#### **GEODETIC BENCHMARK INFORMATION**

ELEVATIONS ARE OF GEODETIC ORIGIN (CGVD-1928:78), DERIVED FROM GNSS OBSERVATIONS AND NATIONAL RESOURCES CANADA'S GEOID MODEL HT2.0.

#### **GENERAL NOTES:**

- 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. SHOULD THERE BE ANY QUESTIONS OR CLARIFICATION REQUIRED PLEASE CONTACT THE GROWTH
- MANAGEMENT DIVISION, ENGINEERING DESIGN AND CONSTRUCTION SECTION AT (905) 546-2424 READ ALL CIVIL DRAWINGS IN CONJUNCTION WITH ALL CONTRACT DOCUMENTS, INCLUDING ARCHITECTURAL,

STRUCTURAL, ELECTRICAL, MECHANICAL, LANDSCAPE AND VENDOR DRAWINGS AS APPLICABLE.

- THE CONTRACTOR FOR ANY PORTION OF WORK SHALL VISIT THE SITE AND SHALL BE THOROUGHLY FAMILIAR WITH ALL THE PHYSICAL FEATURES THAT MAY AFFECT THE WORK IN ANY WAY. D. THE CONTRACTOR MUST FIELD CHECK AND VERIFY ALL DIMENSIONS, ELEVATIONS AND EXISTING CONDITIONS AND
- REPORT ANY DISCREPANCIES TO THE CONSULTANT PRIOR TO COMMENCEMENT OF ANY WORK.
- THE CONTRACTOR SHALL KEEP WORK SITES CLEAN AND FREE OF ALL CONSTRUCTION DEBRIS DURING THE PROCESS OF CONSTRUCTION AND LEAVE THE SITE CLEAN UPON COMPLETION OF WORK OR PORTIONS OF THE WORK.
- THE CONTRACTOR SHALL OBTAIN APPROVED ROAD CUT / SERVICE CONNECTION PERMITS FROM THE CITY OF HAMILTON PLANNING AND ECONOMIC DEVELOPMENT DEPARTMENT BEFORE CONNECTING TO EXISTING SEWER, OR
- $\mathsf{S}.\quad\mathsf{THE}\;\mathsf{CONTRACTOR}\;\mathsf{SHALL}\;\mathsf{NOT}\;\mathsf{OPERATE}\;\mathsf{EXISTING}\;\mathsf{MUNICIPAL}\;\mathsf{WATER}\;\mathsf{SYSTEM}\;\mathsf{VALVES}.\;\mathsf{WATER}\;\mathsf{MAIN}\;\mathsf{FLUSHING},$ DISINFECTING AND TESTING PLAN TO BE SUBMITTED TO, AND APPROVED BY THE CITY OF HAMILTON PRIOR TO THE PERFORMANCE OF WORK. VALVES CAN ONLY BE OPERATED BY THE CITY OF HAMILTON OPERATIONAL STAFF. THE CITY REQUIRES A MINIMUM OF 48 HOURS WRITTEN NOTICE PRIOR TO ALL WORKS.
- CONSULTANT MUST APPROVE ALL DEVIATIONS FROM THE WORKING DRAWINGS. THE CONTRACTOR MUST KEEP AN ACCURATE RECORD OF ALL CHANGES FROM THE ORIGINAL INFORMATION SHOWN ON THE CONSTRUCTION DRAWINGS. FEATURES OF CONSTRUCTION NOT FULLY SHOWN ARE OF THE SAME CHARACTER AS THOSE NOTED FOR SIMILAR
- ALL CONSTRUCTION SHALL CONFORM TO THE LATEST EDITION OF THE FOLLOWING:
- OCCUPATIONAL HEALTH AND SAFETY ACT ONTARIO REGULATION 213/91 - CONSTRUCTION PROJECTS THE ONTARIO BUILDING CODE AND THE NATIONAL BUILDING CODE
- D) THE ONTARIO PROVINCIAL STANDARD SPECIFICATIONS / DRAWINGS
- PROVIDE APPROPRIATE SHORING FOR TRENCH EXCAVATION IN ACCORDANCE WITH THE LATEST REVISION OF THE OHSA GUIDELINE FOR CONSTRUCTION PROJECTS ALL WORK INVOLVED IN THE CONSTRUCTION, RELOCATION, REPAIR OF MUNICIPAL SERVICES FOR THE PROJECT SHALL
- BE TO THE SATISFACTION OF THE DIRECTOR, DEVELOPMENT DIVISION, PLANNING AND DEVELOPMENT DEPARTMENT. M.  $\,$  ALL ELEVATIONS AND DIMENSIONS SHOWN ARE IN METERS, UNLESS NOTED OTHERWISE N. ALL BUILDING ELEVATIONS (MAIN FINISHED FLOOR, TOP OF FOUNDATION, BASEMENT FINISHED FLOOR) TO BE
- COORDINATED WITH ARCHITECTURAL DRAWINGS. . ALL NEW GRADING AFFECTING EXISTING SITE FEATURES (TREES, FENCES, LANDSCAPING, FOUNDATION WALLS,
- RETAINING WALLS, SLABS, BELL PEDESTALS, UTILITY POLES ETC.) TO BE COORDINATED WITH ARCHITECTURAL, STRUCTURAL, ELECTRICAL, MECHANICAL, LANDSCAPE AND VENDOR DRAWINGS AS APPLICABLE. ALL WORK WITHIN MUNICIPAL RIGHT-OF-WAYS REQUIRES ROAD OCCUP. PERMIT.
- . REMOVAL OF EXISTING FEATURES OF THE SITE ARE TO BE CARRIED OUT IN ACCORDANCE WITH OPSS 510 AS APPLICABLE.
- . FIRE ROUTE SIGNS AND 3-WAY FIRE HYDRANTS SHALL BE ESTABLISHED TO THE SATISFACTION OF THE CITY FIRE DEPARTMENT AND AT THE EXPENSE OF THE OWNER.
- THE APPROVAL OF THIS PLAN DOES NOT EXEMPT THE OWNER'S BONDED CONTRACTOR FROM THE REQUIREMENTS TO OBTAIN THE VARIOUS PERMITS/APPROVALS NORMALLY REQUIRED TO COMPLETE A CONSTRUCTION PROJECT, SUCH
- AS, BUT NOT LIMITED TO THE FOLLOWING: A) ROAD CUT PERMITS APPROACH APPROVAL PERMITS
- COMMITTEE OF ADJUSTMENT
- SEWER PERMITS RELOCATION OF SERVICES
- ENCROACHMENT AGREEMENTS (IF REQUIRED)

