

# STANDARD SPECIFICATIONS TABLE OF CONTENTS

<b>CHAPTER 1 - GENERAL REQUIREMENTS .....</b>	<b>1</b>
1.1 PURPOSE OF DOCUMENTS .....	1
1.2 ENCROACHMENT PERMIT, FEES AND BONDING REQUIRED.....	1
1.2.1 Forward:.....	1
1.2.2 Policies:.....	1
1.2.3 General Conditions: .....	4
1.2.4 Protection of Public During Construction: .....	6
1.2.5 Excavation Operation:.....	7
1.2.6 Backfilling Operation:.....	8
1.2.7 Resurfacing: .....	8
1.2.8 Environmental Control:.....	9
1.2.9 Guarantees:.....	10
1.3 CONTRACTOR AND CONSTRUCTION PLAN APPROVAL .....	11
1.4 PRE-CONSTRUCTION MEETINGS .....	11
1.5 CONSTRUCTION OF PUBLIC IMPROVEMENTS .....	12
1.5.1 Responsibility of the Developer: .....	12
1.5.2 Construction Survey:.....	12
1.5.3 Inspections: .....	12
1.5.4 Notification of Needed Inspections:.....	12
1.5.5 Definition of “City Engineer / Public Works Representative”:	13
1.5.6 Conflict: .....	13
1.5.7 Variance: .....	13
1.5.7 Amendments: .....	14
1.5.8 Acceptance of Improvements:.....	14
1.6 ELECTRONIC AND RECORD DRAWINGS .....	14
1.7 TEMPORARY SERVICES .....	14
1.8 CODES AND STANDARDS .....	14
1.9 STATE AND LOCAL LAWS .....	14
1.10 COMPLIANCE WITH GOVERNMENTAL REGULATIONS.....	14
1.10.1 United States Occupational Safety and Health Administration Regulations: .....	14
1.10.2 Utah State Industrial Commission Regulations: .....	15
1.10.3 City Ordinances:.....	15
1.10.4 UDOT Requirements: .....	15
1.10.5 Permits: .....	15
1.11 FEDERAL, STATE, AND LOCAL INSPECTING AGENCIES .....	15
1.12 PUBLIC SAFETY AND CONVENIENCE.....	15
1.12.1 Compliance with Rules and Regulations: .....	15
1.12.2 Road Closures and Obstructions: .....	15
1.12.3 Protection of the Traveling Public: .....	16
1.13 CONFINEMENT OF WORK AND ACCESS TO RIGHT-OF-WAY AND EASEMENTS .....	16
1.14 NOTIFICATION OF RESIDENTS .....	16
1.15 WEATHER CONDITIONS .....	16
1.16 LAND MONUMENTS .....	16
1.17 SOURCE OF MATERIALS .....	17
1.18 OPERATION AND MAINTENANCE MANUALS .....	17
1.19 INTERFERING STRUCTURES, UTILITIES AND FACILITIES.....	17

1.20	MATERIAL AND COMPACTION TESTING.....	17
1.20.1	Guarantee: .....	18
1.20.2	Test Schedule: .....	18
1.20.3	Duties of Contractor: .....	18
1.21	TELEVISIONING OF GRAVITY FLOW PIPELINES.....	19
1.22	LOT CORNER AND SUBDIVISION MONUMENT .....	19
<b>CHAPTER 2 - TRENCH EXCAVATION AND BACKFILL .....</b>		<b>20</b>
2.1	GENERAL .....	20
2.2	SHEETING, BRACING AND SHORING OF EXCAVATIONS .....	20
2.3	CONTROL OF GROUNDWATER.....	20
2.4	TRENCH EXCAVATION.....	20
2.4.1	Authorized Over-Excavation:.....	20
2.4.2	Unauthorized Over-Excavation:.....	20
2.4.3	Trench Width: .....	21
2.4.4	Trenches in Embankments: .....	21
2.4.5	Placement of Excavated Material:.....	21
2.4.6	Fine Grading the Trench Bottom: .....	21
2.5	TRENCH BACKFILL .....	21
2.5.1	Imported Granular Material: .....	22
2.5.2	Foundation Material Placement: .....	23
2.5.3	Pipe Embedment Material Placement: .....	23
2.5.4	Granular Backfill Material Placement:.....	24
2.5.5	Compaction: .....	24
2.6	PRIVATE PROPERTY ACCESS AND RESTORATION .....	24
2.7	RESTORATION OF CONSTRUCTION SITE.....	25
2.8	DEVELOPER/CONTRACTOR'S RESPONSIBILITY .....	25
<b>CHAPTER 3 - PRESSURE IRRIGATION .....</b>		<b>26</b>
3.1	GENERAL .....	26
3.2	PVC PIPE .....	26
3.2.1	Materials: .....	26
3.2.2	Joints:.....	26
3.2.3	Fittings: .....	26
3.2.4	Detectable Caution Tape:.....	26
3.2.5	Tracer Wire:.....	26
3.3	RESILIENT SEATED GATE VALVE .....	27
3.4	BUTTERFLY VALVE .....	27
3.5	VALVE BOXES .....	27
3.5.1	Placement of Concrete Collars:.....	27
3.6	PIPE INSTALLATION .....	27
3.6.1	Cutting:.....	27
3.6.2	Dewatering of Trench: .....	28
3.6.3	Laying of Pipe:.....	28
3.6.4	Joint Restraints:.....	28
3.6.5	Thrust Blocking: .....	28
3.6.6	Connections to Existing Irrigation Lines:.....	28
3.6.7	Pipe Embedment: .....	29
3.7	PRESSURE IRRIGATION SERVICE CONNECTION .....	29
3.7.1	Extent and Locations of Laterals:.....	29
3.7.2	Connection to Main:.....	29
3.7.3	Polyethylene Tubing: .....	29
3.7.4	Compression Connection: .....	30
3.7.5	Ball Valve Curb Stop:.....	30

