

2020 – CONSTRUCTION MANUAL

TABLE OF CONTENTS

SECTION 13 – TRENCHLESS TECHNOLOGIES (AUGER/ BORE)

13.1 GENERAL	1
13.2 MATERIALS	1
13.2.1 CASING	1
13.2.2 SKIDS AND BLOCKING.....	1
13.2.3 STEEL STRAPPING.....	1
13.2.4 LINK SEALS.....	1
13.2.5 CARRIER PIPE.....	2
13.3 INSTALLATION.....	2
13.3.1 BELL HOLES.....	2
13.3.2 UNCASED AUGERING.....	2
13.3.3 CASED AUGERING.....	2
13.3.4 BORING/DIRECTIONAL DRILLING.....	3
13.4 TESTING REQUIREMENTS OF THE CONTRACTOR	3
13.4.1 PRE-INSTALLATION.....	3
13.4.2 INSTALLATION.....	4
13.4.3 POST-INSTALLATION.....	4
13.5 PAYMENT.....	4
13.5.1 BELL HOLES.....	4
13.5.2 UNCASED AUGERING.....	4
13.5.3 CASED AUGERING.....	5
13.5.4 BORING/DIRECTIONAL DRILLING.....	5
13.5.5 SKIDS, BLOCING, STEEL STRAPPING, AND LINK SEALS.....	5
13.5.6 TESTING REQUIREMENTS OF THE CONTRACTOR	5
DETAIL 13-01-CASE AUGER DETAIL.....	6

SECTION 19 - CATHODIC PROTECTION OF UTILITIES

19.1 GENERAL	1
19.2 MATERIALS	1
19.2.1 STEEL PIPE.....	1
19.2.2 BURIED FITTINGS, VALVES, AND HYDRANTS	2
19.2.3 EXTERIOR BOLTS ON VALVES, HYDRANTS, AND COUPLINGS	3
19.3 INSTALLATION.....	3
19.3.1 STEEL PIPE.....	3
19.3.2 BURIED FITTINGS, VALVES, AND HYDRANTS	4
19.3.3 CONNECTIONS TO EXISTING PIPES.....	4
19.4 TESTING REQUIREMENTS OF THE CONTRACTOR	4
19.4.1 PRE-INSTALLATION.....	4
19.4.2 INSTALLATION.....	4
19.4.3 POST-INSTALLATION.....	4
19.5 PAYMENT.....	5
19.5.1 CATHODIC PROTECTION	5
19.5.2 TESTING REQUIREMENTS OF THE CONTRACTOR	5

DETAIL 19-01-ANODE INSTALLATION.....	6
---	---

SECTION 25 - CLOSED CIRCUIT TELEVISION INSPECTION OF SEWER LINES

25.1 GENERAL	1
25.2 MATERIALS	2
25.2.1 VIDEO RECORDS AND INDEX PLAN	2
25.3 INSTALLATION.....	3
25.3.1 GENERAL OPERATIONS.....	3
25.3.2 VIDEO RECORDING.....	3
25.3.3 WORK REPORT	4
25.4 TESTING REQUIREMENTS OF THE CONTRACTOR	5
25.4.1 PRE-INSTALLATION.....	5
25.4.2 INSTALLATION.....	5
25.4.3 POST-INSTALLATION.....	5
25.5 PAYMENT.....	5
25.5.1 TELEVISION INSPECTION	6
25.5.2 TESTING REQUIREMENTS OF THE CONTRACTOR	6

SECTION 33 – ABANDONMENT OF INFRASTRUCTURE

33.1 GENERAL	1
33.1.1 ABANDONMENT OF SANITARY SEWER MAINS	1
33.1.2 ABANDONMENT OF WATER MAINS.....	1
33.1.3 ABANDONMENT OF SERVICES.....	2
33.1.4 ABANDONMENT OF MANHOLES/CHAMBERS	3

SECTION 49 – JOINT TESTING AND SEALING OF SEWER LINES

49.1 GENERAL	1
49.2 TESTING OF PIPE JOINTS	1
49.3 FAILED TEST.....	1
49.4 JOINT SEALING	1
49.5 CHEMICAL SEALING PROPERTIES.....	2
49.6 PAYMENT.....	2