#### <u>SEWERS</u>

### SANITARY AND STORM SEWERS

- A. CONSTRUCTION OF SANITARY & STORM SEWERS & PRIVATE DRAINS SHALL BE IN ACCORDANCE WITH CITY STANDARDS & SPECIFICATIONS (LATEST EDITION) AND MINISTRY OF ENVIRONMENT (MOE) GUIDELINES (LATEST EDITION). . COVER AND BEDDING MATERIAL FOR CONCRETE PIPE SHALL BE GRANULAR 'A' MATERIAL AS PER OPSD 802.030 OR
- COVER AND BEDDING MATERIAL FOR PVC PIPE SHALL BE GRANULAR 'A' MATERIAL AS PER OPSD 802.010 OR 802.013.
- D. PVC PIPE WILL REQUIRE SPECIAL CONSTRUCTION PROCEDURES AS PER CITY SPECIFICATIONS.
- ALL SEWERS TO BE FLUSHED PRIOR TO VIDEO INSPECTION. THE CONTRACTOR SHALL ENSURE ALL NEW AND EXISTING MANHOLES / CATCHBASINS / VALVES AND ANY OTHER
- APPURTENANCE WITHIN THE CONSTRUCTION AREA, TO MATCH FINISHED GRADE, AS REQUIRED. MANHOLE FRAMES AND COVERS SHALL BE AS PER OPSD 401.010 (STORM-OPEN, SANITARY-CLOSED).
- MAINTENANCE HOLES ARE TO BE AS PER OPSD STANDARDS AND ARE TO BE SUMPLESS. CATCH BASIN MAINTENANCE HOLES (CBMH) ARE PERMITTED FOR USE ON PRIVATE PROPERTY WHERE THE SYSTEM
- OUTLETS TO SEPARATE STORM SEWERS AND WHERE STORM WATER QUALITY CONTROL, IS PROVIDED ON-SITE. CBMH'S ARE TO BE SUMPLESS AND ARE TO BE CONSTRUCTED TO OPSD STANDARDS INCLUDING ALL GRATES, STEPS
- CATCH BASINS MUST BE AS PER OPSD 705.010. SINGLE CATCH BASINS ARE TO HAVE A MINIMUM LEAD SIZE OF 200mm AND ARE TO INCLUDE A MINIMUM 600mm SUMP. EVERY CONNECTION TO A MUNICIPAL SEWER MUST BE BY PROPER "T" OR "Y" FITTINGS. SADDLES MAY ONLY BE USED
- WHERE APPROVED BY THE DIRECTOR OF DEVELOPMENT, PLANNING AND ECONOMIC DEVELOPMENT DEPARTMENT. SANITARY SEWER (200mm TO 375mm DIA) SHALL BE PVC PIPE, CSA B182.2. SDR-35.
- M. STORM SEWER (300mm TO 600mm DIA.) SHALL BE PVC PIPE, CSA B182.2, SDR-35. N. STORM SEWER > 600mm DIA. SHALL BE CONCRETE PIPE, CSA A257.2 (AS SPECIFIED)
- O. THE MINIMUM AND MAXIMUM DESIGN REQUIREMENTS FOR VELOCITIES IN SEWERS IS AS FOLLOWS: MIN. ALLOW. VELOCITY 0.75m/s FOR SANITARY AND 0.90m/s FOR STORM;&
- B) MAX. ALLOW. VELOCITY 2.75m/s FOR SANITARY AND 3.65m/s FOR STORM.
- . ALL PROPOSED SEWERS, THROUGHOUT THEIR LENGTH FROM THE MAIN SEWER TO THE BUILDING ARE TO BE LAID AS NEARLY AS PRACTICAL IN A STRAIGHT LINE IN A TRENCH AT A RIGHT ANGLE TO THE MAIN SEWER.
- Q. PVC (SANITARY AND STORM) SEWERS ARE TO BE TESTED FOR DEFLECTION (MANDREL PASSAGE) AFTER INSTALLATION. SANITARY SEWERS SHALL ALSO BE TESTED FOR LEAKAGE (LOW AIR PRESSURE). PRIOR TO ASSUMPTION BY THE CITY,
- PIPE DEFLECTION TESTING SHALL BE REPEATED. . RIBBED OR PROFILE PIPE IS NO LONGER PERMITTED FOR SANITARY OR STORM USE, INCLUDING PRIVATE DRAINS AND CATCH BASIN LEADS.
- . ALTERNATE MATERIALS MAY BE ACCEPTABLE PROVIDED APPROVAL HAS FIRST BEEN OBTAINED FROM THE CITY/ENGINEER.
- NO PERSON IS TO INSTALL ANY SEWER THAT IS OF THE CAPACITY THAT IS LESS THAN ADEQUATE OR OF A DIAMETER THAT IS LESS THAN THAT OF THE BUILDING DRAIN.
- . ALL SYSTEM COMPONENTS ARE TO BE EITHER TO CITY OF HAMILTON STANDARDS OR OPSD STANDARDS. WHERE A
- CITY STANDARD EXISTS IT SHALL BE USED IN PLACE OF THE OPSD STANDARD. ALL EXISTING UNUSED SEWERS TO PROPERTY BEING REDEVELOPED, IN WHOLE OR IN PART, MUST BE REMOVED FROM
- MUNICIPAL PROPERTY I.E. ROAD ALLOWANCE ETC., WITH AN APPROPRIATE REPAIR TO THE MUNICIPAL SEWER TO WHICH IT CONNECTED, AND EITHER REMOVED FROM PRIVATE PROPERTY OR ABANDONED IN ACCORDANCE WITH CITY
- MINIMUM REQUIREMENTS I.E. PLUGGING AT EITHER END WITH A MINIMUM 300mm CONCRETE.
- V. CONTRACTOR TO PROVIDE SHOP DRAWINGS TO THE ENGINEER FOR REVIEW AND APPROVAL PRIOR TO CONSTRUCTION.

