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CONCRETE FOR CURB AND GUTTER AND SIDEWALKS SHALL BE READY MIX CONCRETE DESIGNED TO ACHIEVE A 28 DAY COMPRESSIVE STRENGTH OF 25 MPA, WITH A MAXIMUM AGGREGATE SIZE OF 19MM, AIR ENTRAINMENT 5-7%, WATER-CEMENT RATIO 0.50 MAXIMUM AND SLUMP OF 25-75MM. PRE-MOULDED EXPANSION JOINT FILLER MATERIAL SHALL BE MINIMUM 13MM THICK, CUT TO SUIT.

2.4.6 GRASS SEED MIXTURE

GRASS SEED SHALL BE A PREMIUM QUALITY WITH A PURITY OF 95% OR BETTER AND A GERMINATION RATE OF 85% OR BETTER. THE SPECIES AND PERCENTAGES OF THE SEED MIXTURE SHALL

KENTUCKY BLUEGRASS: 50% CREEPING RED FESCUE: 50%

2.5 INSTALLATION

COPIES OF COMPACTION TEST RESULTS, GRANULAR MATERIALS SIEVE ANALYSIS, ASPHALTIC CONCRETE AND CONCRETE DESIGN MIXES, ASPHALTIC CONCRETE AND CONCRETE TEST RESULTS SHALL BE SUBMITTED TO THE MUNICIPALITY.

THE WORKING AREA AND HAUL ROADS SHALL BE MAINTAINED IN AN ORDERLY FASHION AND SHALL NOT BE ENCUMBERED WITH EQUIPMENT, MATERIALS OR DEBRIS.

DUST CONTROL SHALL BE MAINTAINED AT ALL TIMES BY WATERING OR OTHER APPROVED MEANS.

THE WORK SHALL BE SCHEDULED SUCH THAT DISRUPTION OF NORMAL TRAFFIC AND INCONVENIENCES TO RESIDENTS SHALL BE

PROOF ROLLING OF THE SUBGRADE, SUBBASE OR BASE COURSE MAY BE REQUIRED BY THE APPROVING OFFICER. 2.5.2 CLEARING & GRUBBING

THE ROADWAY RIGHT-OF-WAY SHALL BE CLEARED AND GRUBBED OF ALL STANDING OR FALLEN TREES, BRUSH, TIMBER, STUMPS, OR OTHER DEBRIS AND ORGANIC MATERIALS AND THESE MATERIALS SHALL BE DISPOSED OF BY BURNING OR OTHER APPROVED MEANS. BURNING SHALL BE DONE IN ACCORDANCE WITH BC FOREST ACT AND MUNICIPAL BYLAWS, TOPSOIL AND OVERBURDEN SHALL BE STRIPPED TO A MINIMUM DEPTH OF

THE ENTIRE ROADWAY RIGHT-OF-WAY WIDTH SHALL BE GRADED TO THE APPROVED PROFILE AND CROSS-SECTION, AND UNIFORMLY COMPACTED TO A MINIMUM 95% STANDARD PROCTOR THE COMPLETED PROFILE AND CROSS-SECTION SHALL BE ACCURATE TO A TOLERANCE OF 30MM, WITH NO SOFT, SPONGY OR UNSTABLE AREAS, AND FREE FROM RUTS, WAVES AND UNDULATIONS.

2.5.4 SELECT GRANULAR SUB-BASE

SELECT GRANULAR SUB-BASE MATERIAL SHALL BE PLACED ON DRY, FIRM SUB-GRADE, AND COMPACTED IN UNIFORM LAYERS NOT EXCEEDING 150MM IN UNCOMPACTED THICKNESS. TO A MINIMUM 100% STANDARD PROCTOR DENSITY. THE COMPLETED PROFILE AND CROSS SECTION SHALL BE ACCURATE TO A TOLERANCE OF 15MM, FREE FROM RUTS, WAVES AND

2.5.5 CRUSHED GRANULAR BASE

CRUSHED GRANULAR BASE COURSE MATERIAL SHALL BE PLACED ON DRY, FIRM SUB-BASE, AND COMPACTED IN UNIFORM LAYERS O A MINIMUM 100% STANDARD PROCTOR DENSITY. THE COMPLETED PROFILE AND CROSS-SECTION SHALL BE ACCURATE TO A TOLERANCE OF 12MM, FREE FROM RUTS, WAVES AND UNDULATIONS.