SECTION 50 – DESIGN OF SANITARY SEWAGE FORCEMAINS

50.1 FORCEMAIN SIZE CONSIDERATION.....	1
50.2 FLOW VELOCITY LIMITS	1
50.2.1.....	1
50.2.2.....	1
50.3 DESIGN PRESSURES.....	1
50.4 SURGE PROTECTION DEVICES	2
50.5 SLOPE.....	2
50.6 ALIGNMENT.....	2
50.7 AIR RELEASE.....	2
50.8 BLOWOFF VALVES	2
50.9 VACUUM RELIEF.....	2
50.10 FORCEMAIN OULET.....	3

50.11 DESIGN DOCUMENTATION ON ENGINEERING DRAWINGS	3
50.12 REQUIREMENTS FOR LOCATING FORCEMAINS	3
50.13 REQUIREMENTS FOR FORCEMAIN INSPECTION AND CLEANING	3
50.14 POST CONSTRUCTION.....	3
 50.14.1 TESTING REQUIREMENTS.....	4

SECTION 61 – SANITARY SEWER SYSTEM

61.1 GENERAL	1
61.2 MATERIALS	1
61.2.1 PIPE.....	1
61.2.2 INSULATION FOR SANITARY SEWERS.....	2
61.2.3 MANHOLES/CHAMBERS.....	2
61.2.4 BEDDING.....	5
61.2.5 CONCRETE, GROUT, MORTAR	6
61.2.6 AIR RELEASE VALVES	6
61.2.7 TRACER WIRE.....	6
61.3 INSTALLATION.....	7
61.3.1 PIPE.....	7
61.3.2 MANHOLES/CHAMBERS.....	8
61.3.3 BEDDING.....	12
61.3.4 CONNECTIONS TO EXISTING SEWER SYSTEMS.....	13
61.3.5 CROSSING OTHER PIPELINES OR UTILITIES	14
61.3.6 CLEANING	14
61.3.7 OFFSITE MARKER POSTS.....	14
61.4 TESTING REQUIREMENTS OF THE CONTRACTOR	14
61.4.1 PRE-INSTALLATION.....	14
61.4.2 INSTALLATION.....	14
61.4.3 POST-INSTALLATION.....	15
61.5 PAYMENT.....	16
61.5.1 PIPE.....	16
61.5.2 MANHOLES.....	16
61.5.3 BEDDING.....	17
61.5.4 CONNECTIONS TO EXISTING SEWER SYSTEMS.....	17
61.5.5 CROSSING OTHER PIPELINES OR UTILITIES	17
61.5.6 CLEANING	17
61.5.7 TESTING REQUIREMENTS OF THE CONTRACTOR	17
DETAIL 61-01-BEDDING DETAILS.....	19
DETAIL 61-02-PRECAST CONCRETE MANHOLE	20
DETAIL 61-03-PRECAST EXTERAL DROP MANHOLE.....	21
DETAIL 61-04-PRECAST INTERNAL DROP MANHOLE	22
DETAIL 61-05-PRECAST VARYING DIAMETER INTERNAL DROP.....	23
DETAIL 61-06-PERCHED MANHOLE FOR EXISTING MAIN	24
DETAIL 61-07-FROST BOX PIPE INSULATION	25
DETAIL 61-08-F-39 MANHOLE FRAME AND COVER.....	26
DETAIL 61-09-F-80 MANHOLE FRAME AND COVER.....	27
DETAIL 61-10-F-90 MANHOLE FRAME AND COVER.....	28
DETAIL 61-11-MANHOLE SAFETY PLATFORM.....	29
DETAIL 61-12-DROP BOWLS	30