3.7.6	Service Box:	31
3.7.7	PVC Pipe:	31
3.7.8	Service Pipe Installation:	31
3.8	PIPELINE TESTING AND FLUSHING	31
3.8.1	Pressure Test:	31
3.8.2	Leakage Test:	32
3.8.3	Acceptance of Testing:	33
3.8.4	Flushing:	33
3.9	AIR RELEASE and VACUUM RELIEF VALVE	34
3.10	PRESSURE IRRIGATION DRAINS	34
<b>CHAPTER 4 - CULINARY WATER</b>		<b>35</b>
4.1	GENERAL	35
4.2	DUCTILE IRON PIPE	35
4.2.1	Materials:	35
4.2.2	Joints:	35
4.2.3	Coatings and Linings for Ductile Iron Pipe:	35
4.2.4	Corrosion Protection and Soil Tests:	36
4.2.5	Fittings:	36
4.2.6	Detectable Caution Tape:	36
4.2.7	Tracer Wire:	36
4.3	PVC PIPE	36
4.3.1	Materials:	36
4.3.2	Joints:	37
4.3.3	Fittings:	37
4.3.4	Detectable Caution Tape:	37
4.3.5	Tracer Wire:	38
4.4	PIPE INSTALLATION	38
4.4.1	Cutting:	38
4.4.2	Dewatering of Trench:	38
4.4.3	Laying of Pipe:	38
4.4.4	Pipe Bedding:	38
4.4.5	Thrust Blocking:	39
4.4.6	Connections to Existing Water Lines:	39
4.5	WATER SERVICE LATERALS	39
4.5.1	Extent and Locations of Laterals:	39
4.5.2	Connection to Main:	40
4.5.3	Meter Setter, Box and Cover:	40
4.5.4	Special Joints and Fittings:	40
4.5.5	Flushing, Testing and Disinfecting:	41
4.5.6	Damage and Repair of Water Mains and Appurtenances:	41
4.6	FLUSHING, DISINFECTING, AND TESTING OF WATER MAINS	41
4.6.1	Disinfection:	41
4.6.2	Bacteria Test	42
4.6.3	Flushing:	42
4.6.4	Pressure Test:	42
4.6.5	Leakage Test:	43
4.7	RESILIENT SEATED GATE VALVE	44
4.8	BUTTERFLY VALVE	44
4.9	VALVE BOXES	44
4.9.1	Placement of Concrete Collars	44
4.10	FIRE HYDRANTS	45
4.11	AIR RELEASE and VACUUM RELIEF VALVE	45

