



Draft

Standard Specifications and Drawings

Prepared by
Santaquin City Engineering and Public Works.
(Portions of text and Unaltered Drawings
Provided by J-U-B Engineers, Inc.)

**Approval by the Santaquin City Council
January XX, 2025**

This Manual Updated Yearly

(Page Intentionally Left Blank)

Chapter 4

Standard Specifications

(Page Intentionally Left Blank)

2024 Standard and Specifications and Drawings Updates

Errata for

Changes made to the Santaquin City Standard Specification and Drawings

Division 1

- Section 1.23 Subsection E: Compaction test of Soil, Untreated Base Course
The proposed change is the update the testing requirements to include subgrade

Section 1.23 Subsection E Compaction Test of Soil, Untreated Base Course, **and subgrade:**

- 1) Laboratory test to establish maximum laboratory density shall be determined in accordance with AASHTO T-180, Method D or ASTM D 1557.
- 2) Samples to determine laboratory density shall be taken from the stockpiled backfill or from the un-compacted **imported subgrade or** base course material in place.
- 3) The acceptance of soil, **subgrade, and** base course, with respect to compaction shall be based upon the average density of all density tests made in a lot.
 - a) Field density tests shall be taken as specified in AASHTO T-191 or by use of a portable nuclear density testing device. Field density tests shall be taken at a depth equal to ½ the maximum depth of the lift tested.
 - b) A lot shall equal the amount of soil or untreated base course compacted in each production day.
 - c) A test lot shall be divided into sub-lots and one density test shall be taken within each sub-lot.
 - d) The location of sampling sites within the sub-lot shall be chosen on a random basis by use of a suitable random number table or at the locations designated by the Public Works Representative/Engineer.
 - e) Each test lot shall have a minimum of two (2) sub-lots. A sub-lot shall be no larger than 1,000 cubic yards for embankment, no larger than 200 cubic yards for backfill over pipe or against structures and no larger than 500 tons for untreated road base.
- 4) The test results of all samples tested shall be reported to the City. A test lot shall be accepted when the average of the density determinations is not less than the density required for that improvement in these specifications and when no one density determination is less than 95% of the density required by these specifications.
- 5) Compaction test not meeting the required specifications may be rejected and re-compaction or related construction efforts to obtain compaction shall be at the Developer/Contractor's expense.
- 6) All compaction testing must be completed no less than 24 hours prior to the placement of **any structural material, road base,** asphalt or concrete within the roadway and sidewalk.

Division 3

- Section 3.04 Subsection G. Tracer Wire
The proposed change requires a continuity test for tracer wire on pressure irrigation pipe

All pipe shall include a 12 gauge solid THHN tracer wire installed according to NESC standards. The locator wire shall be installed in the pipeline trench approximately 6-inches above the top of pipe. The locator wire shall be extended 30" into all service boxes to permit a continuity connection when doing line location.

A continuity test shall be conducted to ensure there are no breaks in the tracer wire prior to the placement of material over said wire.

- Section 3.05 Subsection F. Service Box and Meter Box
The proposed change requires a purple lid for the irrigation service box

Service Box and Meter Box shall be DFW Plastics 1324C4-12-4T 63D **with a purple lid** or approved equivalent.

- Section 3.05 Subsection F. Service Box and Meter
The proposed change requires PVC conduit be installed between the PI and Culinary meter boxes

Where PI and culinary meters are located together, A 1 ¼" PVC conduit shall be installed extending from the PI meter box to the Culinary Water Box, and stub at least 2" into each box.

Division 3A

- Section 3A.04 Subsection I. Tracer Wire
The proposed change requires a continuity test for tracer wire on culinary water pipe

A continuity test shall be conducted to ensure there are no breaks in the tracer wire prior to the placement of material over said wire.

Division 3A

- Section 3A.05 Subsection D. Meter, Meter Setter Assembly, Meter Box and Cover:
The proposed change requires PVC conduit be installed between the PI and Culinary meter boxes

Where PI and Culinary meters are located together, A 1 ¼" PVC conduit shall be installed extending from the PI meter box to the Culinary Water Box, and stub at least 2" into each box.

Division 3A

- Section 3A.05 Subsection D. Meter, Meter Setter Assembly, Meter Box and Cover:
The proposed change requires 4" meter vaults to have drain rock instead of a concrete floor

4" Meter Vaults shall have no concrete floor. Place 12" of drain rock along the bottom of vault.

Division 6

- Section 6.06 Fire Hydrants
The proposed change requires Fire Hydrants to be located outside of the clear view area as defined by city code 10.16.090
The proposed change requires a minimum of a 3 foot square concrete maintenance pad around the base of fire hydrants
Proposed change to require an "snake pit" access box for the locator wires at the fire hydrant

Fire Hydrants shall be located outside of the clear view area as defined in Santaquin City Code

All Fire Hydrants shall have a concrete maintenance pad surrounding the base of the fire hydrant. The fire hydrant shall be located in the center of the concrete pad. The maintenance pad shall be a minimum of 3 foot wide by the width of the planter strip or 3 foot square, whichever is greater.

A snake pit access box (PART #: CD14BTP BLUE LID) or approved equivalent shall be provided by and installed by the developer to house the locator wires at the hydrant. Box shall be located between the hydrant and the curb and gutter and within the concrete maintenance pad.

