Cold Milling of Bituminous Pavement.....	V-3
2C.	Concrete Pavement, Curb & Gutter, Sidewalk, and Drive Removal .....	V-4
2D.	Subbase and Base Removal and Replacement .....	V-4

**3. Subgrade, Subbase, and Base Construction**

3A.	Pulverizing Bituminous Pavement .....	V-5
3B.	Machine Grading.....	V-5
3C.	Subgrade Undercutting.....	V-7
3D.	Construction of Subbase and Base Courses .....	V-8

**4. Concrete Curb & Gutter, Sidewalk, and Drive Construction**

4A.	Concrete Curb & Gutter .....	V-9
4B.	Concrete Sidewalk .....	V-10
4C.	Concrete Drive .....	V-11

**5. Bituminous Pavement Construction**

5A.	Cleaning .....	V-11
5B.	Bituminous Placement.....	V-12
5C.	Bituminous Finish Wedging.....	V-14
5D.	Structure Adjustment .....	V-14

**6. Concrete Pavement Construction**

6A.	Concrete Placement.....	V-15
6B.	Hot Joint Sealing.....	V-15
6C.	Structure Adjustment .....	V-15
6D.	Installation of Mechanical Anchors and Hook Bolts .....	V-16

**7. Patching**

7A.	Bituminous Pavement Patching and Repair .....	V-16
7B.	Concrete Pavement Patching and Repair .....	V-17
7C.	Brick Pavement Patching and Repair.....	V-17
7D.	Flowable Fill .....	V-17

**8. Pavement Markings**

8A.	Removal of Pavement Markings .....	V-18
8B.	Temporary Pavement Markings, Type R .....	V-18
8C.	Temporary Pavement Markings, Type NR.....	V-19
8D.	Reflectorized, Fast-Dry Pavement Markings .....	V-19
8E.	Hot-Applied, Thermoplastic Pavement Markings.....	V-19

**DIVISION VI**  
**STREETLIGHT INSTALLATION AND CONSTRUCTION**

**1. General**

1A.	General .....	VI-1
1B.	Measurements .....	VI-1
1C.	Service Characteristics .....	VI-2

**2. Conduit Installation**

2A.	General .....	VI-2
2B.	Rigid Galvanized Steel Conduit.....	VI-3
2C.	Plastic Conduit.....	VI-3
2D.	Warning Tape.....	VI-4
2E.	Backfilling.....	VI-4

**3. Foundations**

3A.	General .....	VI-4
-----	---------------	------

**4. Cable**

4A.	General .....	VI-5
4B.	Cable Connectors .....	VI-5
4C.	Tape .....	VI-6

**5. Handholes**

5A.	General .....	VI-6
5B.	DDA District.....	VI-6

**6. Lighting Fixtures**

6A.	General .....	VI-6
6B.	DDA District.....	VI-6

**7. Testing**

7A.	General .....	VI-6
-----	---------------	------

**DIVISION VII**  
**SOIL EROSION AND SEDIMENTATION CONTROL**

**1. General**

1A.	Purpose	VII-1
1B.	Necessity of Grading Permit .....	VII-1
1C.	Additional Requirements.....	VII-2
1D.	Responsibility of Permittee .....	VII-2

**2. Permit Application**

2A.	Grading Permit Application Data Required .....	VII-4
2B.	Minimum Design Standards.....	VII-5

**3. Review, Inspection and Enforcement**

3A.	General	VII-8
-----	---------	-------

**4. Construction Methods**

4A.	Vegetative Protection and Mulching .....	VII-9
4B.	Silt Fence .....	VII-9

**DIVISION VIII**  
**LANDSCAPING AND RESTORATION**

**1. Landscaping**

1A.	Staking Proposed Planting and Transplanting Locations.....	VIII-1
1B.	Planting Operations.....	VIII-1
1C.	Transplanting Operations .....	VIII-2
1D.	Protection and Maintenance .....	VIII-3
1E.	Guarantee .....	VIII-5
1F.	Acceptance .....	VIII-5

**2. Restoration**

2A.	General .....	VIII-5
2B.	Sodding	VIII-6
2C.	Seeding and Mulching.....	VIII-6
2D.	Maintenance and Acceptance.....	VIII-7
2E.	Clean-Up .....	VIII-8

**3. Chain Link Fence Installation**

3A.	General .....	VIII-8
3B.	Framework .....	VIII-8
3C.	Tension Wire.....	VIII-8
3D.	Fabric .....	VIII-8
3E.	Fasteners .....	VIII-9
3F.	Gates .....	VIII-9
3G.	Condition of Finished Fence .....	VIII-9