<b>CHAPTER 5 - STORM DRAIN &amp; IRRIGATION.....</b>	<b>46</b>
5.1    GENERAL .....	46
5.2    MINIMUM SIZES .....	46
5.3    PIPE .....	46
5.3.1 Reinforced Concrete Pipe: .....	46
5.3.2 Corrugated High Density Polyethylene Pipe:.....	46
5.4    PIPE LAYING .....	47
5.4.1 Reinforced Concrete Pipe: .....	47
5.4.2 Corrugated High Density Polyethylene Pipe:.....	47
5.5    INSTALLATION REQUIREMENTS FOR LINE AND GRADE .....	47
5.6    GRAVEL FOUNDATION FOR PIPE.....	47
5.7    PIPE BEDDING .....	48
5.8    CLEANING AND TELEVISIONING.....	48
5.9    TESTS.....	48
5.9.1 Air Testing: .....	48
5.9.2 GO/NO-GO” Mandrel Proof Testing (For HDPE Pipe Only): .....	48
5.10   MANHOLES OR JUNCTION BOXES.....	49
5.10.1 Setting of Manhole Frames and Covers and Placement of Concrete Collars .....	49
5.11   PIPE CONNECTIONS .....	49
<b>CHAPTER 6 - SANITARY SEWER .....</b>	<b>50</b>
6.1    GENERAL .....	50
6.2    PIPE .....	50
6.3    FITTINGS.....	50
6.4    PIPE LAYING .....	50
6.5    GRAVEL FOUNDATION FOR PIPE.....	50
6.6    INSTALLATION REQUIREMENTS FOR LINE AND GRADE .....	50
6.7    PIPE BEDDING .....	51
6.8    CLEANING AND TELEVISIONING.....	51
6.9    TESTS.....	51
6.9.1 Infiltration Test: .....	51
6.9.2 Exfiltration Test: .....	51
6.9.3 Air Testing: .....	52
6.9.4 “Go/No-Go” Mandrel Proof Testing:.....	52
6.10   MANHOLE CONNECTIONS.....	52
6.11   SEWER LATERAL CONNECTIONS .....	52
6.12   SEWER SERVICE LATERALS .....	53
6.12.1 Extent of Laterals and Location of Laterals: .....	53
6.12.2 Excavation and Backfill: .....	53
6.12.3 Pipe: .....	53
6.12.4 Cover Over Sewer Lateral Lines: .....	53
6.12.5 Testing: .....	53
6.12.6 Damage and Repairs of Sewers and Appurtenances: .....	53
6.13   ORANGEBURG PIPE.....	54
<b>CHAPTER 7 - MANHOLES .....</b>	<b>55</b>
7.1    GENERAL .....	55
7.1.1 Manhole Sizing: .....	55
7.2    CONCRETE BASE .....	55
7.3    WALL AND CONE SECTIONS.....	55
7.4    DROP MANHOLES .....	55
7.5    MANHOLE RINGS AND COVERS.....	55
7.5.1 Setting of Manhole Frames and Covers and Placement of Concrete Collars .....	56
7.6    CONNECTIONS TO EXISTING SEWER MAINS.....	56

7.7	CONNECTIONS TO EXISTING SEWER MANHOLES .....	56
7.8	GREASE INTERCEPTORS .....	56
7.9	POLYMER MANHOLES - HYDROGEN SULFIDE PROTECTION .....	57
<b>CHAPTER 8 - EARTHWORK .....</b>		<b>58</b>
8.1	GENERAL .....	58
8.2	EXCAVATION FOR MANHOLES, BOXES, AND OTHER STRUCTURES .....	58
8.3	GRANULAR FOUNDATION BORROW .....	58
8.4	BACKFILL AROUND STRUCTURES .....	58
8.5	CONSTRUCTION OF EMBANKMENTS AND FILLS .....	58
	8.5.1 Foundation Preparation: .....	58
	8.5.2 Placement: .....	59
	8.5.3 Borrow: .....	60
8.6	COMPACTION OF MATERIALS .....	60
	8.6.1 Under Roadways: .....	60
	8.6.2 Under Sidewalks and Driveways: .....	60
8.7	REMOVAL OF DEFECTIVE FILL AND PLACEMENT OF ACCEPTABLE FILL .....	61
<b>CHAPTER 9 - PORTLAND CEMENT CONCRETE .....</b>		<b>62</b>
9.1	GENERAL .....	62
9.2	MATERIALS .....	62
	9.2.1 Portland Cement: .....	62
	9.2.2 Aggregate: .....	62
	9.2.3 Water: .....	63
	9.2.4 Air-Entraining Agent: .....	63
	9.2.5 Water-Reducing and Set-Retarding Admixtures: .....	63
	9.2.6 Curing compound: .....	63
9.3	CLASS OF CONCRETE .....	63
9.4	COMPOSITION OF CONCRETE .....	63
	9.4.1 Aggregate: .....	63
	9.4.2 Water: .....	64
	9.4.3 Air-Content: .....	64
	9.4.4 Admixtures: .....	64
9.5	DESIGN OF THE CONCRETE MIX .....	64
9.6	OBSERVATION AND TESTING .....	64
	9.6.1 Concrete Testing Requirements: .....	64
	9.6.2 Evaluation of Test Results: .....	65
	9.6.3 Acceptance: .....	65
9.7	HANDLING AND MEASUREMENT OF MATERIALS .....	65
9.8	MIXERS AND MIXING .....	66
9.9	FORMS .....	66
9.10	PREPARATION OF FORMS AND SUBGRADE .....	66
9.11	CONVEYING .....	67
9.12	PLACING .....	67
9.13	CONSTRUCTION JOINTS .....	67
9.14	EXPANSION AND CONTRACTION JOINTS .....	68
9.15	WATERSTOP .....	68
9.16	REMOVAL OF FORMS .....	68
9.17	FINISHING FORMED SURFACES .....	68
9.18	FINISHING UNFORMED SURFACES .....	69
9.19	CURING AND PROTECTION .....	69
9.20	REMOVAL OR REPAIR .....	69
9.21	CONCRETING IN COLD WEATHER .....	70
9.22	CONCRETING IN HOT WEATHER .....	70