- Section 6.10 Pressure Irrigation 4-Inch Flushing, Air Inlet and Removal Facility
Proposed change to require 4" vaults to have drain rock instead of a concrete floor

Each 4-inch flushing, air inlet and removal facility shall be constructed as detailed and placed at the locations shown on the drawings. The work is to include excavation, gravel foundation, backfill, piping, fittings, concrete thrust blocks and collars, valves, utility boxes, sod replacement, and appurtenances.

4" Vaults shall have no concrete floor. Place 12" of drain rock along the bottom of vault.

Division 10

- Section 10.03 Removal of Pavement, Sidewalks, Curbs, Etc.
Proposed change to require asphalt joints to run diagonally at a small angle

Asphalt joints shall run diagonally across the roadway at a 1 to 2 degree angle

Division 13

- Section 13.04 Manholes
Proposed change to require flowable fill where manholes and inlet boxes are located close together

Flowable fill shall be used between the manhole and an inlet box if they are located 32” or less from each other.

- Section 13.07 Subsection A. Concrete Inlet boxes:
Proposed change to correct the part number of the storm drain grate required

The storm drain inlet grate and frame shall be a D & L Supply I-35178 single unit with curb box ~~with type “V” grate or equal.~~ Grates and frames are to be dipped in cold tar epoxy following fabrication. Following construction of the curb and gutter improvements and before the final inspection each inlet box shall have a decal mounted on the curb face adjacent to the inlet box. The decal shall be purchased from the City by the Developer.

- Section 13.07 Subsection A. Concrete Inlet Boxes:
Proposed change to require a 10” opening at the curb box

The opening of the curb box must be at least 10” wide.

- Proposed change to adds Section 13.09 requirements for Underground Stormwater Detention Systems

Section 13.09 UNDERGROUND STORMWATER DETENTION SYSTEMS

All underground stormwater detention systems are required to have a 10” diameter inspection port located at the end of the infiltration gallery furthest away from the inlet at the chambers.

The inspection port shall have a threaded cap and have a minimum 10 inch cast iron lid for access.

Division 16

- Section 16.05 Topsoil
Proposed change to require fractured rock surface in detention basins

Detention basins shall have a minimum of 6 inches of 2-3 inch Fractured rock along the entire surface of the basin, if not landscaped with grass.

Division 20:

- Section 20.02 Topsoil Requirements and Placement
Proposed change to specify a topsoil mix for landscaping

Topsoil shall be fertile, sandy loam topsoil, obtained from well-drained areas. It shall be without admixture of subsoil or slag and shall be free of stones, lumps, sticks, plants or their roots, toxic substances or other extraneous matter that may be harmful to plant growth and would interfere with future maintenance. Topsoil ~~pH range shall be 5.3 to 6.0~~ shall meet the requirements listed in the tables below. Native topsoil at the site may be used as the final topsoil layer if it is of adequate quality. Where topsoil is required a 6” layer of topsoil shall be placed.

Physical Properties

Test	pH	EC	SAR	% Sand	% Silt	% Clay	% OM
Acceptable level(s)	5.5-8.0	<3.0	<6.0	15-60	10-60	5-30	>1.0

Nutrients

Test	No3-N ppm	P ppm	K ppm	Fe ppm
Acceptable level(s)	>20	>11	>130	>10

Section 20.04 Subsection A. Basic Irrigation Requirements

- Proposed change to specify a minimum of 2” diameter for the irrigation connection to open space areas
- Proposed change to require unions at all valves filters and connection points

The Developer/Irrigation Contractor shall provide labor, materials, equipment and services necessary to complete the irrigation work as defined in these specifications and as indicated on the Improvement Drawings. The Contractor shall coordinate work of this section with work of all related trades and subcontractors to assure smooth progression of work. Work shall include, but is not limited to:

1. The minimum service connection to all open space areas either public dedication or privately maintained must be a minimum of 2” diameter.
2. Completing the irrigation system as shown on the Improvement Drawings and required by these specifications.
3. Verifying the underground utility locations.
4. Protecting and/or restoring all existing improvements.
5. Trenching and backfilling for all pipes, valves and drain pits specified.
6. Furnishing and installing all filter mains, laterals, risers and fitting, heads, quick-coupling valves, gate valves, control valves, controllers, electric wire, controls, etc., and all necessary specialties and accessories.
7. Furnishing and installing all sleeves beneath walkways, roads, and driveways where required.
8. Testing of irrigation system.
9. Regulating and adjusting all heads and programming controller.
10. Unions shall be installed at all valves, filters, and connection points, etc.

Section 20.04 Sub-section C. Fittings

Proposed change to require swing joints on fittings 1” or larger.

Swing joints are required on all fittings 1” and greater in diameter.

Section 20.04 Subsection D. Automatic Controller

Proposed change to the model of automatic controller required and to require a hydrometer and valve to accompany the controller

~~The developer will check with the Public Works Director prior to purchasing an automatic controller. Unless directed otherwise the automatic controller will be a Huner controller with stainless steel pedestal mount ICC, with TBOX batter operated module.~~ The automatic controller shall be a WeatherTrak pro3 2 wire controller and ET Pro3 2-Wire housing box. The controller shall be housed in a NEMA Type 4, weatherproof, watertight enclosure with lockable access door. The enclosure shall be at grade or pedestal mounted as determined by the Public Works Director.

