WATERMAINS / SERVICES

1. CONSTRUCTION OF PRIVATE WATER SERVICES SHALL BE IN ACCORDANCE WITH REGION OF HALTON AND ONTARIO PROVINCIAL STANDARDS & SPECIFICATIONS.
2. MINIMUM COVER OVER WATERMAIN TO BE 1.7m
3. BEDDING AS PER O.P.S.D. 802.030 OR O.P.S.D. 802.031, CLASS B, MIN 150mm DEEP GRANULAR 'A' AT 98% S.P.D.D. EXCAVATED MATERIAL TO BE TAKEN OFF SITE AND NOT USED FOR BACKFILL OR BEDDING. BACKFILL TO BE GRANULAR 'A' AT 98%SPD.
4. WATER SERVICE TO BE 100mm, CLASS 150, DR-18 P.V.C.
5. MAXIMUM ALLOWABLE JOINT DEFLECTION FOR WATERMAINS SHALL BE 50% OF THE MANUFACTURER'S SPECIFICATIONS. JOINT DEFLECTION SHALL BE AVOIDED AND BENDS SHALL BE INCORPORATED INSTEAD. PIPE BARREL BENDING/DEFLECTION SHALL NOT BE ALLOWED.
6. WATERMAINS SHALL HAVE A MINIMUM VERTICAL SEPARATION OF 0.5m WHERE THE WATERMAIN PASSES UNDER/OVER THE SEWER/STORM AND HORIZONTAL SEPARATION OF 2.5m BETWEEN ANY SEWER OR MANHOLE.
7. ONLY MECHANICAL RESTRAINTS MAY BE USED.
8. WATER SERVICE CONNECTIONS TO BE AS PER RH 409.01.
9. WATER SERVICE CONNECTIONS TO PROPERTY LINE CURB STOP AND SERVICE BOX REQUIRE THE INSTALLATION OF STAINLESS STEEL RODS AND BRASS COTTER PINS.
10. GATE VALVES CONFORMING TO A.W.W.A C500 STANDARDS ARE REQUIRED ON WATERMAINS 300mm AND UNDER. LINE GATE VALVES SHALL HAVE AUGER OF SCREW TYPE VALVE BOXED.
11. AT CATCH BASINS AND MANHOLES PROVIDE 75mm EXTRUDED POLYSTYRENE INSULATION STYRA FOAM M1-40 FOR WATERMAIN.
12. FOLLOW A.W.W.A. C651-99 WATER QUALITY STANDARDS.
13. ALL METALLIC WATERMAINS, FITTINGS, HYDRANTS AND RESTRAINERS TO HAVE CATHODIC PROTECTION IN ACCORDANCE WITH REGION OF HALTON STANDARD DRAWINGS RH 420.01 AND RH 420.02.
14. ALL SACRIFICIAL ANODES SHALL CONFORM TO ASTM B-418 TYPE II AND SHALL B MADE OF HIGH GRADE ELECTROLYTIC ZINC, 99.99% PURE.
15. FOR ALL ANODES CONNECTED TO NEW PIPE, FITTINGS OR TO EXISTING METALLIC WATERMAINS, A CADWELDER AND CA-15 OR EQUIVALENT CARTRIDGE SHALL BE USED. ANODE INSTALLATION SHALL BE PERFORMED IN ACCORDANCE WITH THE MANUFACTURERS' INSTRUCTIONS.
16. ALL WELD CONNECTIONS TO BE COATED WITH "TC MASTIC" OR APPROVED EQUIVALENT.
17. TRACER WIRE IS TO BE INSTALLED ON ALL NEW INSTALLATIONS OF PVC WATERMAIN PIPE FOR COATING PURPOSES. A SOLID 10 GAUGE T.W.U. COPPER TRACER WIRE SHALL BE INSTALLED ALONG THE TOP OF THE PIPE, STRAPPED TO THE PIPE AT 6 METRE INTERVALS. TRACER WIRE IS TO BE BROUGHT UP OUTSIDE THE VALVE BOX TO THE TOP OF THE BOX THEN IN THROUGH THE HOLE AS PER HALTON STANDARD DRAWING RH 400.04 OR 400.05. THE INSPECTOR MAY TEST THE TRACING WIRE FOR CONDUCTIVITY. IF THE TRACING WIRE IS NOT CONTINUOUS FROM VALVE TO VALVE, THE CONTRACTOR SHALL, AT HIS OWN EXPENSE, REPLACE/REPAIR THE WIRE.
18. ALL WATERMAIN SHALL BE SWABBED, CHLORINATED, PRESSURE TESTED AND WATER SAMPLES TAKEN AS PER REGION OF HALTON STANDARDS.
19. OPERATION OF EXISTING WATERMAINS SHALL BE BY REGION OF HALTON STAFF ONLY.
20. AS PER NEW MOE REGULATIONS, THE WATERMAINS MUST BE CONSTRUCTED ENTIRELY SEPARATE FROM THE EXISTING SYSTEM. CONNECTION TO THE EXISTING SYSTEM WILL ONLY BE ALLOWED ONCE THE NEW SYSTEM HAS HAD ALL OF ITS SWABBING PERFORMED, PRESSURE TESTING PASSED, CHLORINATION, FLUSHING AND BACTERIOLOGICAL TESTING RESULTS APPROVED. THE CONTRACTOR SHALL PROVIDE ALL TEMPORARY CAPS, PLUGS, BLOW-OFFS AND BACKFLOW PREVENTION FOR TESTING THE NEW WATERMAIN.
21. WATERMAIN TO BE PVC CLASS 150 (DR18). BEDDING, BACKFILL AND COVER MATERIAL TO BE GRANULAR 'A' COMPACTED TO 95% S.P.D.D. IN ACCORDANCE WITH O.P.S.D. 1102.01 CLASS "B". SELECT NATIVE MATERIAL COMPACTED TO 95% S.P.D.D. MAY BE USED FOR COVER MATERIAL UNDER LANDSCAPE AREAS ONLY. GATE VALVES TO OPEN LEFT WITH 500mm SQUARE STANDARD A.W.W.A. OPERATING NUT AND TO BE FROM MANUFACTURERS APPROVED BY THE REGION. THRUST BLOCKS TO BE IN ACCORDANCE WITH THE O.P.S.D. 1003.01 AND O.P.S.D. 1103.020. PIPE FOR ALL SERVICE CONNECTIONS UP TO 50mm DIA. SHALL BE SOFT COPPER TUBING.
22. ALL PLUGS, CAPS, TEES AND BENDS SHALL BE MECHANICALLY RESTRAINED AS PER MANUFACTURES SPECIFICATIONS. RESTRAINTS SHALL MEET UNI-B13-92.
23. ALL WATER CUSTOMERS SUPPLIED BY THE WATERMAIN TO BE SHUT DOWN SHALL BE NOTIFIED BY THE CONTRACTOR AT LEAST 24 HOURS IN ADVANCE OF THE SHUT DOWN AS PER REGION OF HALTON SPECIFICATIONS. NOTIFICATION SHALL TAKE PLACE UNDER THE ENGINEER'S DIRECTION.