## PRIVATE DRAINS

- A. IT IS THE APPLICANT/OWNER'S RESPONSIBILITY TO ENSURE THAT THE SEWER SYSTEM IS ADEQUATELY SIZED TO
- HANDLE THE REQUIREMENTS OF THE SITE. EXISTING SEWER TO BE REUSED MUST BE IN GOOD WORKING CONDITION AND OF ADEQUATE CAPACITY TO MEET THE REQUIREMENTS OF THE SITE. THE APPLICANT/OWNER OR THEIR CONTRACTOR IS RESPONSIBLE FOR HAVING THE SEWER TO BE REUSED VIDEO INSPECTED WHILE THE CITY OF HAMILTON SEWER INSPECTOR IS PRESENT. CONTACT PLANNING AND ECONOMIC DEVELOPMENT DEPARTMENT, DEVELOPMENT ENGINEERING DIVISION AT (905) 546-2424
- PRIVATE DRAINS TO BE 150mm DIA. PVC PIPE, CSA B182.1 M-1983, SDR 28 AS PER RHW FORM 1407. STORM PIPE SHALL BE WHITE AND SANITARY SHALL BE ANY COLOUR OTHER THAN WHITE. WOOD MARKING AT END OF SANITARY PRIVATE
- COVER AND BEDDING MATERIAL FOR PRIVATE DRAINS SHALL BE GRANULAR 'A' INSTALLED AS PER OPSD 802.010 OR
- MINIMUM FALL FOR PRIVATE DRAINS TO BE 2.0%.
- TOP OF SANITARY PRIVATE DRAINS AT STREET LINE TO BE 2.2m (MIN.) BELOW CENTERLINE ROAD ELEVATION AT THAT POINT OR AS DETAILED
- 6. TOP OF STORM PRIVATE DRAINS AT STREET LINE TO BE 1.2m (MIN.) BELOW CENTERLINE ROAD ELEVATION AT THAT POINT OR AS DETAILED.
- FOR COMMERCIAL, INSTITUTIONAL AND INDUSTRIAL DEVELOPMENTS AN INSPECTION MAINTENANCE HOLE IS REQUIRED ON ALL SANITARY SEWER SERVICES ON PRIVATE PROPERTY AT THE PROPERTY LINE TO FUNCTION AS AN INSPECTION MANHOLE. DEPENDING ON THE TYPE OF DEVELOPMENT, I.E. CHEMICAL STORAGE FACILITY, DEPOT ETC., AN INSPECTION MAINTENANCE HOLE MAY ALSO BE REQUESTED ON THE STORM SEWER. THE INSPECTION MAINTENANCE HOLE IS A REQUIREMENT OF THE CITY OF HAMILTON'S BY-LAW "TO REGULATE THE DISCHARGE OF ANY MATTER INTO THE SANITARY, COMBINED, AND STORM SEWER SYSTEMS OF THE CITY OF HAMILTON", 04-150, AND PERMITS SAMPLING
- OF SEWER DISCHARGE. BUILDING SERVICES SHALL TERMINATE AT 1.5m FROM THE FACE OF THE BUILDING. SITE SERVICES CONTRACTOR TO COORDINATE, WITH THE MECHANICAL CONTRACTOR, THE CONNECTION OF SITE SERVICES, INCLUDING SANITARY STORM AND WATER, TO THE INTERNAL SERVICES.
- IN ACCORDANCE WITH THE ONTARIO BUILDING CODE, SECTION 7.4.4.3, "INTERCEPTORS" (OIL AND GRIT) ARE REQUIRED IN THE FOLLOWING SITUATIONS.
- A) WHERE A FIXTURE THAT DISCHARGES SEWAGE THAT INCLUDES GREASE IS LOCATED IN A PUBLIC KITCHEN OR RESTAURANT OR IN AN INSTITUTIONAL OCCUPANCY, A GREASE INTERCEPTOR SHALL BE INSTALLED. B) WHERE THE DISCHARGE FROM A FIXTURE MAY CONTAIN OIL OR GASOLINE, AN OIL INTERCEPTOR SHALL BE
- C) WHERE A FIXTURE DISCHARGES SAND, GRIT OR SIMILAR MATERIALS, AN INTERCEPTOR DESIGNED FOR THE PURPOSES OF TRAPPING SUCH DISCHARGES SHALL BE INSTALLED.
- D) EVERY INTERCEPTOR SHALL HAVE SUFFICIENT CAPACITY TO PERFORM THE SERVICE FOR WHICH IT IS PROVIDED. THE APPLICANT SHOULD REFER TO ARTICLE 7.5.4.2, ONTARIO BUILDING CODE, FOR VENTING REQUIREMENTS FOR OIL INTERCEPTORS.
- E) AN ON SITE CONSTRUCTED INTERCEPTOR SHALL BE CONSTRUCTED TO THE REQUIREMENTS OF A MANUFACTURED INTERCEPTOR.