The developer shall provide an appropriately sized Netafim combined hydrometer and valve, with a digital register, after the point of connection, such as the meter. The equipment must be installed with the manufacturer’s required materials.

- Section 20.04 Subsection J. Valves and Couplers:
Proposed change to require manual isolation valves on sprinklers

Manual Isolation valves shall be installed at each sprinkler valve.

- Section 20.04
Proposed change to add a requirement for filters before the flow meter, and bypass systems on filters larger than 4"

Sub-section L. Filters

All filters must be installed before the flow meter. Filters must be an auto-flushing Amiad filter or approved equivalent.

All Filters 4" or larger shall utilize a bypass system with a manual flush drain valve before the filter.

- Section 20.07 Trees
Proposed change to require deep root tree irrigation systems on trees

A deep root tree irrigation system shall be installed on all trees.

- Proposed change to add section 20.08 Recreational Facility specifications for recreational facilities, including pour-in-place rubber play surfaces for playgrounds, and pavilion materials.

Section 20.08 Recreational Facilities

Playgrounds: Pour-in-place rubber surfaces shall be installed under all playground equipment. The manner and area of installation shall be done according to the approved plans and the manufacturer's recommendations for both the play structure and play surface. Colors must be neutral earthtone colors approved by Santaquin City.

Pavillions: Any pavillions installed shall be finished with an architectural powder coated metal or aluminum construction.

Standard Drawings:

- All Drawings: Update title block to show current address
- W3 Update the label on 4" Double check valve to state that it must be testable
- PI2 change label on conduit between meter boxes to match specification text
- W7: Remove label that says 2" PVC on the Eclipse Hydrant Blow-Off Assembly and replace with 2" ductile iron

CHAPTER 4

STANDARD SPECIFICATIONS

TABLE OF CONTENTS

DIVISION 1: GENERAL REQUIREMENTS

Section 1.01	PURPOSE OF DOCUMENTS.....	pg. 1
Section 1.02	DEFINITIONS	pg. 1
Section 1.03	EXCAVATION PERMIT, FEES, AND BONDING REQUIRED	pg. 1
	Sub-Section A. Permit Application	
	Sub-Section B. Fee Assessment	
	Sub-Section C. Bonding	
Section 1.04	CONTRACTOR AND CONSTRUCTION PLAN APPROVAL	pg. 2
Section 1.05	PRE-CONSTRUCTION CONFERENCE	pg. 2
Section 1.06	TIMELY COMPLIANCE WITH THE ISSUED PERMIT	pg. 3
	Sub-section A. Inspections	
	Sub-section B. Notification of Needed Inspections	
	Sub-section C. Responsibility of the Developer	
	Sub-section D. Conflict	
Section 1.07	ELECTRONIC AND RECORD DRAWINGS	pg. 3
Section 1.08	TEMPORARY SERVICES	pg. 4
Section 1.09	CODES AND STANDARDS	pg. 4
Section 1.10	STATE AND LOCAL LAWS	pg. 4
Section 1.11	COMPLIANCE WITH GOVERNMENTAL REGULATIONS	pg. 4
	Sub-section A. United States Occupational Safety and Health Administration Regulations	
	Sub-section B. Utah State Industrial Commission Regulations	
	Sub-section C. City Codes and Ordinances	
	Sub-section D. UDOT Requirements	
	Sub-section E. Permits	
Section 1.12	FEDERAL, STATE, AND LOCAL INSPECTING AGENCIES.....	pg. 5
Section 1.13	PUBLIC SAFETY AND CONVENIENCE.....	pg. 5
	Sub-section A. Compliance with Rules and Regulations	
	Sub-section B. Road Closures and Obstructions	
	Sub-section C. Protection of the Traveling Public	
	Sub-section D. Hazardous Conditions	
	Sub-section E. Dust and Debris Control	
Section 1.14	CONFINEMENT OF WORK AND ACCESS TO RIGHT-OF-WAY AND EASEMENTS	pg. 6
Section 1.15	NOTIFICATION OF RESIDENTS	pg. 6
Section 1.16	WEATHER CONDITIONS	pg. 6
Section 1.17	LAND MONUMENTS.....	pg. 6
Section 1.18	SOURCE OF MATERIALS.....	pg. 7
Section 1.19	CONSTRUCTION WATER.....	pg. 7
Section 1.20	OPERATION AND MAINTENANCE MANUALS	pg. 7
Section 1.21	INTERFERING STRUCTURES, UTILITIES AND FACILITIES	pg. 7
Section 1.22	MATERIAL AND COMPACTION TESTING.....	pg. 7
Section 1.23	TESTING AND PROCESS CONTROL.....	pg. 8
	Sub-section A. Quality Assurance	

Sub-section B.	Submittals	
Sub-section C.	Sampling	
Sub-section D.	Soil Classification Test	
Sub-section E.	Compaction Test of Soil and Untreated Base Course	
Sub-section F.	Test Roll of Roadway Sub-grade	
Sub-section G.	Gradation Test of Untreated Base Course	
Sub-section H.	Extraction – Gradation Testing of Bituminous Surface Course	
Sub-section I.	Compaction Testing of Bituminous Surface Course	
Sub-section J.	Compressive Strength Testing of Concrete Cylinders	
Sub-section K.	Additional Concrete Testing	
Sub-section L.	Certifications	
Sub-section M.	Summary Table of Tests and Certifications	
Section 1.24	INSTALLATION OF UTILITY CONDUITS	pg. 14
Section 1.25	PHOTOGRAPHS.....	pg. 14