3.3.3 VALVES, VALVE BOXES AND FITTINGS

SOLID WEDGE OR DOUBLE DISC GATE VALVES, IRON BODY, BRONZE MOUNTED. CLOCKWISE CLOSURE, MANUFACTURED IN CANADA, WITH NON-RISING STEMS, CONFORMING TO AWWA C500 SPECIFICATIONS AND COMBINED WITH EXTENSION SPINDLES AND VALVE BOXES SHALL BE INSTALLED ON ALL WATERMAINS UP TO AND INCLUDING 300MM DIAMETER. VALVE MANUFACTURER MUST BE ACCEPTABLE TO THE APPROVING OFFICER

ON MAINS LARGER THAN 300MM IN DIAMETER, BUTTERFLY VALVES, FLANGED TYPE CONFORMING TO AWWA C504 SPECIFICATIONS ALONG WITH AN INSULATED VALVE CHAMBER SHALL BE INSTALLED. VALVES LARGER THAN 300MM SHALL HAVE

WHERE AIR RELEASE VALVES ARE REQUIRED THEY SHALL BE DOUBLE ACTING, VACUUM TYPE, WITH CAST IRON BODIES AND 60 KPA FLANGES. A BALL VALVE OR GATE VALVE WITH ACTIVATOR SHALL BE INSTALLED BENEATH EACH AIR VALVE ASSEMBLY. ALL AIR RELEASE VALVES SHALL BE PROTECTED FROM FROST BY INSULATING THE VALVE CHAMBERS.

VALVE BOXES SHALL BE NELSON TYPE, OR AS APPROVED. VALVE BOX RISERS SHALL BE PVC PIPE OR AS APPROVED, SUITABLE FOR THE VALVE AND VALVE BOX. FITTINGS FOR PVC PIPE SHALL

a) CAST IRON FITTINGS MANUFACTURED TO AWWA C110 DESIGNED FOR A WORKING PRESSURE OF 1035 KPA. b) ASPHALT COATED DUCTILE IRON COMPACT FITTINGS MANUFACTURED TO ANSI/AWWA C153/A21.53-84. MECHANICAL SEAL JOINTS ON FITTINGS TO PIPE SHALL BE FORMED BY A BELL AND PREFORMED RUBBER GASKET SUITABLE FOR THE PIPE TO WHICH THE JOINT IS MADE.

FLANGED JOINTS ON FITTINGS SHALL BE FLAT FACED CONFORMING IN DIMENSION AND DRILLING TO ANSI 816.1. ENDS SHALL BE FLANGED OR BELLED TO SUIT PIPE ENDS.

3.0 WATER

3.3.2 PIPE JOINTS

JOINTING OF PIPE SHALL BE IN ACCORDANCE WITH MANUFACTURER'S RECOMMENDATIONS. A FLEXIBLE JOINT SHALL BE PROVIDED AT LOCATIONS WHERE PIPE IS HELD IN A FIXED POSITION BY A RIGID STRUCTURE OR

UNLESS OTHERWISE APPROVED, THE AMOUNT OF PIPE DEFLECTION AT JOINTS AND COUPLINGS SHALL NOT EXCEED 3 DEGREES, OR ONE HALF THE LIMIT SPECIFIED BY THE MANUFACTURER,

WHICHEVER IS LESS. 3.3.3 VALVES, VALVE BOXES AND FITTINGS

SOLID WEDGE OR DOUBLE DISC GATE VALVES, IRON BODY, BRONZE MOUNTED, CLOCKWISE CLOSURE, MANUFACTURED IN CANADA, WITH NON-RISING STEMS, CONFORMING TO AWWA C500 SPECIFICATIONS AND COMBINED WITH EXTENSION SPINDLES AND VALVE BOXES SHALL BE INSTALLED ON ALL WATERMAINS UP TO AND INCLUDING 300MM DIAMETER.

2017 FEB 24 ISSUE FOR 60% COSTING

Date

2 2017 FEB 8 ISSUE FOR 60% COORDINATION 1 2016 DEC 9 | ISSUE FOR DESIGN DEVELOPMENT VALVE MANUFACTURER MUST BE ACCEPTABLE TO THE APPROVING ON MAINS LARGER THAN 300MM IN DIAMETER, BUTTERFLY VALVES, FLANGED TYPE CONFORMING TO AWWA C504 SPECIFICATIONS ALONG WITH AN INSULATED VALVE CHAMBER SHALL BE INSTALLED