SANITARY SEWERS

1. CONSTRUCTION OF PRIVATE DRAINS SHALL BE IN ACCORDANCE WITH REGION OF HALTON AND ONTARIO PROVINCIAL STANDARDS & SPECIFICATIONS.
2. ALL SANITARY SEWERS TO BE PVC SDR35 IN ACCORDANCE WITH CSA-B182.2, ASTM D-2779 AND ASTM D-3034 OR LATEST REVISIONS AND NEW HALTON LINEAR DESIGN STANDARDS 2014, RUBBER GASKET. ALL SANITARY LATERALS TO HAVE A MINIMUM SLOPE OF 2 PERCENT FROM BUILDING TO MAIN. SHARED LATERALS ARE NO LONGER PERMITTED. SANITARY LATERALS FOR SINGLE SERVICES ARE TO BE 125mm PVC SDR28.
3. SANITARY MANHOLES AS PER O.P.S.D. 701.010 UNLESS NOTED, WITH FRAME AND COVERS AS PER O.P.S.D. 401.01, TYPE"A", UNLESS NOTED.
4. THE BENCHING SHALL BE TO THE OBVERT OF THE PIPE, CONCRETE PIPE SHALL BE CONCRETE SUPPORTED TO THE FIRST JOINT AND FOR FLEXIBLE PIPE PROVIDE JOINT 600mm FROM MANHOLE WALL OR APPROVED WATERTIGHT PIPE CONNECTOR IN MANHOLE OPENING, IN LIEU OF CONCRETE CRADLE.
5. FRAME AND COVER AS PER O.P.S.D. 401.010, SANITARY CLOSED (TYPE A).
6. BEDDING AS PER REGIONAL MUNICIPALITY OF HALTON DRAWING RH302.01 AND RH302.02, EXCAVATED MATERIAL TO BE TAKEN OFF SITE AND NOT USED FOR BACKFILL OR BEDDING. BACKFILL TO BE GRANULAR 'A' AT 98% S.P.D.D.
7. EXISTING SEWER INVERTS TO BE CONFIRMED ON SITE PRIOR TO CONSTRUCTION.
8. SAFETY PLATFORMS IN DEEP MANHOLES ARE NOT PERMITTED IN HALTON REGION.
9. SANITARY MANHOLES ARE TO BE PRE-BENCHED TO THE OBVERT OF THE PIPE.
10. SANITARY MANHOLE COVERS ARE TO BE STAMPED 'DANGER' & "SANITARY".
11. MANHOLE DROPS GREATER THAN 0.6m SHALL HAVE DROP PIPE AS PER O.P.S.D.-1003.010.
12. WASTEWATER MAINS ARE NOT PERMITTED TO ACCEPT ANY STORM DRAINAGE INCLUDING FOUNDATION, ROOF DRAINAGE AND WEEPING TILE CONNECTIONS.