DIVISION 2: TRENCH EXCAVATION AND BACKFILL

Section 2.01	GENERAL.....	pg. 15
Section 2.02	BARRICADES	pg. 15
Section 2.03	BLASTING	pg. 15
Section 2.04	SHEETING, BRACING AND SHORING OF EXCAVATIONS	pg. 15
Section 2.05	CONTROL OF GROUNDWATER.....	pg. 15
Section 2.06	TRENCH EXCAVATION	pg. 16
Sub-section A.	Normal Excavation	
Sub-section B.	Authorized Over-Excavation	
Sub-section C.	Unauthorized Over-Excavation	
Sub-section D.	Trench Width	
Sub-section E.	Trenches in Embankments	
Sub-section F.	Placement of Excavated Material	
Sub-section G.	Fine Grading the Trench Bottom	
Section 2.07	TRENCH BACKFILL	pg. 17
Sub-section A.	Imported Granular Material	
Sub-section B.	Foundation Placement	
Sub-section C.	Pipe Embedment	
Sub-section D.	Final Backfill	
Sub-section E.	Clay Dams	
Sub-section F.	Compaction	
Section 2.08	TRENCH CROSSINGS AND EASEMENTS	pg. 19
Section 2.09	RESTORATION OF CONSTRUCTION SITE	pg. 20
Section 2.10	OPEN TRENCHES IN PUBLIC THOROUGHFARES	pg. 20
Section 2.11	DEVELOPER/CONTRACTOR RESPONSIBILITY	pg. 20

DIVISION 3: PRESSURE PIPE - PRESSURE IRRIGATION

Section 3.01	GENERAL	pg. 21
Section 3.02	DUCTILE IRON PIPE.....	pg. 21
Sub-section A.	Materials	
Sub-section B.	Joints	
Sub-section C.	Coatings and Linings for Ductile Iron Pipe	
Sub-section D.	Flanges	
Sub-section E.	Fittings	
Section 3.03	PVC PIPE	pg. 22
Sub-section A.	Materials	
Sub-section B.	Joints	
Sub-section C.	Fittings.	
Section 3.04	PIPE INSTALLATION	pg. 22
Sub-section A.	Cutting	
Sub-section B.	Dewatering of Trench	

Sub-section C.	Laying of Pipe	
Sub-section D.	Thrust Blocking & Megalug Joint Restraint	
Sub-section E.	Connections to Existing Water Lines	
Sub-section F.	Corrosion Protection and Soil Tests	
Sub-section G.	Tracer Wire	
Sub-section H.	Dead end Pressure Irrigation Lines.	
Section 3.05	PRESSURE IRRIGATION SERVICE CONNECTION	pg. 24
Sub-section A.	Service Saddle Specifications	
Sub-section B.	Polyethylene Tubing	
Sub-section C.	Compression Connection	
Sub-section D.	Service Fittings	
Sub-section E.	Angle Ball Service Valve	
Sub-section F.	Service Box and Meter	
Sub-section G.	PVC Pipe	
Sub-section H.	Hose Bib	
Sub-section I.	Location of Stub Pipes	
Sub-section J.	Service Pipe Installation	
Section 3.06	TESTING AND FLUSHING	pg. 27
Sub-section A.	Pressure Test	
Sub-section B.	Leakage Test	
Sub-section C.	Flushing	

DIVISION 3A: PRESSURE PIPE - CULINARY WATER

Section 3A.01	GENERAL	pg. 30
Section 3A.02	DUCTILE IRON PIPE.....	pg. 30
Sub-section A.	Materials	
Sub-section B.	Joints	
Sub-section C.	Coatings and Linings for Ductile Iron Pipe	
Sub-section D.	Flanges	
Sub-section E.	Fittings	
Section 3A.03	PVC PIPE	pg. 31
Sub-section A.	Materials	
Sub-section B.	Joints	
Sub-section C.	Fittings	
Section 3A.04	PIPE INSTALLATION	pg. 31
Sub-section A.	Cutting	
Sub-section B.	Dewatering of Trench	
Sub-section C.	Laying of Pipe	
Sub-section D.	Separation	
Sub-section E.	Pipe Bedding	
Sub-section F.	Thrust Blocking & Megalug Joint Restraints	
Sub-section G.	Connections to Existing Water Lines	
Sub-section H.	Corrosion Protection and Soil Tests	
Sub-section I.	Tracer wire	
Sub-section J.	Damage and Repair of Water Mains and Appurtenances	
Sub-section K.	Dead end water lines	
Section 3A.05	WATER SERVICE LATERALS	pg. 34
Sub-section A.	Extent of Laterals	
Sub-section B.	Excavation and Backfill	
Sub-section C.	Connection to Main	
Sub-section D.	Meter, Meter Setter Assembly, Meter Box and Cover	
Sub-section E.	Special Joints and Fittings	
Sub-section F.	Separation	
Sub-section G.	Location of Stub Pipes	
Sub-section H.	Flushing, Testing, and Disinfecting	
Section 3A.06	FLUSHING, DISINFECTING, AND TESTING	pg. 36