## **WATERMAINS AND WATER SERVICES**

## WATERMAINS

- $\lambda$ . CONSTRUCTION OF WATERMAINS & PRIVATE SERVICES SHALL BE IN ACCORDANCE WITH CITY STANDARDS & SPECIFICATIONS (LATEST EDITION) AND MINISTRY OF ENVIRONMENT (MOE) GUIDELINES (LATEST EDITION). . TO BE INSTALLED TO A MINIMUM DEPTH OF 1.80m BELOW PROPOSED CENTERLINE ROAD GRADE ON ALL ROADS.
- MINIMUM HORIZONTAL SEPARATION BETWEEN WATERMAINS AND SEWERS SHALL BE 2.5m. VERTICAL SEPARATION BETWEEN WATER MAINS AND SEWERS WHICH CROSS MUST BE 500mm BETWEEN THE OUTSIDE OF THE WATERMAIN AND THE OUTSIDE OF THE SEWER. THIS SEPARATION REQUIREMENT REGARDLESS OF WHETHER THE WATERMAIN PASSES OVER THE SEWER OR UNDER. IS IN ACCORDANCE WITH CURRENT (2008) M.O.E. GUIDELINES, AND IS
- NECESSARY TO ALLOW FOR PROPER BEDDING AND STRUCTURAL SUPPORT OF THE WATER MAIN AND SEWER. THE LENGTH OF WATER PIPE SHOULD BE CENTERED AT THE POINT OF CROSSING SUCH THAT JOINTS IN THE WATER MAIN WILL BE EQUIDISTANT AND AS FAR AS POSSIBLE FROM THE SEWER, CROSSING PERPENDICULAR IF POSSIBLE. FOR SERVICES GREATER THAN 50mm. THE PROPOSED WATER SERVICE BOTH WITHIN THE ROAD ALLOWANCE AND ON
- PRIVATE PROPERTY MAY EITHER BE DUCTILE IRON (CLASS 52) OR PVC RATED AT MINIMUM WORKING PRESSURE OF
- 150psi (DR-18). NOTE: PVC WATER MAIN/SERVICE MATERIAL, CATHODIC PROTECTION, TRACER WIRE ETC. MUST BE AS PER FORM 400.

- E. PVC PIPE IN SIZES 100mm THROUGH 300mm SHALL BE CLASS 150 DR18 CONFORMING TO AWWA C900 F. TRACER WIRE SHALL BE INSTALLED WITH PVC PIPE IN ACCORDANCE WITH FORM 400. IT SHALL BE 12 GAUGE TW75, TWU75 OR RW90XLPE COATED COPPER AND SHALL BE POSITIONED ALONG THE TOP OF THE PIPE AND FASTENED AT 6 metre INTERVALS. THE WIRE IS TO BE INSTALLED BETWEEN EACH VALVE AND/OR THE END OF THE NEW PVC WATERMAIN. JOINTS IN THE WIRE BETWEEN VALVES ARE NOT PERMITTED. AT EACH GATE VALVE A LOOP WIRE IS TO BE BROUGHT UP INSIDE THE VALVE BOX TO THE CAP. THE TRACER WIRE SHALL BE BROUGHT TO THE SURFACE AT THE SECONDARY VALVE ON ALL FIRE HYDRANTS. THE TRACER WIRE SHALL ALSO BE CONNECTED TO THE CATHODIC PROTECTION SYSTEM AS REQUIRED.
- G. MOLDED PVC FITTINGS FOR PIPE SIZES 100mm TO 300mm SHALL CONFORM TO AWWA C900 AND CERTIFIED TO CSA
- H. FABRICATED FITTINGS 250mm AND 300mm SHALL BE MANUFACTURED FROM SEGMENTS OF AWWA C900, CLASS 150 (DR18) PVC PIPE, BONDED TOGETHER AND OVER-WRAPPED WITH FIBREGLASS-REINFORCED POLYESTER TO MEET THE REQUIREMENTS OF CSA B137.3.
- I. WHERE METAL FITTINGS ARE TO BE USED ON PVC MAINS SUFFICIENT CATHODIC PROTECTION MUST BE PROVIDED AS PER THE FOLLOWING REQUIREMENTS:
- A) MINIMUM OF ONE 11kg ZINC ANODE SHALL BE INSTALLED FOR EVERY 1000m OF TRACER WIRE; B) ONE 11kg ZINC ANODE SHALL BE INSTALLED FOR EACH COPPER WATER SERVICE CONNECTION; C) ONE 11kg ZINC ANODE SHALL BE INSTALLED ON EVERY VALVE, HYDRANT, BEND, TEE, SLEEVE, REDUCER, PLUG,
- CAP, JOINT RESTRAINT, COUPLING, ETC., CONNECTED TO THE PVC PIPE. J. WATERMAIN BEDDING AND COVER MATERIAL TO BE INSTALLED AS PER WM-200.01 (CONCRETE AND PVC WATER MAINS AND SERVICES) AND WM-200.02 (DUCTILE IRON WATER MAINS AND SERVICES) WITH GRANULAR "A" FOR BOTH BEDDING AND COVER. BEDDING AND COVER FOR SMALL DIAMETER SERVICES (I.E. 50mm AND UNDER TO BE AS PER WM-200.01 WITH GRANULAR "D" FOR BOTH BEDDING AND COVER.
- A) MAXIMUM ALLOWABLE DEFLECTION OF 1.5 DEGREES PER JOINT UP TO 250mm DIAMETER (160mm PER 6.1m PIPE LENGTH) AND 1.2 DEGREES FOR 300mm DIAMETER (128mm PER 6.1m PIPE LENGTH) SHALL NOT BE EXCEEDED. B) ALL JOINTS SHALL BE DEFLECTED AN EQUAL AMOUNT. L. ALL SYSTEM COMPONENTS (I.E. HYDRANTS, METER CHAMBERS, THRUST BLOCKS, VALVES, PIPING ARRANGEMENTS
- ETC.) ARE TO BE AS PER CITY OF HAMILTON STANDARDS (RD. SEW, FORMS AND WM) OR ONTARIO PROVINCIAL STANDARD DRAWING (OPSD). WHERE A CITY STANDARD EXISTS IT SHALL TAKE PRECEDENCE.
- A) ALL HYDRANTS ARE TO BE INSTALLED AS PER WM-203.01 AND/OR WM-203.02, AS APPLICABLE VALVE BOX INSTALLATION FOR 100-300mm WATERMAINS AS PER WM-202.