VALVES LARGER THAN 300MM SHALL HAVE A 100MM DIAMETER BYPASS LINE WHERE AIR RELEASE VALVES ARE REQUIRED THEY SHALL BE DOUBLE ACTING, VACUUM TYPE, WITH CAST IRON BODIES AND 860 KPA FLANGES. A BALL VALVE OR LATE VALVE WITH ACTIVATOR SHALL BE INSTALLED BENEATH EACH AIR VALVE

ALL AIR RELEASE VALVES SHALL BE PROTECTED FROM FROST BY INSULATING THE VALVE CHAMBERS. VALVE BOXES SHALL BE NELSON TYPE, OR AS APPROVED. VALVE

BOX RISERS SHALL BE PVC PIPE OR AS APPROVED, SUITABLE FOR THE VALVE AND VALVE BOX. FITTINGS FOR PVC PIPE SHALL BE a) CAST IRON FITTINGS MANUFACTURED TO AWWA C110

DESIGNED FOR A WORKING PRESSURE OF 1035 KPA. b) ASPHALT COATED DUCTILE IRON COMPACT FITTINGS MANUFACTURED TO ANSI/AWWA C153TA21.53-84. MECHANICAL SEAL JOINTS ON FITTINGS TO PIPE SHALL B FORMED BY A BELL AND PREFORMED RUBBER GASKET SUITABLE

FLANGED JOINTS ON FITTINGS SHALL BE FLAT FACED CONFORMING IN DIMENSION AND DRILLING TO ANSI 816.1. ENDS SHALL BE FLANGED OR BELLED TO SUIT PIPE ENDS.

PIPE BEDDING SPECIFICATIONS SHALL CONFORM TO MUNICIPAL STANDARDS FOR CLASS "4", CLASS "8", AND CLASS "C' BEDDING PIPE BEDDING SELECTION MAY VARY FOR DIFFERENT MATERIAL INSTALLED AND FOR DIFFERENT LOCATIONS WITH THE MUNICIPALITY.

3.4 INSTALLATION 3.4.1 EXCAVATION, BEDDING, BACKFILL, RESTORATION

THE TRENCH SHALL BE EXCAVATED SO THAT PIPE CAN BE LAID TO THE SPECIFIED ALIGNMENT AND DEPTH WITH ALLOWANCE FOR THE SPECIFIED TRENCH WALL CLEARANCES AND BEDDING. WALL CLEARANCES SHALL BE MINIMUM 150MM, MAXIMUM 400MM. FROM THE BOTTOM OF THE TRENCH TO 100MM ABOVE THE TOP

OF THE PIPE. BRACING, SHEETING AND TRENCH SIDE SLOPES SHALL BE IN ACCORDANCE WITH WORKERS' COMPENSATION BOARD SAFETY REQUIREMENTS. DEWATERING MAY BE REQUIRED TO CONTROL TRENCH WATER.

BEDDING MATERIAL SHALL BE CRUSHED GRAVEL OR CONCRETE FOR PVC OR DUCTILE IRON PIPE OR SAND FOR POLYETHYLENE SERVICE PIPE. BEDDING SHALL BE COMPACTED TO 95% STANDARD

BACKFILL MATERIAL SHALL BE APPROVED SELECT NATIVE MATERIAL OR PITRUN GRAVEL AND SHALL BE PLACED IN SUCH A MANNER TO PREVENT DAMAGE TO THE PIPE.

BACKFILL MATERIALS IN TRAVELED SURFACES SHALL BE COMPACTED TO 95% STANDARD PROCTOR DENSITY, EXCEPT FOR THE UPPER 750MM WHICH SHALL BE COMPACTED IN ACCORDANCE WITH THE ADJACENT TRAVELED SURFACE DESIGN REQUIREMENTS. SURFACE RESTORATION SHALL CONFORM TO THE ORIGINAL CONDITION OR AS ACCEPTED.

3.4.2 PIPE LAYING

PIPE SHALL BE INSTALLED IN ACCORDANCE WITH THE APPLICABLE AWWA SPECIFICATIONS, THE MANUFACTURER'S RECOMMENDATIONS AND REQUIREMENTS OF THIS SCHEDULE. PIPES SHALL BE HANDLED WITH THE GREATEST CARE AND WITH EQUIPMENT DESIGNED SO THAT NO DAMAGE OCCURS TO PIPE OR

ALL PIPES SHALL BE LAID ON HORIZONTAL LINE, WITH A TOLERANCE OF PLUS OR MINUS 10 MM OF THE DESIGN LINE; AND GRADE, WITH A TOLERANCE OF PLUS OR MINUS 25MM FOR WATER MAINS AND SERVICES; WITH THE SPIGOT END POINTED IN THE DIRECTION OF THE FLOW. THE PIPES SHALL BE JOINTED IN ACCORDANCE WITH THE MANUFACTURER'S RECOMMENDATIONS EXCEPT THAT JOINT DEFLECTIONS SHALL BE ALLOWED ONLY UP TO ONE-HALF OF THE MANUFACTURER'S RECOMMENDED