- Sub-section A. Flushing
- Sub-section B. Disinfection
- Sub-section C. Bacteriological Test
- Sub-section D. Pressure Test
- Sub-section E. Leakage Test

Section 3A.07 SURFACE WATER CROSSING	pg. 40
Sub-Section A. Crossing Type	
Sub-Section B. Water Crossings greater than 15 feet (15')	

DIVISION 4: CONCRETE PIPE

Section 4.01 GENERAL	pg. 41
Section 4.02 PIPE	pg. 41
Sub-section A. Reinforced Concrete Pipe	
Sub-section B. Non-Reinforced Concrete Pipe	
Sub-section C. Bell and Spigot Joints	
Sub-section D. Minimum size and Slope Requirements	
Section 4.03 PIPE LAYING	pg. 42
Section 4.04 GRAVEL FOUNDATION FOR PIPE	pg. 42
Section 4.05 INSTALLATION REQUIREMENTS FOR LINE AND GRADE	pg. 42
Section 4.06 PIPE BEDDING	pg. 42
Section 4.07 TESTS	pg. 43
Sub-section A. Displacement Test	
Sub-section B. Infiltration Test	
Sub-section C. Exfiltration Test	
Sub-section D. Air Testing	
Sub-section E. Televising	
Section 4.08 MANHOLE CONNECTIONS.....	pg. 44
Section 4.09 SEWER SERVICE LATERALS	pg. 44
Sub-section A. Extent and Location of Laterals	
Sub-section B. Excavation and Backfill	
Sub-section C. Pipe	
Sub-section D. Connection to Main	
Sub-section E. Cover Over Sewer Lateral Lines	
Sub-section F. Sewer Clean Outs	
Sub-section G. Location of Stub Pipes	
Sub-section H. Testing	
Sub-section I. Damage and Repair of Sewers and Appurtenances	

DIVISION 4A: PVC PLASTIC PIPE

Section 4A.01 GENERAL	pg. 47
Section 4A.02 PIPE	pg. 47
Sub-section A. Minimum Size and Slope Requirements	
Section 4A.03 FITTINGS	pg. 47
Section 4A.04 PIPE LAYING	pg. 47
Section 4A.05 GRAVEL FOUNDATION FOR PIPE.....	pg. 48
Section 4A.06 INSTALLATION REQUIREMENTS FOR LINE AND GRADE	pg. 48
Section 4A.07 PIPE BEDDING	pg. 48
Section 4A.08 TESTS	pg. 48
Sub-section A. Displacement Test	
Sub-section B. Infiltration Test	
Sub-section C. Exfiltration Test	
Sub-section D. Air Testing	
Sub-section E. Televising	
Section 4A.09 MANHOLE CONNECTIONS.....	pg. 50
Section 4A.10 SEWER LATERAL CONNECTIONS	pg. 50

Section 4A.11 SEWER SERVICE LATERALS	pg. 50
Sub-section A. Extent of Laterals and Location of Laterals	
Sub-section B. Excavation and Backfill	
Sub-section C. Pipe	
Sub-section D. Connection to Main	
Sub-section E. Cover Over Sewer Lateral Lines	
Sub-section F. Sewer Clean Outs	
Sub-section G. Location of Stub Pipes	
Sub-section H. Testing	
Sub-section I. Damage and Repairs of Sewers and Appurtenances	
Section 4A.12 "GO/NO-GO" MANDREL PROOF TESTING.....	pg. 51

DIVISION 4B: POLYETHYLENE CORRUGATED PIPE

Section 4B.01 GENERAL	pg. 53
Section 4B.02 PIPE	pg. 53
Section 4B.03 JOINTS	pg. 53
Section 4B.04 PERFORATIONS.....	pg. 53
Section 4B.05 PIPE LAYING	pg. 54
Section 4B.06 GRAVEL FOUNDATION FOR PIPE	pg. 54
Section 4B.07 INSTALLATION REQUIREMENTS FOR LINE AND GRADE	pg. 54
Section 4B.08 PIPE BEDDING	pg. 54
Section 4B.09 TESTS	pg. 55
Sub-section A. Displacement Test	
Sub-section B. Televising	
Section 4B.10 MANHOLE CONNECTIONS.....	pg. 55
Section 4B.11 LATERAL CONNECTIONS	pg. 55

DIVISION 4C: POLYETHYLENE CORRUGATED PIPE WITH WATER TIGHT JOINTS

Section 4C.01 GENERAL	pg. 56
Section 4C.02 PIPE	pg. 56
Section 4C.03 FITTINGS	pg. 56
Section 4C.04 PIPE LAYING	pg. 56
Section 4C.05 GRAVEL FOUNDATION FOR PIPE	pg. 57
Section 4C.06 INSTALLATION REQUIREMENTS FOR LINE AND GRADE	pg. 57
Section 4C.07 PIPE BEDDING	pg. 57
Section 4C.08 TESTS	pg. 58
Sub-section A. Displacement Test	
Sub-section B. Infiltration Test	
Sub-section C. Ex-filtration Test	
Sub-section D. Air Testing	
Sub-section E. Televising	
Section 4C.09 MANHOLE CONNECTIONS.....	pg. 59
Section 4C.10 LATERAL CONNECTIONS	pg. 59
Section 4C.11 "GO/NO-GO" MANDREL PROOF TESTING.....	pg. 59