DETAIL 61-13-DROP STRUCTURE CLAMPING BRACKETS	31
DETAIL 61-14-SANITARY MAIN CLEAN OUT	32
DETAIL 61-15-PRECAST CONCRETE SANITARY END LINE CHAMBER	33
DETAIL 61-16-PRECAST CONCRETE SANITARY TEE CHAMBER.....	34
DETAIL 61-17-PRECAST CONCRETE SANITARY 90 CHAMBER.....	35
DETAIL 61-18-PRECAST CONCRETE SANITARY INLINE CHAMBER.....	36
DETAIL 61-19-FROST COVER	37
DETAIL 61-20-TYP. VALVE CASING	38
DETAIL 61-21-PRIVATE PROPERTY SANITARY CLEANOUT	39

SECTION 66 – SERVICE DISCONNECTIONS

66.1 GENERAL	1
<i>66.1.1 PURPOSE.....</i>	1
<i>66.1.2 DEMOLITION PERMITS.....</i>	1
<i>66.1.3 SERVICE DISCONNECTION APPLICATION.....</i>	1
66.2 TEMPORARY SERVICE DISCONNECTION	2
<i>66.2.1 LOCATES</i>	2
<i>66.2.2 RESIDENTIAL.....</i>	2
<i>66.2.3 COMMERCIAL/INDUSTRIAL</i>	3
66.3 PERMANENT SERVICE DISCONNECTION	3
66.4 REQUIREMENTS FOR EXISTING 1/2" WATER SERVICE.....	4
DETAIL 66-01-TEMPORARY SERVICE DISCONNECTION 20 TO 50 mm	5
DETAIL 66-02-TEMPORARY SERVICE DISCONNECTION 75mm & GREATER.....	6
DETAIL 66-03-PERMANENT SERVICE DISCONNECTION	7

SECTION 67 – SERVICE CONNECTION SYSTEM

67.1 GENERAL	1
67.2 MATERIALS	1
<i>67.2.1 COPPER AND COMPOSITE SERVICE PIPE</i>	1
<i>67.2.2 MAIN STOP.....</i>	1
<i>67.2.3 WATER SERVICE SADDLES.....</i>	1
<i>67.2.4 CURB STOP.....</i>	1
<i>67.2.5 SERVICE BOX.....</i>	2
<i>67.2.6 SEWER SERVICE PIPE.....</i>	2
<i>67.2.7 SEWER SERVICE FITTINGS</i>	2
<i>67.2.8 INSULATED PIPE AND FITTINGS</i>	3
<i>67.2.9 BEDDING.....</i>	3
<i>67.2.10 RINK HYDRANT OPERATING ASSEMBLY</i>	4
67.3 INSTALLATION.....	4
<i>67.3.1 GENERAL</i>	4
<i>67.3.2 AUGERING/TRENCHING.....</i>	4
<i>67.3.3 BEDDING.....</i>	5
<i>67.3.4 WATER SERVICE CONNECTION</i>	5
<i>67.3.5 SANITARY SEWER SERVICE</i>	6
<i>67.3.6 CLEANING AND TESTING WATER SERVICE.....</i>	7
<i>67.3.7 CLEANING AND TESTING SEWER SERVICE.....</i>	7
<i>67.3.8 RINK HYDRANTS.....</i>	7

67.3.9 TRACER WIRE.....	7
67.4 TESTING REQUIREMENTS OF THE CONTRACTOR	8
67.4.1 PRE-INSTALLATION.....	9
67.4.2 INSTALLATION.....	9
67.4.3 POST-INSTALLATION.....	9
67.5 PAYMENT.....	10
67.5.1 AUGERING/TRENCHING.....	10
67.5.2 BEDDING.....	10
67.5.3 WATER SERVICE	10
67.5.4 SEWER SERVICE	10
67.5.5 FITTINGS	10
67.5.6 SERVICE RISERS	10
67.5.7 CLEANING	10
67.5.8 TESTING REQUIREMENTS OF THE CONTRACTOR	11
DETAIL 67-01-BEDDING DETAILS.....	12
DETAIL 67-02-RESIDENTIAL SERVICE CONNECTION.....	13
DETAIL 67-03-SERVICE RISER.....	14
DETAIL 67-04-SERVICE CONNECTION INFORMATION SCHEDULE	15
DETAIL 67-05-RINK HYDRANT DETAIL	16
 DETAIL 67-06-COMMERCIAL SERVICE CONNECTION.....	17
 DETAIL 67-07-COMMERCIAL WATER SERVICE TESTING RISER.....	18