<b>CHAPTER 10 - CONCRETE REINFORCEMENT .....</b>	<b>71</b>
10.1 GENERAL .....	71
10.2 FABRICATION AND PLACING STEEL REINFORCEMENT .....	71
10.2.1 Fabrication: .....	71
10.2.2 Clearances: .....	71
10.2.3 Support: .....	72
10.2.4 Splicing: .....	72
10.3 EPOXY COATING .....	72
10.3.1 Prequalify all Coatings: .....	72
10.3.2 Coat Bars as Specified: .....	73
10.3.3 Handling: .....	73
10.4 FIELD CUTTING EPOXY-COATED BARS .....	73
10.4.1 Cutting: .....	73
10.4.2 Repairing: .....	73
10.5 FIBER REINFORCEMENT .....	73
<b>CHAPTER 11 - RESTORATION OF SURFACE IMPROVEMENTS.....</b>	<b>74</b>
11.1 GENERAL .....	74
11.2 FIELD VERIFICATION OF IMPROVEMENTS .....	74
11.3 REMOVAL OF PAVEMENT, SIDEWALKS, CURBS, ETC. ....	74
11.4 MATERIALS.....	74
11.5 RESTORING BITUMINOUS OR CONCRETE STREET SURFACES .....	74
11.5.1 Before Excavation: .....	74
11.5.2 Temporary Graded Surface: .....	74
11.5.3 Preparation for Paving: .....	75
11.5.4 Bituminous Surface: .....	75
11.5.5 Special Requirements for Longitudinal Trench Repair: .....	75
11.6 UTILITY POTHOLES-KEYHOLE METHOD .....	76
11.6.1 Pothole Excavation: .....	76
11.6.2 Pothole Backfill: .....	76
11.6.3 Bonding Agent: .....	76
11.6.4 Pavement Restoration: .....	77
11.6.5 Deficiencies: .....	77
11.7 GRAVEL SURFACE.....	77
11.7.1 Layer Thickness: .....	77
11.7.2 Placement: .....	77
11.7.3 Gradation: .....	78
11.8 MISCELLANEOUS IMPROVEMENTS .....	78
11.9 RESTORATION OF SURFACES .....	78
11.10 CLEANUP .....	78
11.11 PAVEMENT MARKINGS .....	78
11.12 LANDSCAPE RESTORATION.....	78
<b>CHAPTER 12 - ROADWAY CONSTRUCTION.....</b>	<b>80</b>
12.1 GENERAL .....	80
12.2 MILLING / PULVERIZING .....	80
12.3 EARTHWORK .....	80
12.4 ROADWAY EXCAVATION.....	80
12.5 SUBGRADE PREPARATION.....	80
12.6 GRANULAR BORROW .....	80
12.7 UNTREATED BASE COURSE.....	81
12.8 ASPHALT PAVEMENT .....	81
12.9 ADJUSTING MANHOLES AND BOXES TO FINAL GRADE & INSTALLING CONCRETE COLLAR.....	82

12.10	ADJUSTING VALVE BOXES TO FINAL GRADE & INSTALLING CONCRETE COLLAR.....	82
<b>CHAPTER 13 - CONCRETE PLACEMENT.....</b>		<b>84</b>
13.1	GENERAL.....	84
13.2	CONCRETE .....	84
13.3	GRADE.....	84
13.4	FORMS.....	84
13.5	SUBGRADE PREPARATION.....	84
13.6	CONSTRUCTION OF CURB, GUTTER AND SIDEWALK.....	84
	13.6.1 Matching Existing Monolithic Curb, Gutter and Sidewalk .....	85
	13.6.2 Curb and Gutter Joints .....	85
	13.6.3 Sidewalk Joints.....	85
	13.6.4 Finishing of Sidewalks .....	85
	13.6.5 Finishing of Curb and Gutter.....	85
13.7	CONCRETE DRIVE APPROACH .....	85
13.8	ADA (AMERICANS WITH DISABILITIES ACT) STANDARDS IN PUBLIC RIGHTS-OF-WAY .....	86
<b>CHAPTER 14 - UTAH DEPARTMENT OF TRANSPORTATION RIGHTS-OF-WAY.....</b>		<b>87</b>
14.1	GENERAL .....	87
<b>CHAPTER 15 - CASINGS.....</b>		<b>88</b>
15.1	GENERAL .....	88
<b>CHAPTER 16 - FLOWABLE FILL (CLSM).....</b>		<b>89</b>
16.1	GENERAL .....	89