**DIVISION IX**  
**PAY ITEMS**

**1. General Items**

Item No. 101, General Conditions.....	IX-1
Item No. 102, Audiovisual Tape Coverage .....	IX-2
Item Nos. 110-116, Traffic Control.....	IX-3
Item No. 120, Project Supervision.....	IX-5
Item No. 130, Protective Fencing .....	IX-6
Item No. 135, Tree Removal (8" and larger) .....	IX-7
Item Nos. 140-144, Exploratory Excavation .....	IX-7

**2. Utility Items**

Item Nos. 300-355, Sewer Pipe, Fittings and Leads.....	IX-8
Item Nos. 360-379, Manholes and Structures.....	IX-9
Item No. 380, Sewer Boring & Jacking.....	IX-11
Item No. 385-386, Sewer Abandonment .....	IX-11
Item Nos. 391-392, Pipe Undercut & Refill .....	IX-12
Item Nos. 400-449, Water Main, Fittings, Fire Hydrants and Valves .....	IX-12
Item Nos. 450-455, Tapping Sleeve and Valve .....	IX-14
Item No. 460, Excavate & Backfill for Water Service Tap and Lead .....	IX-14
Item No. 470, Water Main Boring & Jacking.....	IX-15
Item Nos. 481-483, Water Main Abandonment.....	IX-15
Item Nos. 490-491, Air-Relief Assembly .....	IX-16

**3. Road Items**

Item Nos. 500-503, Removals .....	IX-17
Item Nos. 510-511, Cold-Milling Bituminous Pavement .....	IX-17
Item No. 512, Pulverizing Bituminous Pavement.....	IX-19
Item No. 516, 6" Wrapped Edge Drain .....	IX-19
Item No. 520, Machine Grading .....	IX-20
Item No. 521-522, Subgrade Undercutting.....	IX-20
Item Nos. 523-529, Aggregate Bases .....	IX-21
Item Nos. 530-538, Bituminous Pavement .....	IX-22
Item No. 539, Bituminous Finish Wedging .....	IX-23
Item No. 540, Non-Reinforced Concrete Pavement .....	IX-23
Item No. 545, Hot Joint Sealing .....	IX-24
Item Nos. 550-556, Concrete Curb & Gutter, Sidewalks, Ramps, and Drives .....	IX-24

Item Nos. 560-569, Adjustment, Lowering, Repair, Reconstructing Structures and Boxes .....	IX-25
Item No. 570, Part-Width Construction.....	IX-29
Item Nos. 580-581, Remove Pavement Markings .....	IX-30
Item Nos. 582-583, Temporary Pavement Markings.....	IX-30
Item Nos. 584-589 & 592-599, Pavement Markings .....	IX-31

#### **4. Streetlight Items**

Item Nos. 601-602 & 611-614, Electrical Conduit.....	IX-32
Item No. 620, Electrical Handhole .....	IX-32
Item Nos. 630-632, Foundations .....	IX-33

#### **5. Soil Erosion & Sedimentation Control Items**

Item Nos. 701-702, Stone and Inlet Filters.....	IX-33
Item No. 703, Silt Fence.....	IX-34

#### **6. Landscaping & Restoration Items**

Item Nos. 800-849, Landscape Items .....	IX-34
Item Nos. 881-882, Sodding and Permanent Seeding & Mulching .....	IX-35
Item No. 891, Clean-Up & Restoration .....	IX-35
Item Nos. 895-898, Chain Link Fence.....	IX-36

**DIVISION X**  
**STANDARD DETAILS**

STANDARD DETAIL NO.	TITLE	ISSUE DATE
TRENCH DETAILS		
SD-TD-1	Utility Trench-Type I (Under Bituminous Surface)	11-6-92
SD-TD-2	Utility Trench-Type II (Under Gravel Road)	11-6-92
SD-TD-3	Utility Trench-Type III (Under Concrete Pavement)	1-31-94
SD-TD-4	Utility Trench-Type IV (Under Concrete Pavement with Bituminous Overlay)	1-31-94
SD-TD-5	Utility Trench-Type V (In Greenbelt Area Outside Pavement Influence)	11-6-92
SD-TD-6	Utility Trench-Type VI (In Greenbelt Area Requiring Class II Backfill)	11-6-92
SD-TD-7	Utility Trench-Type VII (Under Sidewalk or Drive Approach)	11-6-92
SD-TD-8	Utility Trench-Type VIII (Water Main at Typical City Location, 3' Behind B/C)	11-6-92
SD-TD-9	Utility Trench-Type IX (Concrete Encasement)	11-6-92
SD-TD-10	Typical Edge Drain Trench	11-6-92
SD-TD-11	Edge Drain Trench In Resurfaced Street	1-31-94
SEWER DETAILS		
SD-S-1	Standard Manhole (Type I)-For 8" to 30" Sewers	11-6-92
SD-S-2	Standard Manhole (Type II)-For 36" to 54" Sewers	11-6-92
SD-S-3	Shallow Manhole (Type III)-For 8" to 54" Sewers	11-6-92
SD-S-4	Sampling Manhole (Type IV)	11-6-92
SD-S-5	Drop Manhole Connection	11-6-92
SD-S-6	Sewer Connection	11-6-92
SD-S-7	Sanitary Sewer Connection With Riser	11-6-92
SD-S-8	Sanitary Sewer Lead Cleanout	11-6-92
SD-S-9	Inlet-Junction Chamber	11-6-92