DIVISION 5 MANHOLES

Section 5.01 GENERAL	pg. 60
Section 5.02 CONCRETE BASE	pg. 60
Section 5.03 BACKFILL REQUIREMENTS	pg. 60
Section 5.04 WALL AND CONE SECTIONS	pg. 60
Sub-section A. Manholes Shall be Furnished with Steps	
Section 5.05 DROP MANHOLES	pg. 61
Sub-section A. Cement	
Sub-section B. Fly Ash	
Sub-section C. Fine Aggregate	
Sub-section D. Mix Design	

Section 5.06	MANHOLE FRAMES AND COVERS	pg. 61
Sub-section A.	Setting Manhole Frames and Covers	
Section 5.07	CONNECTIONS TO EXISTING SEWER.....	pg. 62
Section 5.08	INCOMING SEWER LINES.....	pg. 63
Section 5.09	PREVENTING MATERIALS FROM ENTERING THE SEWER MAIN	pg. 63
Section 5.10	TESTING OF MANHOLES, GREASE INTERCEPTORS & SAND/OIL INTERCEPTORS.....	pg. 63
Section 5.11	Pipe Connections to Manholes	pg. 64

DIVISION 6: VALVES, COUPLINGS, AND FIRE HYDRANTS

Section 6.01	GENERAL	pg. 65
Section 6.02	RESILIENT SEATED GATE VALVE.....	pg. 65
Section 6.03	BUTTERFLY VALVE	pg. 66
Section 6.04	VALVE BOXES	pg. 66
Section 6.05	COUPLINGS	pg. 67
Section 6.06	FIRE HYDRANTS.....	pg. 67
Section 6.07	BLOWOFF VALVE.....	pg. 67
Section 6.08	PRESSURE IRRIGATION 2-INCH AIR INLET AND REMOVAL FACILITY .	pg. 68
Section 6.09	PRESSURE IRRIGATION DRAINS	pg. 68
Section 6.10	PRESSURE IRRIGATION 4-INCH FLUSHING AIR INLET AND REMOVAL FACILITY	pg. 68

DIVISION 7: EARTHWORK

Section 7.01	GENERAL	pg. 70
Section 7.02	EXCAVATION FOR STRUCTURES	pg. 70
Section 7.03	GRANULAR FOUNDATION BORROW	pg. 70
Section 7.04	BACKFILL AROUND STRUCTURES	pg. 70
Section 7.05	CONSTRUCTION OF EMBANKMENTS AND FILLS	pg. 70
Sub-section A.	Foundation Preparation	
Sub-section B.	Placement	
Sub-section C.	Borrow	
Section 7.06	COMPACTION OF MATERIALS	pg. 72
Sub-section A.	Under Roadways	
Sub-section B.	Under Sidewalk and Driveways	
Section 7.07	REMOVAL OF DEFECTIVE FILL AND PLACEMENT OF ACCEPTABLE FILL ..	pg. 73

DIVISION 8: PORTLAND CEMENT CONCRETE

Section 8.01	GENERAL	pg. 74
Section 8.02	MATERIALS	pg. 74
Sub-section A.	Portland Cement	
Sub-section B.	Aggregate	
Sub-section C.	Water	
Sub-section D.	Air-Entraining Agent	
Sub-section E.	Steel Reinforcement	
Sub-section F.	Water-Reducing and Set-Retarding Admixtures	
Sub-section G.	Curing Compound	
Section 8.03	CLASS OF CONCRETE	pg. 76
Section 8.04	COMPOSITION OF CONCRETE	pg. 76
Sub-section A.	Aggregate	
Sub-section B.	Water	
Sub-section C.	Air-Content	
Sub-section D.	Admixtures	
Section 8.05	DESIGN OF THE CONCRETE MIX	pg. 77
Section 8.06	OBSERVATION AND TESTING	pg. 77
Section 8.07	HANDLING AND MEASUREMENT OF MATERIALS	pg. 77
Section 8.08	MIXERS AND MIXING	pg. 77

Section 8.09	FORMS	pg. 78
Section 8.10	PREPARATION OF FORMS AND SUBGRADE.....	pg. 78
Section 8.11	CONVEYING.....	pg. 78
Section 8.12	PLACING	pg. 78
Section 8.13	CONSTRUCTION JOINTS.....	pg. 79
Section 8.14	EXPANSION AND CONTRACTION JOINTS	pg. 79
Section 8.15	WATERSTOP.....	pg. 80
Section 8.16	REMOVAL OF FORMS.....	pg. 80
Section 8.17	FINISHING FORMED SURFACES	pg. 80
Section 8.18	FINISHING UNFORMED SURFACES.....	pg. 80
Section 8.19	CURING AND PROTECTION.....	pg. 80
Section 8.20	REMOVAL OR REPAIR	pg. 81
Section 8.21	CONCRETING IN COLD WEATHER.....	pg. 81
Section 8.22	CONCRETING IN HOT WEATHER.....	pg. 81