PIPING ARRANGEMENT FOR 100-300mm WATER SERVICE CONNECTION WITH TAPPING VALVE AND SLEEVE TO

### FLUSHING, SWABBING AND TESTING

BE AS PER WM-207.05

K. WATERMAIN DEFLECTION FOR PVC PIPE:

- A. ALL NEW WATERMAINS ARE TO BE SWABBED IN ACCORDANCE WITH CITY SPECIFICATIONS B. A REDUCED PRESSURE ZONE BACKFLOW PREVENTER (WATTS SERIES 909 OR APPROVED EQUAL) IS REQUIRED ON THE
- TEMPORARY SUPPLY LINES USED FOR FILLING AND FLUSHING OR SWABBING OF WATERMAINS. C. UPON COMPLETION OF INSTALLATION, THE CONTRACTOR SHALL PERFORM A PRESSURE TEST ON THE WATERMAINS AS PER FORM 400. WATERMAIN IS TO BE TESTED PRIOR TO CONNECTION TO EXISTING WATERMAINS USING TEMPORARY

CAPS OR PLUGS. PIPE CLOSURES, WHERE REQUIRED, ARE TO BE SUPPLIED BY THE CONTRACTOR. THE CONTRACTOR

D. INSPECTION AND TESTING OF WATER SERVICES AND WATERMAINS TO BE TO THE SATISFACTION OF THE CITY OF HAMILTON AND IN ACCORDANCE WITH FORM 400 OF THE CONSTRUCTION AND MATERIAL SPECIFICATIONS MANUAL (LATEST EDITION) AND MOE GUIDELINES.

WILL ALSO SUPPLY AND INSTALL ALL ADAPTOR PIECES IN ORDER TO CONNECT TO EXISTING WATERMAINS

#### WATER SERVICES

- A. WATER SERVICES ARE TO BE INSTALLED PERPENDICULAR TO THE EXISTING CITY WATERMAIN AND STRAIGHT INTO THE
- BUILDING. B. GRANULAR BEDDING AS PER FORM 400 TO BE GRANULAR 'D' AS PER FORM 600.
- C. FOR CONNECTING THE PROPOSED SERVICE TO THE CITY WATER MAIN A MAIN STOP SHALL BE INSTALLED AS PER THE CITY STANDARD. IF THE CITY WATER MAIN IS CONCRETE AN APPROVED SADDLE MUST ALSO BE UTILIZED. D. IF A FIRE SERVICE IS PROPOSED TO THE BUILDING, A BACKFLOW PREVENTER MAY BE REQUIRED IN ACCORDANCE WITH THE ONTARIO BUILDING CODE. IF A BACKFLOW PREVENTER IS REQUIRED IT MUST BE LOCATED AT THE SERVICE POINT
- E. TAPPING OF A DOMESTIC SERVICE OFF OF A FIRE SERVICE IS ACCEPTABLE; HOWEVER, THE CONNECTION SHOULD BE MADE WITHIN THE ROAD ALLOWANCE, WITH SEPARATE CURB STOPS PROVIDED FOR BOTH THE FIRE AND DOMESTIC
- SERVICES WITHIN THE ROAD ALLOWANCE. F. IF THE APPLICANT/OWNER INTENDS TO REUSE AN EXISTING SERVICE IT MUST BE IN GOOD WORKING CONDITION, OF
- ACCEPTABLE MATERIAL (RE-USE OF LEAD SERVICES IS NOT PERMITTED) AND ADEQUATELY SIZED TO HANDLE THE REQUIREMENTS OF THE SITE.
- G. BUILDING SERVICES SHALL TERMINATE AT 1.5m FROM THE FACE OF THE BUILDING. SITE SERVICES CONTRACTOR TO COORDINATE WITH MECHANICAL CONTRACTOR FOR ALL CONNECTIONS TO INTERNAL PLUMBING. H. A WATER METER MUST BE INSTALLED ON ALL DOMESTIC WATER SERVICES AT THE SERVICE POINT OF ENTRY TO THE
- BUILDING, OR ALTERNATE PERMITTED LOCATION. INTERNAL WATER METER INSTALLATIONS TO BE AT FLOOR LEVEL A MASTER WATER METER IS REQUIRED FOR COMMERCIAL AND MULTI-RESIDENTIAL DEVELOPMENTS. IN ACCORDANCE WITH THE MULTIPLE UNIT WATER METERING POLICY (06-006) ANY DEVELOPMENT THAT PROPOSES INDIVIDUAL UNITS SUCH AS APARTMENTS, A SATELLITE (SECONDARY METER) IS REQUIRED IN EACH INDIVIDUAL UNIT. ALL SUCH SATELLITE METERS MUST BE INSTALLED IN A COMMON AREA WITHIN THE FLOOR LEVEL THAT THE METERS ARE
- SERVICING, TO ALL APPLICABLE STANDARDS J. IN ACCORDANCE WITH THE CITY OF HAMILTON BACKFLOW PREVENTION BY-LAW #10-103, A BACKFLOW PREVENTION DEVICE MUST BE INSTALLED AND MAINTAINED ON ALL EXISTING AND/OR PROPOSED WATER SERVICES TO INDUSTRIAL. COMMERCIAL, INSTITUTIONAL PROPERTIES AND ALSO MULTI-RESIDENTIAL BUILDINGS OVER THE HEIGHT OF 3 STORIES TO PREVENT THE FLOW OF CONTAMINANTS INTO THE MUNICIPAL DRINKING WATER SYSTEM. BACKFLOW PREVENTION DEVICES MUST BE INSTALLED NO MORE THAN 3.0m DOWNSTREAM OF A PROPERTIES "MASTER" WATER METER, OR IN THE CASE OF A FIRE PROTECTION SYSTEM, WHERE THE FIRE PROTECTION SERVICE ENTERS THE BUILDING AND IN A LOCATION ACCEPTABLE TO THE CITY. WHERE A FIRE PROTECTION SYSTEM EXISTS OR IS PROPOSED WITHIN A BUILDING, THE SERVICE MUST ALSO BE PROTECTED AGAINST BACKFLOW IN ACCORDANCE WITH THE CSA STANDARDS, AND THE BACKFLOW DEVICE MUST BE EITHER A DOUBLE CHECK DETECTOR ASSEMBLY OR A REDUCED PRESSURE DETECTOR ASSEMBLY WITH A DETECTOR METER WHICH IS CAPABLE OF MEASUREMENTS IN CUBIC METERS.
- K. PROPOSED BACKFLOW PREVENTION DEVICES TO BE INSTALLED WITHIN BUILDINGS WILL BE REVIEWED AND APPROVED UNDER A PERMIT ISSUED BY THE CITY OF HAMILTON BUILDING DEPARTMENT. ALL BACKFLOW PREVENTION DEVICES MUST BE SELECTED, AND MAINTAINED IN ACCORDANCE WITH THE CITY OF HAMILTON'S BACKFLOW PREVENTION BY-LAW # 10-103 THE MANUFACTURER'S SPECIFICATIONS AND THE GUIDELINES SET OUT IN THE MOST RECENT VERSION'S OF THE AWWA CANADIAN CROSS CONNECTION CONTROL MANUAL AND THE CSA. B64.10 / 07 / B64. 10.1-07 STANDARDS.
- L. IF THE WATERMAIN CAN BE SHUT DOWN, AND IT IS NOT CONCRETE, A TEE MAY BE USED. 100-300mm DIAMETER WATER SERVICE CONNECTIONS USING A TEE AND SLEEVE ARE TO BE AS PER WM-207.04. SHUTDOWN OF A CITY WATERMAIN WILL BE AT THE DISCRETION OF THE CITY AND IS SUBJECT TO THE FOLLOWING REQUIREMENTS: A) MAXIMUM 4 HOUR SHUTDOWN OF EXISTING MAIN AT A TIME CONVENIENT TO THE CITY OF HAMILTON AND
- ABUTTING USERS. B) CONTRACTOR TO GIVE 48 HOUR PRIOR NOTIFICATION USING THE "CITY OF HAMILTON NOTICE OF SHUTDOWN" FOR ALL AFFECTED AREAS. C) IN THE EVENT A SCHEDULED SHUTDOWN IS CANCELED BY THE CITY OF HAMILTON, THE CONTRACTOR SHALL
- HAVE NO CLAIMS AGAINST THE CITY. M. ALL UNUSED WATER SERVICES ARE TO BE PROPERLY ABANDONED. WATER SERVICE ABANDONMENT FOR SERVICES 50mm AND LESS:
- A) REMOVE CURB STOP. B) CUT AND CRIMP WATER SERVICE AT THE MAIN.
- C) CLOSE MAINSTOP FOR SERVICES GREATER THAN 50mm, USING A TEE AND SLEEVE, THE TEE SHOULD BE REMOVED AND REPLACED WITH A SECTION OF PIPE AND SLEEVE. WHERE A TAPPING VALVE WAS USED THE APPLICANT SHOULD CONTACT THE CITY FOR FURTHER DIRECTION. ALL EXISTING WATER METERS ON SYSTEMS TO BE ABANDONED MUST BE REMOVED AND SALVAGED BY THE CITY OF HAMILTON. THE SERVICING CONTRACTOR SHOULD CONTACT THE WATER AND WASTEWATER SECTION, PUBLIC WORKS DEPARTMENT AT 905 546-2424 X4426 TO ARRANGE FOR THE WORK