TOLERANCES, PARTICULAR CARE MUST BE TAKEN TO SEE THAT THE ENDS OF THE PIPES ARE KEPT CLEAN. CARE SHALL BE TAKEN TO PROPERLY ALIGN THE PIPE ONCE THE JOINTS ARE FORCED HOME. MOVEMENT OF THE PIPE ONCE ONE JOINT IS MADE SHALL BE KEPT TO AN ABSOLUTE MINIMUM. JUMPING ON OR DROPPING OF THE PIPE TO OBTAIN GRADE SHALL NOT BE

CARE SHALL BE TAKEN TO PREVENT THE ENTRANCE OF TRENCH VALVES, HYDRANTS AND APPURTENANCES

VALVES SHALL BE INSTALLED AT THE SPECIFIED LOCATIONS, IN THE VERTICAL POSITION. VALVE BOXES SHALL BE INSTALLED PLUMB, CENTERED OVER THE VALVE, AND SUCH THAT TRAFFIC LOADS ARE NOT TRANSMITTED TO THE VALVE. TOWN OF SMITHERS WATER SYSTEM STANDARDS (EXCERPT FROM BYLAW 1723) WATER CONT. 3.4.3 VALVES & HYDRANTS HYDRANTS SHALL BE INSTALLED AT THE SPECIFIED LOCATIONS, SET PLUMB AND SUCH THAT THE PUMPER PORT FACES, AND IS AT RIGHT ANGLES TO, THE ROAD CENTERLINE, UNLESS OTHERWISE ACCEPTED. DRAIN OUTLETS WITH DRAIN ROCK SHALL BE PROVIDED AND KEPT FREE OF OBSTRUCTIONS. THE GROUND FLANGE SHALL BE 50MM ABOVE FINISHED GROUND OR SIDEWALK

GRADE UNLESS OTHERWISE ACCEPTED. FITTINGS SHALL BE INSTALLED AT THE SPECIFIED LOCATIONS IN ACCORDANCE WITH THE MANUFACTURER'S RECOMMENDATIONS.

3.4.4 THRUST BLOCKING

THRUST BLOCK BEARING AREAS SHALL BE TO MUNICIPAL STANDARDS. CONCRETE SHALL BE 25MPA MINIMUM AT 28 DAYS. CARE SHALL BE TAKEN TO ENSURE THAT CONCRETE DOES NOT INTERFERE WITH THE OPERATION OF THE FLANGE BOLTS AND NUTS OR PREVENT PROPER OPERATION OF HYDRANT DRAINS. 3.4.5 SERVICE CONNECTIONS

SERVICE CONNECTIONS SHALL BE INSTALLED AT THE SPECIFIED LOCATIONS AND DEPTHS WITH THE SAME TOLERANCES AS SPECIFIED FOR PIPE LAYING.

CURB STOP BOXES SHALL BE SET PLUMB AND ADJUSTED TO FINISH GRADE.

EL

EL Initials

3.4.6 TESTING

PRIOR TO TESTING, ALL NEW WATER MAINS ARE TO BE CLEANED OF DEBRIS BY PASSING A LINE SIZED "PIG" THROUGH THE MAIN OR ALTERNATIVELY THE MAIN SHALL BE VIDEO INSPECTED AND IMMEDIATELY AFTERWARDS THE PIPE ENDS SHALL BE CAPPED IN PREPARATION FOR TESTING AND DISINFECTION.

ALL WATER MAINS SHALL BE TESTED IN ACCORDANCE WITH THE APPROPRIATE AWWA SPECIFICATIONS AND THE FOLLOWING

a) THE TEST PRESSURE SHALL BE 1.035KPA OR 1.5 TIMES THE OPERATING PRESSURE, WHICHEVER IS GREATER, THE PRESSURE TEST SHALL BE MAINTAINED FOR A MINIMUM OF TWO HOURS. b) THE ALLOWABLE LEAKAGE SHALL BE DETERMINED BY AWWA

L = ALLOWABLE LEAKAGE IN LITRES PER HOUR

N = NUMBER OF JOINTS IN TEST SECTIOND = INSIDE DIAMETER OF PIPE IN MILLIMETERS P = TEST PRESSURE IN KILOPASCALS

SERVICE CONNECTIONS SHALL BE TESTED WITH THE WATER MAIN. ALLOWABLE EXPANSION FOR POLYETHYLENE SERVICE PIPING SHALL BE AS SPECIFIED BY THE MANUFACTURER. THE APPROVING OFFICER SHALL BE NOTIFIED 24 HOURS IN ADVANCE OF THE LEAKAGE TESTING AND MAY ELECT TO WITNESS THE TEST. ALL TEST DATA AND LEAKAGE CALCULATIONS ARE TO

3.4.7 FLUSHING AND DISINFECTION

BE SUBMITTED TO THE APPROVING OFFICER.