DIVISION 9: REINFORCING STEEL

Section 9.01	GENERAL	pg. 82
Section 9.02	FABRICATION AND PLACING REINFORCEMENT	pg. 82
	Sub-section A. Fabrication	
	Sub-section B. Clearances	
	Sub-section C. Support	
	Sub-section D. Splicing	
Section 9.03	EPOXY COATING	pg. 83
	Sub-section A. Prequalify all Coatings	
	Sub-section B. Coat Bars as Specified	
	Sub-section C. Handling	
Section 9.04	FIELD CUTTING EPOXY-COATED BARS.....	pg. 84
	Sub-section A. Cutting	
	Sub-section B. Repairing	

DIVISION 10: RESTORATION OF SURFACE IMPROVEMENTS

Section 10.01	GENERAL	pg. 85
Section 10.02	FIELD VERIFICATION OF IMPROVEMENTS	pg. 85
Section 10.03	REMOVAL OF PAVEMENT, SIDEWALKS, CURBS, ETC.....	pg. 85
Section 10.04	MATERIALS	pg. 85
	Sub-section A. Untreated Base Course	
	Sub-section B. Bituminous Surface Course	
	Sub-section C. Concrete	
Section 10.05	RESTORING BITUMINOUS, CONCRETE, OR ASPHALT STREET SURFACES.....	pg. 86
	Sub-section A. Before Excavation	
	Sub-section B. Temporary Graded Surface	
	Sub-section C. Preparation for Paving	
	Sub-section D. Bituminous Surface	
Section 10.06	GRAVEL SURFACE	pg. 86
	Sub-section A. Layer Thickness	
	Sub-section B. Placement	
	Sub-section C. Gradation	
Section 10.07	MISCELLANEOUS IMPROVEMENTS	pg. 87
Section 10.08	RESTORATION OF SURFACES	pg. 87
Section 10.09	CLEANUP	pg. 87
Section 10.10	PAVEMENT MARKINGS.....	pg. 87

DIVISION 11: ROADWAY CONSTRUCTION

Section 11.01	GENERAL	pg. 88
Section 11.02	MINIMUM ROADWAY CROSS SECTION.....	pg. 88

Section 11.03	PULVERIZING	pg. 88
Section 11.04	EARTHWORK	pg. 88
Section 11.05	ROADWAY EXCAVATION	pg. 88
Section 11.06	SUBGRADE PREPARATION	pg. 88
Section 11.07	DRAIN ROCK	pg. 89
Section 11.08	GRANULAR BORROW	pg. 89
Section 11.09	GRANULAR BACKFILL BORROW	pg. 89
Section 11.10	FLOWABLE BACKFILL.....	pg. 89
	Sub-section A. Cement	
	Sub-section B. Fly Ash	
	Sub-section C. Fine Aggregate	
	Sub-section D. Mix Design	
Section 11.11	BASE COURSE.....	pg. 90
Section 11.12	TACK COAT	pg. 91
Section 11.13	BITUMINOUS ASPHALT CEMENT PAVEMENT	pg. 91
Section 11.14	ADJUSTING MANHOLES AND VALVE BOXES TO FINAL GRADE	pg. 92
Section 11.15	PAVEMENT CRACK SEAL.....	pg. 93
	Sub-section A. Quality Assurance	
	Sub-section B. Filler and Sealer Materials	
	Sub-section C. Equipment	
	Sub-section D. Advanced Preparation	
	Sub-section E. Application	
	Sub-section F. Backer Rod	
Section 11.16	CHIP SEAL.....	pg. 95
	Sub-section A. Submittals	
	Sub-section B. Quality Assurance	
	Sub-section C. Paving Asphalt	
	Sub-section D. Cover Material	
	Sub-section E. Preparation	
	Sub-section F. Application	
	Sub-section G. Rolling	
	Sub-section H. Fog Seal	
	Sub-section I. Cleanup and Repair	
	Sub-section J. Acceptance	
Section 11.17	PAVEMENT MARKINGS	pg. 98
	Sub-section A. Materials	
	Sub-section B. Preparation	
	Sub-section C. Application	
	Sub-section D. Removing Pavement Markings	

DIVISION 12: CONCRETE CURB, GUTTER AND SIDEWALK

Section 12.01	GENERAL	pg. 100
Section 12.02	CONCRETE.....	pg. 100
Section 12.03	GRADE	pg. 100
Section 12.04	FORMS	pg. 100
Section 12.05	SUBGRADE PREPARATION.....	pg. 100
Section 12.06	CONSTRUCTION OF CURB, GUTTER AND SIDEWALK	pg. 101
Section 12.07	CONCRETE CURBWALL	pg. 102
Section 12.08	6-INCH CONCRETE DRIVE APPROACH	pg. 102
Section 12.09	ACCESSIBILITY STANDARDS IN PUBLIC RIGHTS-OF-WAY	pg. 102
	Sub-section A. Sidewalks	
	Sub-section B. Curb Ramps	
	Sub-section C. Landings	
	Sub-section D. Side Flares	

Sub-section E.	Built up Curb Ramps	
Sub-section F.	Obstructions	
Sub-section G.	Location of Marked Crossings	
Sub-section H.	Diagonal Curb Ramps	
Sub-section I.	Curb Ramps Associated with Trails	
Sub-section J.	Detectable Warnings	
Sub-section K.	Islands	
Sub-section L.	Pedestrian Crossings	
Section 12.10	LANDSCAPE RESTORATION.....	pg. 105