SECTION 68 – WATER METER SERVICES

68.1 GENERAL	1
68.2 MATERIALS	1
68.2.1 PIPE.....	1
68.2.2 FITTINGS	1
68.2.3 CONDUIT.....	1
68.2.4 METER VALVES	1
68.2.5 PRE-MANUFACTURED METER SETTINGS.....	1
68.3 INSTALLATION.....	1
68.3.1 METER SETTING	2
68.3.2 RIGID PVC CONDUIT.....	3
68.3.3 IRRIGATION METER	4
68.3.4 PRESSURE REDUCING VALVES	4
68.4 TESTING	4
68.5 PAYMENT.....	4
DETAIL 68-01-TYP WATER METER SETTING 1" OR LESS.....	5
DETAIL 68-02-TYP WATER METER SETTING 1-1/2" TO 2".....	6
DETAIL 68-02A-TYP WATER METER SETTING 1-1/2" TO 2" WITH BYPASS	7
DETAIL 68-03-TYP WATER METER SETTING 3" OR GREATER.....	8
DETAIL 68-04-TYP IRRIGATION WATER METER	9
DETAIL 68-05-TYP WATER SUB-METER 1" OR LESS	10
DETAIL 68-06-TYP WATER SUB-METER 1.5" TO 2".....	11

DETAIL 68-07-TYP SETTING FOR WATER METER 1" OR LESS FOR TRICKLE FEED
SYSTEM 12

SECTION 88 – TRENCHING AND BACKFILLING

88.1 GENERAL	1
88.2 MATERIALS	1
88.2.1 NATIVE.....	1
88.2.2 SAND	1
88.2.3 GRAVEL	2
88.3 INSTALLATION.....	2
88.3.1 TRENCHING.....	2
88.3.2 MECHANICAL AUGERING	3
88.3.3 BACKFILLING.....	3
88.3.4 WASTE MATERIAL	4
88.4 TESTING REQUIREMENTS OF THE CONTRACTOR	4
88.4.1 PRE-INSTALLATION.....	4
88.4.2 INSTALLATION.....	4
88.4.3 POST-INSTALLATION.....	5
88.5 PAYMENT.....	5
88.5.1 TRENCHING AND BACKFILLING.....	5
88.5.2 WASTE MATERIAL	5
88.5.3 TESTING REQUIREMENTS OF THE CONTRACTOR	5

SECTION 91 – WATER DISTRIBUTION SYSTEM

91.1 GENERAL	1
91.2 MATERIALS	1
91.2.1 PIPE.....	1
91.2.2 FITTINGS	2
91.2.3 TRANSITION COUPLINGS.....	2
91.2.4 VALVES	2
91.2.5 VALVE BOXES	3
91.2.6 HYDRANTS	3
91.2.7 BEDDING.....	5
91.2.8 HYDRANT MARKERS	6
91.2.9 THRUST BLOCKING	6
91.2.10 CATHODIC PROTECTION.....	6
91.2.11 TRACER WIRE	7
91.2.12 WATER CHAMBERS.....	7
91.3 INSTALLATION.....	7
91.3.1 PIPE.....	8
91.3.2 FITTINGS	8
91.3.3 TRANSITION COUPLINGS.....	9
91.3.4 VALVES	9
91.3.5 VALVE BOXES	9
91.3.6 HYDRANTS	9
91.3.7 HYDRANT MARKERS	10
91.3.8 BEDDING.....	10