ALL WATER MAINS SHALL BE DISINFECTED BY CHLORINATION AFTER THE SYSTEM HAS BEEN "PIGGED" OR FLUSHED OF DIRT AND OTHER DEBRIS. CHLORINATION METHODS SHALL CONFORM TO AWWA C601 AND ALL DISINFECTION SHALL BE ACCEPTABLE TO THE APPROVING OFFICER AND PUBLIC HEALTH INSPECTOR. UPON COMPLETION OF DISINFECTION, THE ENTIRE PIPING SYSTEM SHALL BE THOROUGHLY FLUSHED, FILLED WITH WATER AND LEFT IN A CONDITION READY FOR USE.

CARE SHALL BE TAKEN TO ENSURE CHLORINATED WATER FROM THE TESTING PROCEDURE IS NOT DISCHARGED INTO FISH BEARING STREAMS. DECHLORINATION MAY BE REQUIRED PRIOR TO DISCHARGE.4.0 SANITARY SEWERS

4.3.1 GRAVITY MAIN PIPE

(SEE FULL BYLAW)

ALL GRAVITY SEWER PIPE SHALL BE JOINTED USING RUBBER GASKETS OR GASKET FITTINGS AND COUPLINGS. ALL SEWER FORCE MAIN PIPING SHALL BE JOINTED AS SPECIFIED FOR WATER

ALL MANHOLES SHALL BE PRECAST CONCRETE, MINIMUM 1,050MM INSIDE DIAMETER AND SHALL CONFORM TO ASTM C478. MANHOLES SLABS SHALL BE PRECAST OR CAST IN PLACE ON COMPACTED MATERIAL TO MUNICIPAL STANDARDS USING 20 MPA

CONCRETE AND SHALL BE 1,600MM SQUARE. PRECAST CONCRETE LIDS SHALL BE DESIGNED TO WITHSTAND H-20 LOADING CONDITIONS. CAST IRON FRAMES AND COVERS AND MANHOLE LADDER RUNGS SHALL CONFORM TO MUNICIPAL

TEMPORARY CLEANOUT BARRELS, COVERS, BASE AND LIDS SHALL CONFORM TO STANDARDS FOR MANHOLES, OR AS ACCEPTED. 4.3.6 SERVICE CONNECTIONS

ALL SERVICE CONNECTIONS.

POLYVINYL CHLORIDE PIPE AND FITTINGS SHALL BE USED FOR

PIPE BEDDING CLASSIFICATIONS SHALL CONFORM TO MUNICIPAL STANDARDS FOR CLASS "A" CLASS "B", OR CLASS "C" BEDDING PIPE BEDDING SELECTION MAY VARY FOR DIFFERENT MATERIALS INSTALLED AND FOR DIFFERENT LOCATIONS WITHIN THE MUNICIPALITY.