SD-S-10	Single Inlet Structure	11-6-92
SD-S-11	Double Inlet Structure	1-31-94
SD-S-12	Storm Water Retention/Detention Outlet Restrictor	11-6-92
SD-S-13	Sewer Bore	11-6-92
WATER DETAILS		
SD-W-1	Fire Hydrant Assembly	1-31-94
SD-W-2	Thrust Blocks	11-6-92
SD-W-3	Gate Well for Main 12" and Smaller	1-31-94
SD-W-4	Gate Well for Butterfly Valves 16" and Larger	11-6-92
SD-W-5	Tapping Sleeve and Valve In Well	11-6-92
SD-W-6	Permanent Blow-Off/Air Relief	1-31-94
SD-W-7	Temporary Testing Blow-Off	11-6-92
SD-W-8	Swab Launching Tee	11-6-92
SD-W-9	Water Main Bore	11-6-92
GENERAL UTILITY DETAILS		
SD-GU-1	Utility Location Plan (66' R.O.W. w/24' Pavm't)	11-6-92
SD-GU-2	Utility Location Plan (66' R.O.W. w/28' Pavm't)	11-6-92
SD-GU-3	Utility Location Plan (70' R.O.W.)	11-6-92
SD-GU-4	Tree Tunnelling	11-6-92
SD-GU-5	Standard Casting Schedule	11-6-92
SD-GU-6	Manhole Casting Adjustment	11-6-92
SD-GU-7	Valve/Monument Box Adjustment	11-6-92
SD-GU-8	Structure Plate	11-6-92
SD-GU-9	Manhole & Valve/Monument Box Lowering	11-6-92
ROAD DETAILS		
SD-R-1	Barrier Curb & Gutter	11-6-92
SD-R-2	Mountable Curb & Gutter	11-6-92
SD-R-3	Spill-Out Barrier Curb & Gutter	11-6-92
SD-R-4	Spill-Out Mountable Curb & Gutter	11-6-92

SD-R-5	Mechanical Anchor and Hook Bolt	11-6-92
SD-R-6	Type 'M' Drive Approach (For Use on Asphalt Streets with Barrier Curb)	1-31-94
SD-R-7	Type 'L' Drive Approach (For Use on Streets With Barrier or Mountable Curb)	1-31-94
SD-R-8	Modified 'M' Drive Approach (For Use on Concrete Streets with Barrier Curb)	1-31-94
SD-R-9	Sidewalk and Curb & Gutter Joints	1-31-94
SD-R-10	Sidewalk Ramp	1-31-94
SD-R-11	DDA Brick Paving-Plan	1-31-94
SD-R-12	DDA Tree Pit-Section	1-31-94
SD-R-13	DDA Brick Paving-Section	1-31-94
SD-R-14	DDA Concrete Curb-Section	1-31-94
SD-R-15	Urban Guardrail Location	1-31-94
<b>STREETLIGHT DETAILS</b>		
SD-SL-1	Streetlight Foundation	1-31-94
<b>SOIL EROSION &amp; SEDIMENTATION CONTROL DETAILS</b>		
SD-EC-1	Inlet Filter	1-31-94
SD-EC-2	Stone Filter	11-6-92
SD-EC-3	Silt Fence	11-6-92
SD-EC-4	Straw Bale Diversion Structure	11-6-92
<b>LANDSCAPING DETAILS</b>		
SD-L-1	Chain Link Fence	1-31-94
SD-L-2	Step Chain Link Fence	1-31-94
<b>MISCELLANEOUS DETAILS</b>		
SD-M-1	Tree Protection	11-6-92
SD-M-2	Mailbox/Newspaper Tube Installation and Relocation	11-6-92
SD-M-3	Vertical Control Monument	11-6-92