# VALVES & VALVE BOXES

- A. ALL VALVE BOXES TO BE SET TO PROPOSED GRADES.
- B. 100mm TO 300mm GATE VALVE & VALVE BOXES AS PER WM-202. C. CURB STOPS (VALVES) ARE TO BE INSTALLED ON WATER SERVICES AT THE PROPERTY LINE, ENTIRELY WITHIN THE ROAD ALLOWANCE. WHEREVER POSSIBLE CURB STOPS SHOULD BE LOCATED WITHIN THE SODDED OR LANDSCAPED AREAS WHICH ARE EASILY ACCESSIBLE AND OUTSIDE OF THE VEHICULAR PORTION OF THE SITE.

## ANCHOR BLOCKS

A. ANCHOR OR THRUST BLOCKS ARE TO BE INSTALLED AT ALL WATER SERVICE ELBOWS, TEES, PLUGS ETC. FOR 300mm DIAMETER WATER SERVICES AND SMALLER, ANCHOR BLOCKS ARE TO BE AS PER WM-204.01

## <u>HYDRANTS</u>

- A. TO BE INSTALLED WITH SECONDARY VALVES AS PER WM-203.01 OR WM-203.02 AS DETAILED. THEY SHALL OPEN COUNTER-CLOCKWISE (LEFT) AND HAVE A 'L' PAINTED ON THE BARREL SECTION. THE 100mm PUMPER 'STORZ' CONNECTION SHALL FACE THE ROADWAY AND BE PAINTED BLACK.
- B. ALL FIRE HYDRANTS SHALL CONFORM TO THE CITY OF HAMILTON (MUNICIPALITY) FIRE DEPARTMENT'S REQUIREMENTS AND SHALL BE OF SAME MANUFACTURE.

## <u>ROADWORKS</u>

- A. CONSTRUCTION OF ROADWAYS & RELATED WORKS SHALL BE IN ACCORDANCE WITH CITY STANDARDS AND
- SPECIFICATIONS (LATEST EDITION). B. FOLLOWING THE INSTALLATION OF SEWERS, ALL ROADWAYS SHALL BE ROUGH GRADED TO SUBGRADE FOR THE INSTALLATION OF WATERMAINS & UTILITIES.
- C. 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.

#### A. CATCH BASIN CONNECTIONS TO BE 250mm DIA. PVC PIPE CSA B182.2, SDR-35 UNLESS OTHERWISE NOTED B. SINGLE/DOUBLE STREET CATCH BASINS AS PER OPSD 705.010/705.020 RESPECTIVELY WITH GOSS TRAPS (SEW-304).