DIVISION 13: STORM DRAINS

Section 13.01	GENERAL	pg. 106
Section 13.02	PIPE INSTALLATION.....	pg. 106
Section 13.03	PIPE	pg. 106
Section 13.04	MANHOLES	pg. 106
Section 13.05	CONCRETE.....	pg. 106
Section 13.06	REINFORCING STEEL	pg. 106
Section 13.07	STORM DRAIN AND INLET BOXES.....	pg. 106
Sub-section A.	Concrete Inlet Boxes	
Sub-section B.	PVC Inlets	
Section 13.08	PIPE CONNECTING INLET BOXES TO EXISTING STORM DRAINS	pg. 107
Section 13.09	UNDERGROUNDSTORMWATER DETENTION SYSTEMS.....	PG.111

DIVISION 14: UTAH DEPARTMENT OF TRANSPORTATION RIGHTS-OF-WAY

Section 14.01	GENERAL	pg. 108
Section 14.02	UTILITY LINE AGREEMENT.....	pg. 108
Section 14.03	INSPECTION FEES.....	pg. 108

DIVISION 15: CASINGS

Section 15.01	GENERAL	pg. 109
Section 15.02	MATERIALS	pg. 109
Section 15.03	CONSTRUCTION METHODS	pg. 109
Section 15.04	LINE AND GRADE	pg. 109
Section 15.05	CARRIER PIPE INSTALLATION THROUGH CASINGS	pg. 109
Section 15.06	CASING SPACERS	pg. 110
Section 15.07	CASING END SEALS.....	pg. 110

DIVISION 16: DETENTION BASINS

Section 16.01	GENERAL	pg. 111
Section 16.02	EARTHWORK	pg. 111
Section 16.03	CONCRETE AND REINFORCING STEEL	pg. 111
Section 16.04	PIPING	pg. 111
Section 16.05	TOPSOIL	pg. 111

DIVISION 17: CONDUIT

Section 17.01	GENERAL	pg. 112
Section 17.02	UTILITY CONDUIT	pg. 112
Sub-section A.	Materials	
Sub-section B.	Location	
Sub-section C.	Magnetic Locator Tape	
Section 17.03	INSTALLATION.....	pg. 112
Sub-section A.	Cutting	
Sub-section B.	Dewatering of Trench	
Sub-section C.	Laying of Conduit	
Sub-section D.	Bedding	

DIVISION 18: RESIDENTIAL & SMALL COMMERCIAL PUMP SYSTEMS

Section 18.01 GENERALpg. 114
 Sub-section A. Installation
 Sub-section B. Inspection and Testing
 Sub-section C. Deviation from Requirements

DIVISION 19: STREET LIGHTING

Section 19.01 GENERALpg. 117
Section 19.02 STREET LIGHTS ALONG LOCAL AND COLLECTOR STREETSpg. 117
 Sub-section A. Placement
 Sub-section B. Luminaire
 Sub-section C. Pole and Base
 Sub-section D. Lamp
 Sub-section E. Installation
Section 19.03 STREET LIGHTS ALONG MAIN STREET pg. 118
 Sub-section A. Placement
 Sub-section B. Luminaire
 Sub-section C. Pole and Base
 Sub-section D. Lamp
 Sub-section E. Installation
Section 19.04 STREET LIGHTS ALONG ARTERIAL STREETS pg. 118
 Sub-section A. Placement
 Sub-section B. Luminaire
 Sub-section C. Pole and Base
 Sub-section D. Lamp
 Sub-section E. Foundation

DIVISION 20: LANDSCAPING

Section 20.01 GENERALpg. 120
Section 20.02 TOPSOIL REQUIREMENTS AND PLACEMENTpg. 120
Section 20.03 GRAVEL DRIVE APPROACHESpg. 120
Section 20.04 IRRIGATION SYSTEM – MATERIALSpg. 120
 Sub-section A. Basic Irrigation Requirements
 Sub-section B. Pipe
 Sub-section C. Fittings
 Sub-section D. Automatic Controller
 Sub-section E. Automatic Control Valve
 Sub-section F. Rotary Sprinkler
 Sub-section G. Plastic Nozzles
 Sub-section H. Valve Box
 Sub-section I. Control Wire, Wire Connectors and Sealing Cement
 Sub-section J. Valves and Couplers
 Sub-section K. Main Line Connections
 Sub-Section L. Filters
Section 20.05 IRRIGATION SYSTEM – INSTALLATIONpg. 123
 Sub-section A. Trenching
 Sub-section B. Pipe Installation
Section 20.06 SEEDING OF TURF pg. 126
 Sub-section A. Seeding
 Sub-section B. Sodding
 Sub-section C. Maintenance
Section 20.07 TREES pg. 128
 Sub-section A. Approved Tree Species List
 Sub-section B. Trees Prohibited in Park Strips

Sub-section C.	Tree Substitutions for Unique Environments	
Sub-section D.	Streetscape Substitutions	
Sub-section E.	Tree and Shrub Installation	
Section 20.08	Recreational Facilities.....	pg 143
Section 20.09	Bonding	pg. 138