4.4 INSTALLATION 4.4.1 EXCAVATION, BEDDING, BACKFILL, RESTORATION

EXCAVATION, BEDDING, BACKFILL, AND RESTORATION SHALL CONFORM TO THE REQUIREMENTS OF SECTION 3.4.1 OF THIS SCHEDULE

PIPE SHALL BE HANDLED WITH THE GREATEST CARE AND EQUIPMENT DESIGNED SO THAT NO DAMAGE OCCURS TO PIPE AND FITTINGS. BATTER BOARDS SHALL BE ERECTED OVER THE TRENCH OR TRENCH LINE AT INTERVALS OF NOT MORE THAN 20M. THE CENTER LINE OF THE REQUIRED PIPE LINE SHALL BE MARKED ON THESE BOARDS AND STRING OR WIRE STRETCHED BETWEEN THE ENTIRE LINE. THE PIPE SHALL BE KEPT TO PROPER LINE BY PLUMBING DOWN FROM THIS STRING LINE. EACH PIPE SHALL BE LAID TO GRADE BY MEANS OF BATTER BOARDS AND A BONING ROD WITH A SHOE WHICH WILL ENTER THE PIPE AND STAND ON THE INVERT. A MINIMUM OF THREE (3) BATTER BOARDS SHALL BE IN PLACE AT ALL TIMES DURING EXCAVATION AND PIPE LAYING. SUFFICIENT BATTER BOARDS SHALL BE PLACED SO THAT SIGHTING IS POSSIBLE ALONG THESE BOARDS FROM ONE MANHOLE TO THE NEXT. ALTERNATE METHODS OF GRADING AND ALIGNING THE PIPE MAY BE CONSIDERED. VERTICAL TOLERANCE SHALL BE 7MM PLUS OR MINUS FOR SANITARY SEWER GRAVITY MAINS AND 25MM, PLUS OR MINUS FOR SEWER FORCE MAINS. ALL PIPES SHALL BE LAID TO HORIZONTAL LINE WITH SPIGOT END POINTED IN THE DIRECTION OF THE FLOW. THE PIPES SHALL BE JOINTED IN ACCORDANCE WITH THE MANUFACTURER'S RECOMMENDATION TOLERANCES, CARE SHALL BE TAKEN TO PROPERLY ALIGN THE PIPE ONCE THE JOINTS FORCED HOME MOVEMENT OF THE PIPE ONCE THE JOINT IS MADE SHALL BE KEPT TO AN ABSOLUTE MINIMUM. JUMPING ON OR DROPPING OF PIPE TO OBTAIN GRADE SHALL NOT BE PERMITTED. CARE SHALL BE TAKEN TO PREVENT THE ENTRANCE OF TRENCH WATER OR OTHER MATERIAL INTO THE PIPE DURING INSTALLATION. 4.4.3 MANHOLES, CLEANOUTS, APPURTENANCES

MANHOLES, CLEANOUTS, AND APPURTENANCES SHALL BE INSTALLED AT THE LOCATIONS SHOWN ON THE APPROVED DESIGN DRAWINGS AND IN ACCORDANCE WITH THE STANDARD DRAWINGS. MANHOLES SHALL BE SET PLUMB AND SHALL BE CONSTRUCTED CONCURRENTLY WITH THE LAYING OF THE PIPE. MANHOLES SHALL BE CONSTRUCTED SO AS TO BE FREE FROM BOTH GROUND WATER INFILTRATION AND EXFILTRATION OF SEWAGE. ALL JOINTS SHALL BE BUTTER MORTARED, INCLUDING BASE, BARREL, COVER, BRICKING, AND FRAME.

INLET AND OUTLET ELEVATIONS SHALL BE AS SHOWN ON THE APPROVED DESIGN DRAWINGS WITH TOLERANCES AS SPECIFIED

4.4.4 SERVICE CONNECTIONS

SERVICE CONNECTIONS SHALL BE INSTALLED AT THE LOCATIONS AND DEPTHS SHOWN ON THE APPROVED DRAWING WITH THE SAME TOLERANCES AS SPECIFIED FOR PIPE LAYING.

PER KILOMETER PER DAY.

PRIOR TO FLUSHING AND TESTING, ALL NEW MAINS ARE TO BE CLEANED OF DEBRIS BY PASSING A LINE SIZED "PIG" THROUGH THE MAIN, OR BY TV INSPECTION AND IMMEDIATELY AFTERWARDS CAPPING THE PIPE ENDS IN PREPARATION FOR TESTING. THIS PROCEDURE WILL HELP TO IDENTIFY ANY MISALIGNMENTS ON CURVED MAINS. ALL SANITARY SEWERS SHALL BE VISUALLY INSPECTED AND FLUSHED TO DETERMINE THAT THEY ARE STRAIGHT AND FREE FROM SILT, SAND, EARTH, OR OTHER DEBRIS EXFILTRATION TESTS SHALL BE CARRIED OUT ON GRAVITY SEWERS WITH EITHER AIR OR WATER AS OUTLINED BELOW. TESTING FOR SANITARY SEWER FORCE MAINS SHALL CONFORM TO THE TESTING CRITERIA FOR WATERMAINS, BUT NEED NOT INCLUDE DISINFECTION. EXFILTRATION TEST: THE ALLOWABLE EXFILTRATION (WATER METHOD) SHALL BE 4 LITRES PER MILLIMETER OF PIPE DIAMETER