91.3.9 TRACER WIRE.....	11
91.3.10 THRUST BLOCKING	12
91.3.11 TIE-IN TO EXISTING WATERMAIN.....	12
91.3.12 CUT-IN TO EXISTING WATERMAIN.....	12
91.3.13 RELOCATION OF EXISTING WATERMAIN	12
91.3.14 CATHODIC PROTECTION.....	13
91.3.15 CROSSING OTHER PIPELINES OR UTILITIES	13
91.3.16 DISINFECTION AND CLEANING	13
91.3.17 OFFSITE MARKER POSTS.....	14
91.3.18 CHAMBER MANHOLES.....	14
91.4 TESTING REQUIREMENTS	14
91.4.1 PRE-INSTALLATION.....	15
91.4.2 INSTALLATION.....	15
91.4.3 POST-INSTALLATION.....	15
91.5 PAYMENT.....	21
91.5.1 PIPE.....	21
91.5.2 FITTINGS	22
91.5.3 TRANSISTION COUPLINGS.....	22
91.5.4 VALVES	22
91.5.5 VALVE BOXES	22
91.5.6 HYDRANTS	22
91.5.7 TRACER WIRE.....	22
91.5.8 THRUST BLOCKING	22
91.5.9 CONNECTIONS TO EXISTING SYSTEMS	22
91.5.10 RELOCATION OF EXISTING WATERLINE.....	23
91.5.11 WATERMAIN CROSSING OTHER UTILITIES	23
91.5.12 CATHODIC PROTECTION.....	23
91.5.13 DISINFECTION AND CLEANING	23
91.5.14 TESTING REQUIREMENTS OF THE CONTRACTOR	23
FORM - TURBIDITY SAMPLING REPORT.....	24
FORM - PRESSURE TEST - PVC.....	25
FORM - PRESSURE TEST - HDPE.....	26
FORM - CHLORINE RESIDUAL REPORT	27
FORM - BACTERIAL SAMPLING REPORT.....	28
FORM - CCTV REVIEW.....	29
FORM - FIELD DENSITY REVIEW.....	30
FORM - TRENCHLESS LOG REVIEW.....	31
FORM - TRACER WIRE REVIEW.....	32
DETAIL 91-01 – THRUST BLOCK DETAILS	33
DETAIL 91-02 – HYDRANT CONNECTION	34
DETAIL 91-03 – PERMANENT BLOW-OFF VALVE	35
DETAIL 91-04 – PIPE INSULATION DETAIL.....	36
DETAIL 91-05 – BEDDING DETAILS	37
DETAIL 91-06 – WATERMAIN CROSSING DETAIL.....	38
DETAIL 91-09 – FROST COVER DETAIL.....	39
DETAIL 91-10 – TYP. VALVE CASING	40

SECTION 92 – METER LIFT ASSEMBLIES

92.1 GENERAL	1
92.2 MATERIALS	1
92.2.1.....	1
92.2.2.....	1
92.2.3.....	1
92.2.4.....	2
92.2.5.....	2
92.2.6.....	2
92.2.7.....	2
92.3 INSTALLATION.....	2
92.3.1.....	2
92.3.2.....	2
92.3.3.....	2
92.3.4.....	2
92.3.5.....	2
92.3.6.....	2
92.3.7.....	2
92.3.8.....	3
92.4 TESTING REQUIREMENTS OF THE CONTRACTOR	3
92.4.1 PRE-INSTALLATION.....	3
92.4.2 INSTALLATION.....	3
92.4.3 POST-INSTALLATION.....	3
92.5 PAYMENT.....	3
92.5.1.....	3
92.5.2.....	3
DETAIL 92-01- AQUATERA METER LIFT ASSEMBLY INSTALLATION DETAILS.....	4

SECTION 93 – CURBSTOPS IN HARD LANDSCAPING

93.1 GENERAL	1
93.2 MATERIALS	1
93.2.1.....	1
93.3 INSTALLATION.....	1
93.3.1.....	1
93.4 TESTING REQUIREMENTS OF THE CONTRACTOR	1
93.4.1 PRE-INSTALLATION.....	1
93.4.2 INSTALLATION.....	2
93.4.3 POST-INSTALLATION.....	2
93.5 PAYMENT.....	2

SECTION 100 – RURAL SERVICING DESIGN AND CONSTRUCTION MANUALS

SECTION 101 – SUBMISSION STANDARDS	1
101.1 DESIGN DRAWINGS	1
101.1.1 GENERAL.....	1
101.3 ADDITIONAL DRAWINGS FOR RURAL SERVICE AREA	1
101.3.1 DRAINAGE BASIN.....	1