D. STREET CB GRATES AS PER OPSD 400.020 (FLAT) AND REAR YARD CB GRATES TO BE BEEHIVE TYPE GRATE AND COVER.

PRIVATE REAR YARD CATCH BASINS AS PER OPSD 705.010 (NO GOSS TRAPS).

FINAL ROADWAYS

SIDEWALKS AND CURBS & GUTTERS

- A. MANHOLES AND CATCH BASINS SHALL BE INSTALLED FLUSH WITH THE BASE COURSE ASPHALT (HL 8). B. MANHOLES TO BE ADJUSTED TO MATCH FINAL LIFT OF ASPHALT.
- C. FOR MANHOLE AND CATCH BASIN TOP ADJUSTMENTS, ALL PERMANENT ADJUSTMENTS ARE TO BE POURED IN PLACE. D. FINAL ASPHALT COURSE (HL 3) SHALL BE PLACED AFTER THE INSTALLATION OF THE ASPHALT BINDER COURSE. E. ROAD, PAVED AREAS AND GRASSED AREAS TO BE RESTORED TO THEIR ORIGINAL CONDITION OR AS PER THE CITY OF
- A. CONCRETE CURB AND GUTTER AS PER OPSD 600.040 (BARRIER TYPE), MIN. 30 MPa STRENGTH WITHIN MUNICIPAL ROADWAYS. CONCRETE CURBS AS PER OPSD 600.110- (BARRIER TYPE), MIN. 30 MPa STRENGTH WITHIN PRIVATE PROPERTY. A 50mm KEY IS REQUIRED FOR ALL LOCATIONS.

HAMILTON STANDARDS FOR ROAD RESTORATION IF EXISTS.

- B. CURB DEPRESSION AT DRIVEWAYS AS PER OPSD 600.040 AND OPSD 310.050. C. 1.5m WIDE CONCRETE SIDEWALK AS PER OPSD 310.010. 1.5m WIDE CONCRETE SIDEWALK ADJACENT TO CURB AND GUTTER AS PER OPSD 310,020. (125mm THICKNESS, MIN. 30 MPa STRENGTH WITH GRANULAR 'A' BASE AS REQUIRED TO PROVIDE A LEVELING COURSE FOR THE CONCRETE, AT DRIVEWAYS, CONCRETE DEPTH TO BE MIN. 175mm.
- WHEELCHAIR RAMPS REQUIRED AT ALL INTERSECTIONS AS PER OPSD 310.030. E. ASPHALT RAMPING SHALL BE PLACED TO SUIT THE WHEELCHAIR RAMPS IF SURFACE COURSE ASPHALT IS NOT INSTALLED AT THE SAME TIME. THESE RAMPS ARE TO BE REMOVED JUST PRIOR TO PLACEMENT OF SURFACE COURSE ASPHALT.

### ROAD SUBDRAINS

A. 100mm FILTER WRAPPED CORRUGATED SUBDRAINS TO BE INSTALLED CONTINUOUSLY BELOW THE CURB AND GUTTER AND CONNECTED TO THE CBS.

### COMPACTION REQUIREMENTS

- A. ALL BEDDING AND BACKFILL MATERIAL, ROAD SUB-GRADES AND GENERALLY ALL MATERIAL USED FOR LOT GRADING AND FILL SECTIONS, ETC., SHALL BE COMPACTED TO MIN. 95% SPDD (UNLESS OTHERWISE RECOMMENDED BY THE
- GEOTECHNICAL ENGINEER). ALL MATERIAL SHALL BE PLACED IN LAYERS NOT EXCEEDING 300mm LIFTS. B. ALL GRANULAR ROAD BASE MATERIALS SHALL BE COMPACTED TO 95% SPDD.
- C. FOR ALL SEWERS AND WATERMAINS IN FILL SECTIONS, THE COMPACTION SHALL BE CERTIFIED BY A GEOTECHNICAL ENGINEER PRIOR TO LAYING OF PIPE. D. COMPACTION TESTS TO BE PROVIDED BY THE CONTRACTOR THROUGH A THIRD PARTY TESTING AGENCY.

- A. SILTATION CONTROL BARRIERS SHALL BE PLACED ON ALL NEW AND EXISTING CATCH BASIN COVERS AND AROUND
- PERIMETER OF AREA OF WORK DURING CONSTRUCTION AND REMOVE UPON COMPLETION. B. ALL SILTATION CONTROL MEASURES SHALL BE CLEANED AND MAINTAINED AFTER EACH RAINFALL AS DIRECTED AND TO THE SATISFACTION OF THE CITY OF HAMILTON.
- C. ADDITIONAL SILT CONTROL LOCATIONS MAY BE REQUIRED AS DETERMINED BY THE CITY OF HAMILTON.