THE ALLOWABLE EXFILTRATION (AIR METHOD) SHALL BE DETERMINED BY FILLING THE TEST SECTION WITH AIR TO A CONSTANT PRESSURE OF 25KPA AND MAINTAINING A PRESSURE ABOVE 20KPA FOR A MINIMUM OF 5 MINUTES. AFTER THE STABILIZATION PERIOD. THE AIR SUPPLY SHALL BE CUT OFF AND THE PRESSURE ALLOWED TO DROP TO 20KPA. TIMING SHALL COMMENCE AT 20KPA AND SHALL CONTINUE UNTIL THE PRESSURE REACHES 15KPA. THE MINIMUM ACCEPTABLE TIME PERIOD SHALL BE DETERMINED BY THE FORMULA:

MINIMUM TIME IN MINUTES = 0.040 X PIPE DIAMETER IN

WHERE PREVAILING GROUNDWATER IS ABOVE THE SEWER LINE BEING TESTED, THE TEST PRESSURE SHALL BE INCREASED 10 KPA FOR EACH METER OF GROUNDWATER ABOVE THE PIPE.

AN INFILTRATION TEST MAY BE REQUIRED IN AREAS OF HIGH GROUNDWATER, AT THE DISCRETION OF THE APPROVING OFFICER. THE APPROVING OFFICER SHALL BE NOTIFIED 24 HOURS IN ADVANCE OF THE LEAKAGE TESTING AND MAY ELECT TO WITNESS THE TEST. ALL TEST DATA AND LEAKAGE CALCULATIONS ARE TO BE SUBMITTED TO THE APPROVING OFFICER. 5 STORM DRAINAGE

5.3 MATERIALS 5.3.1 PIPE

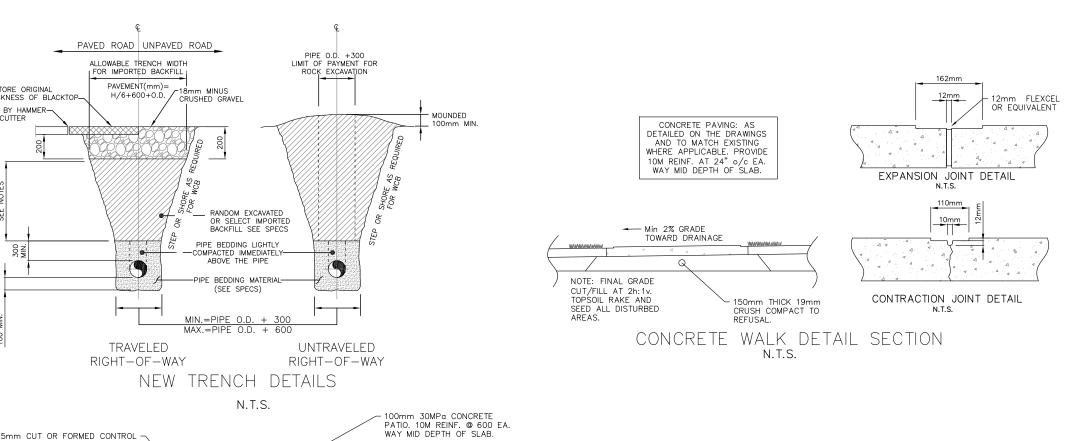
(SEE FULL BYLAW)

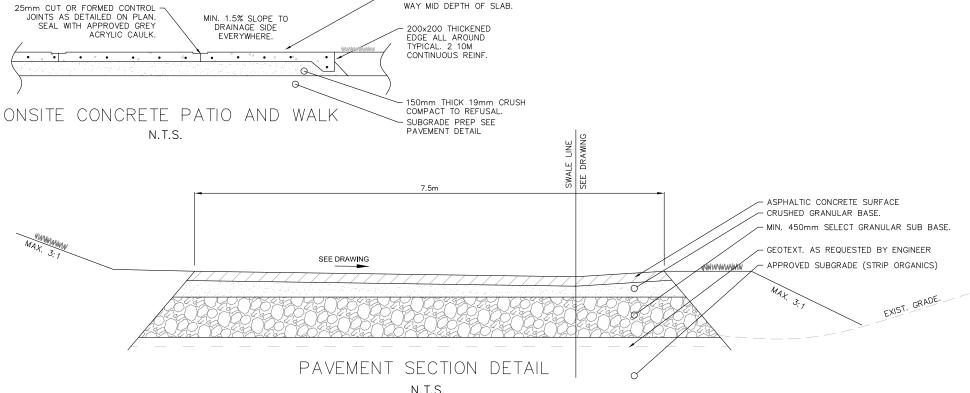
ALL PIPE JOINTS SHALL BE JOINTED WITH RUBBER GASKETS OR GASKETED FITTINGS AND COUPLINGS. 5.3.3 MANHOLES