STORM SEWERS

1. PVC STORM SEWERS TO BE SDR 35. BEDDING, BACKFILL AND COVER MATERIAL GRANULAR 'A' COMPACTED TO 95% STANDARD PROCTOR DENSITY (S.P.D.) IN ACCORDANCE WITH O.P.S.D. 802.04. NATIVE MATERIAL COMPACTED TO 95% S.P.D.D. MAY BE USED FOR COVER MATERIAL UNDER LANDSCAPED AREAS ONLY.
2. CONC. STORM SEWER TO BE CLASS 3 ES (C.S.A. A257.1). BEDDING, BACKFILL AND COVER MATERIAL GRANULAR 'A' COMPACTED TO 95% STANDARD PROCTOR DRY DENSITY (S.P.D.D.) IN ACCORDANCE WITH O.P.S.D. 802.03 CLASS 'B'. NATIVE MATERIAL COMPACTED TO 95% S.P.D.D. MAY BE USED FOR COVER MATERIAL UNDER LANDSCAPED AREAS ONLY.
3. ALL CONCRETE USED IN SEWERS, DRAINS, MANHOLES, CATCHBASINS AND ANCHOR BLOCKS TO BE MANUFACTURED WITH TYPE 50 SULPHATE RESISTANT CEMENT
4. ALL STORM MANHOLES TO BE O.P.S.D. 701.010 UNLESS NOTED, WITH FRAMES AND GRATES STAMPED 'DANGER' AND 'STORM' AS PER O.P.S.D. 401.010.
5. ALL CATCHBASINS TO BE O.P.S.D. 705.010 WITH FRAMES AND GRATES AS PER O.P.S.D. 400.020.
6. STORM CONNECTIONS TO MUNICIPAL STORM SEWERS TO BE AS PER CITY OF BURLINGTON STANDARD S-183.