101.3.2 COMBINED UTILITIES PLAN.....	1
SECTION 102 – LOW PRESSURE SANITARY SEWER SYSTEM	2
SYSTEM DESIGN OVERVIEW	2
102.1 ESTIMATING AVERAGE SEWAGE FLOWS.....	2
102.1.1.....	2
102.1.2.....	2
102.1.3.....	2
102.2 MAIN PIPE SIZING AND MATERIAL.....	2
102.2.1.....	2
102.2.2.....	2
102.3 ON SITE REQUIREMENTS.....	3
102.4 LOW PRESSURE SEWER SYSTEM	4
102.4.1.....	4
102.5 ALL SYSTEM MATERIALS INCLUDING FITTINGS & VALVES SHALL BE IN ACCORDANCE WITH APPLICABLE AQUATERA STANDARDS....	5
102.6 SERVICE CONNECTIONS	5
102.6.1 GENERAL.....	5
102.6.2 DETAILS.....	5
102.7 SYSTEM INSTALLATION	5
102.7.1 GENERAL.....	5
102.7.2 TRENCHING, BEDDING, AND BACKFILLING.....	5
102.7.3 TRACER WIRE.....	6
102.7.4 SEWER.....	7
102.8 INSPECTION AND TESTING.....	7
102.8.1-102.8.5 GENERAL TESTING INFORMATION.....	7
102.8.6 TRACER WIRE.....	7
102.8.7 MARKER POSTS	7
102.9 CAVEAT	8
102.9.1 CAVEAT REGISTRATION.....	8
102.9.2 EXISTING LOTS	8
102.10 LOW PRESSURE&FORCEMAIN SANITARY SEWER CLEANING	8
102.10.1 SANITARY SEWER CLEANING (new installation).....	8
SECTION 103 – TRICKLE FEED WATER DISTRIBUTION SYSTEM.....	9
SYSTEM DESIGN OVERVIEW	9
103.1 ESTIMATING FLOW DEMAND.....	9
103.1.1.....	9
103.1.2.....	9
103.1.3.....	9
103.2 MAIN PIPE SIZING AND MATERIAL.....	9
103.2.1.....	9
103.2.2.....	9
103.2.3.....	9
103.3 GENERAL STANDARD INFORMATION	9
103.3.1 MAIN CONNECTIONS.....	9
103.4 ON SITE REQUIREMENTS	10
103.5 SERVICE CONNECTIONS	10
103.5.1.....	10

103.5.2	10
103.5.3	11
103.5.4	11
103.6 SYSTEM INSTALLATION	11
 103.6.1 TRENCHING, BEDDING, AND BACKFILLING	11
 103.6.2 TRACER WIRE	12
 103.6.3 INSTALLATION OF ANODES	12
 103.6.4 WATER	12
 103.6.5 INSPECTION AND TESTING	12
 103.6.6 MARKER POSTS	14
 103.6.7 SIGNS	15
Detail 100-1 – AIR RELEASE	16

SECTION 200 – INSPECTIONS

CCC/FAC INSPECTIONS DURING / AFTER CONSTRUCTION	1
INSPECTIONS DURING CONSTRUCTION	1
 200.1-200.6	1
PROCEDURE	1
 200.7-200.28	1
 CCC TEST PACKAGE / INSPECTION REQUEST FORM	4

SECTION 300 – EXTERNAL REFERENCE STANDARD DOCUMENTS

WATER TESTING SEQUENCE DOCUMENT	1
IPEX PVC SEWER PIPE INSTALLATION GUIDE – WATER TESTING – INFILTRATION & EXFILTRATION	3
ALBERTA SPECIFICATIONS FOR CAST IRON PRODUCTS	4
MUELLER METER LIFT DRAWING	10
AVB CROWN SURFACE ADAPTOR DRAWINGS	11

SECTION 400 – APPROVED MATERIALS LIST – IN PROGRESS