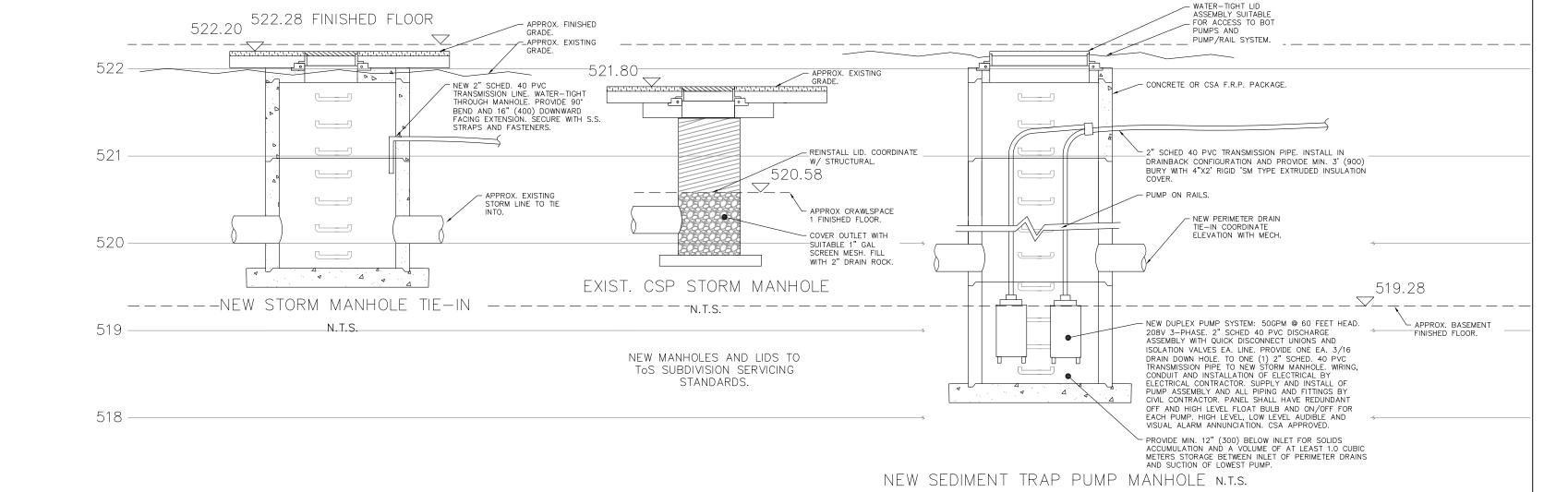
MANHOLE BARRELS SHALL BE PRECAST CONCRETE, 1050MM MINIMUM INSIDE DIAMETER AND SHALL CONFORM TO ASTM C478 FOR ALL MAINS UP TO 380MM IN DIAMETER. FOR MAINS 400MM AND LARGER IN DIAMETER CAST IN PLACE STRUCTURES COMBINED WITH PRECAST SECTIONS SHALL BE UTILIZED. MANHOLE SLABS SHALL BE PRECAST OR CAST IN PLACE ON COMPACTED MATERIAL TO MUNICIPAL STANDARDS USING 20MPA

CONCRETE AND SHALL BE 1600MM SQUARE PIPE INTERSECTIONS IN MANHOLES SHALL UTILIZE SMOOTH HAND FORMED CONCRETE CHANNELS TO MAINTAIN UNIFORM FLOWS.

MINIMUM INVERT DROPS SHALL BE AS FOLLOWS: STRAIGHT RUN NO DROP REQUIRED DEFLECTIONS TO 45°20MM DROP DEFLECTIONS 45° TO 90°30MM DROP







8 |2017 AUG 09 ISSUE CONSTRUCTION 7 2017 JUL 14 ISSUE FOR POST TENDER ADDENDUM & CONSTRUCTION 6 2017 MAY 1 ISSUE FOR BUILDING PERMIT 5 2017 APR 11 ISSUE TENDER 4 2017 MAR 10 ISSUE FOR 90%

Revision

AULKLEY · VALLED

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M. LILLES #31453
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Date: Dec 16

Client Project No. Smithers Regional Airport Client Drawing No. Terminal Expansion BVES Project No. DETAILS AND NOTES 16 - 133Drawing No. Sheet 3 of 3

Plotted Full Size on - 22 x 34

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Checked: LMO

Surveyed: JS

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