LEGEND

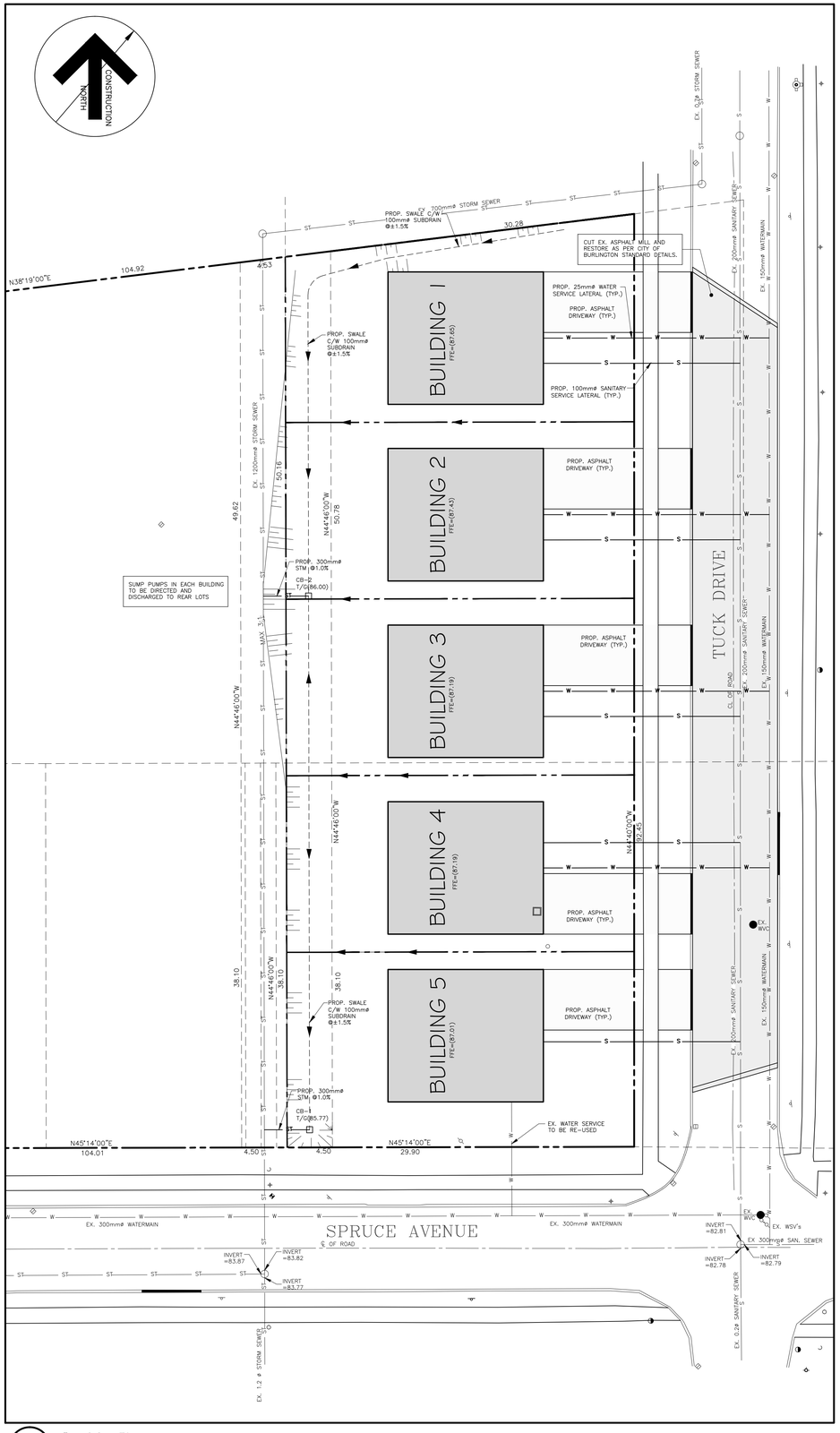
- EXISTING MANHOLE
- EXISTING CATCHBASIN
- PROPOSED CATCHBASIN
- DITCH DRAINAGE AND FLOW
- ST — EXISTING STORM SEWER
- ST — PROPOSED STORM SEWER
- S — EXISTING SANITARY SEWER
- S — PROPOSED 100mmø SANITARY SERVICE
- W — EXISTING WATERMAIN
- W — PROPOSED 25mmø WATERMAIN
- PROPERTY LINE
- CB — CATCH BASIN
- CONC. — CONCRETE
- FH — FIRE HYDRANT
- MH — MANHOLE
- SAN. — SANITARY
- STM — STORM
- FFE — FINISHED FLOOR ELEVATION
- T/G — TOP OF GRATE

GENERAL SERVICING NOTES:

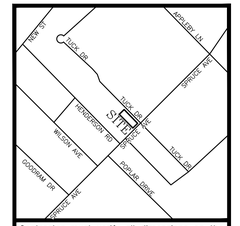
1. ALL SERVICES TO BE INSTALLED AS PER CITY OF BURLINGTON CAPITAL WORKS DOCUMENTS AND DRAWINGS SPECIFICATIONS (LATEST EDITION) AND MINISTRY OF THE ENVIRONMENT GUIDELINES (LATEST EDITION).
2. MINIMUM HORIZONTAL SEPARATION BETWEEN WATER SERVICES AND SEWERS SHALL BE 2.5m MEASURED FROM THE CLOSEST PIPE EDGE TO CLOSEST PIPE EDGE. VERTICAL SEPARATION BETWEEN WATERMAINS AND SEWERS WHICH CROSS MUST BE 0.5m BETWEEN THE OUTSIDE OF THE WATERMAIN AND THE OUTSIDE OF THE SEWER, WITH THE LENGTH OF THE WATER PIPE BEING CENTRED AT THE POINT OF CROSSING SUCH THAT JOINTS IN THE WATERMAIN WILL BE EQUIDISTANT AND AS FAR AS POSSIBLE FROM THE SEWER, CROSSING PERPENDICULAR IF POSSIBLE.
3. ALL WATER SERVICES TO BE INSTALLED WITH A MINIMUM OF 1.6m COVER. SEWERS TO BE INSTALLED WITH A MINIMUM COVER OF 2.20m AT THE PROPERTY LINE BELOW THE FINAL ROAD GRADE OR AT SUCH HIGHER ELEVATION ONLY AS MAY BE NECESSITATED BY THE LEVEL OF THE MAIN SEWER. ON PRIVATE PROPERTY THE MINIMUM COVER IS TO BE NO LESS THAN 1.2m.
4. RESTORATION OF ROAD OVER UTILITY CUTS IN HAMILTON TO BE AS PER STANDARD DRAWINGS RD-100.01 AND RD-100.02, WITH GRANULAR "A" BEDDING.
5. APPROVAL OF THIS DRAWING IS FOR MATERIAL ACCEPTABILITY AND COMPLIANCE WITH MUNICIPAL AND PROVINCIAL SPECIFICATIONS AND STANDARDS ONLY. APPROVAL AND INSPECTION BY THE CITY OF THE WORKS DOES NOT CERTIFY THE LINE AND GRADE OF THE WORKS AND IT IS THE OWNER'S RESPONSIBILITY TO HAVE THEIR ENGINEER CERTIFY THIS ACCORDINGLY.
6. ALL SERVICE LATERALS TO BE MINIMUM 1.0m FROM FACE OF BUILDING.
7. SANITARY SERVICES TO BE CONNECTED TO MAIN LINE SEWER WITH 200x100mmø DOUBLE WYE FITTINGS.
8. THIS DRAWING IS TO BE READ IN CONJUNCTION WITH MECHANICAL DRAWINGS DONE BY EXP INC.

BEFORE STARTING WORK

1. THE CONTRACTOR SHALL NOTIFY THE CITY OF HAMILTON AND LANHACK CONSULTANTS INC. AT LEAST 48 HOURS PRIOR TO COMMENCING CONSTRUCTION.
2. THE POSITION OF THE POLE LINES, CONDUITS, WATERMAINS, SEWERS, AND OTHER UTILITIES AND STRUCTURES ARE NOT NECESSARILY SHOWN ON THE CONTRACT DRAWINGS, AND WHERE SHOWN, THE ACCURACY OF THE POSITION OF SUCH UTILITIES AND STRUCTURES IS NOT GUARANTEED.
3. PRIOR TO THE COMMENCEMENT OF CONSTRUCTION, ALL BENCHMARKS, ELEVATIONS, DIMENSIONS, AND GRADES MUST BE CHECKED BY THE CONTRACTOR AND ANY DISCREPANCIES REPORTED TO THE ENGINEER.
4. ALL EXISTING UNDERGROUND UTILITIES WITHIN THE LIMITS OF CONSTRUCTION SHALL BE LOCATED, MARKED AND PROTECTED. ANY UTILITIES DAMAGED OR DISTURBED DURING CONSTRUCTION SHALL BE REPAIRED OR REPLACED TO THE SATISFACTION OF THE ENGINEER, AT THE CONTRACTOR'S EXPENSE.
5. AT LEAST TWO DIFFERENT BENCHMARKS MUST BE REFERRED TO AT ALL TIMES.



1 C2-1 **Servicing Plan** 1:250



Contractor must verify all dimensions on the Project Site and report any discrepancies before proceeding with the Work.

This drawing is a part of the Contract Documents and is to be read in conjunction with all other Contract Documents.

SOURCE
EXISTING BOUNDARY SURVEY AND TOPOGRAPHICAL INFORMATION OBTAINED FROM MACKAY MACKAY & PETERS LTD., DWG. No. 35116.

THE POSITION OF THE POLE LINES, CONDUITS, WATERMAINS, SEWERS, AND OTHER UTILITIES AND STRUCTURES ARE NOT NECESSARILY SHOWN ON THE CONTRACT DRAWINGS, AND WHERE SHOWN, THE ACCURACY OF THE POSITION OF SUCH UTILITIES AND STRUCTURES IS NOT GUARANTEED.

Revision Record

No.	Description	Date (m/d/y)
A	ISSUED FOR ZBA	03/23/18

Issue Record

No.	Description	Date (m/d/y)

NOT FOR CONSTRUCTION

LANHACK Consultants Inc.
Consulting Engineers
1425 Cornwarant Road
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Ancaster, ON L9G 4V5
Tel: (905) 777-1454
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Spruce Avenue Development

4417 Spruce Avenue
Burlington, Ontario

Date:	March 2018
Drawn By:	TV
Chkd By:	SMP
Scale:	1:250

Preliminary Servicing Plan

Project No.:	Drawing No.:	Rev.:
18088	C2-1	A

Plot Date: 03/23/18
M:\2018\18088 – Zorh Homes, Burlington\CAD\18088_C2-1 Grading and Servicing Plan.dwg