GENERAL GRADING NOTES

- A. ALONG ADJOINING PROPERTIES GRADE TO MEET EXISTING OR PROPOSED ELEVATIONS WITH SODDED SLOPES (MIN. 3H
- TO 1V) AND/OR RETAINING WALLS AS SPECIFIED B. ALL RETAINING WALLS, WALKWAYS, CURBS, ETC., SHALL BE PLACED A MIN. OF 0.45m OFF THE PROPERTY LINE. ALL
- WALLS 1.0m OR HIGHER SHALL BE DESIGNED BY A P.ENG. C. SHOULD A RETAINING WALL BE REQUIRED, THE TOP OF WALL ELEVATIONS SHALL BE SET 150mm ABOVE THE
- PROPOSED SIDE YARD SWALES D. RETAINING WALLS 0.6m IN HEIGHT OR GREATER REQUIRE CONSTRUCTION OF A FENCE OR GUARD RAIL AT THE TOP OF THE REAR OF THE WALL. GUARDS FOR RETAINING WALLS SHALL BE DESIGNED AND CONSTRUCTED IN ACCORDANCE
- WITH THE REQUIREMENTS OF EXTERIOR GUARDS AS CONTAINED IN THE ONTARIO BUILDING CODE E. SLOPES OF SWALES FOR BOTH "BACK TO FRONT" AND "SPLIT" DRAINAGE SHALL BE NO LESS THAN 2.0% GRADE AND NO GREATER THAN 33% GRADE (3:1 SLOPES) F. WHEN MATCHING TO EXISTING PROPERTIES WHERE A 2.0% GRADE CANNOT BE ACHIEVED, A 1.5% GRADE IS PERMITTED
- PROVIDED A 150mm SUB-DRAIN IS INSTALLED BELOW THE BOTTOM OF THE SWALE AND DRAINED TO A SUITABLE OUTLET, (WITH A MINIMUM 0.3m COVER OVER THE SUB-DRAIN), OR OTHER MITIGATION MEASURES G. MINIMUM GRADE FOR A WRAP-AROUND SWALE IN THE BACKYARD SHALL BE 1.0%
- H. UNLESS OTHERWISE NOTED, THE GROUND BETWEEN PROPOSED ELEVATIONS SHALL BE GRADED AS A STRAIGHT LINE TOP OF FOUNDATION WALLS FOR BUILDINGS SHALL BE 150mm (MIN) ABOVE FINISHED GRADE DRIVEWAY SLOPES SHALL NOT BE LESS THAN 2% AND NOT MORE THAN 7.0%. REVERSED SLOPED DRIVEWAYS IN NEW DEVELOPMENTS ARE NOT PERMITTED
- K. ALL FILL PLACED SHALL BE COMPACTED TO A MINIMUM 95% SPDD (UNLESS OTHERWISE RECOMMENDED BY THE GEOTECHNICAL ENGINEER). ALL MATERIAL SHALL BE PLACED IN LAYERS NOT EXCEEDING 300mm LIFTS FOR DELINEATION OF TREE PROTECTION ZONES, BUFFERS, REMOVALS AND PROTECTION SCHEMATICS, ETC., REFER
- TO TREE PROTECTION PLAN M. LOT GRADING SHALL CONFORM STRICTLY WITH THIS PLAN. ANY CHANGES, UNLESS APPROVED PRIOR TO CONSTRUCTION BY THE CITY, SHALL RESULT IN NON ACCEPTANCE BY THE CITY

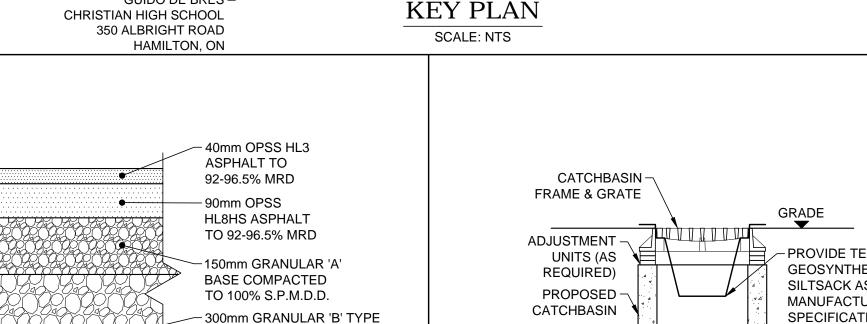
N. IF GRADING IS REQUIRED ON LANDS ADJACENT TO THE DEVELOPMENT WHICH ARE NOT OWNED BY THE DEVELOPER

P. DRIVEWAY AND DRIVEWAY APPROACHES SHALL BE LOCATED SUCH THAT HYDRO VAULTS AND OTHER STREET

DEVELOPER SHALL LIMIT HIS ACTIVITIES TO THE LIMITS OF THE DEVELOPMENT SITE

FURNITURE ARE A MIN. OF 1.2m FROM THE PROJECTIONS OF THE OUTSIDE GARAGE WALLS

- THEN THE DEVELOPER MUST OBTAIN WRITTEN PERMISSION FROM THE ADJACENT PROPERTY OWNER TO ALLOW THE DEVELOPER TO GRADE ON THE ADJACENT LANDS, OTHERWISE RETAINING WALLS MUST BE USED O. THE WRITTEN PERMISSION REQUIRED FROM THE ADJACENT LANDOWNER SHALL BE OBTAINED PRIOR TO ENTERING THE LANDS. SHOULD PERMISSION NOT BE OBTAINED OR IS WITHDRAWN PRIOR TO COMMENCING THE WORK, THEN THE
- Etno Bar & Grill 1 RED HILL and Wings Barfknecht Law Offic





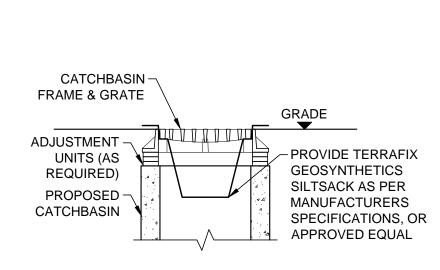
II SUB-BASE COMPACTED

TO 98% S.P.M.D.D.

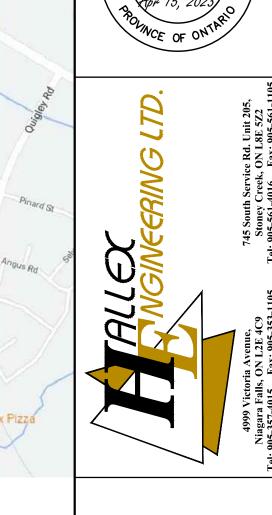
-UNDISTURBED OR

PROOFROLLED SOIL

GUIDO DE BRES-



TYP. SEDIMENT TRAP



CLIENT:

3224 CAMPDEN ROAD VINELAND, ON PROJECT:

CHRISTIAN HIGH SCHOOL

NEW SCHOOL ADDITION

350 ALBRIGHT ROAD

DUOMAX DEVELOPMENTS LTD

HAMILTON, ON, L8K 5J4 **SHEET TITLE:** GENERAL NOTES TYPICAL DETAILS

AND KEY PLAN

GUIDO DE BRES

**DATE:** NOV. 2022 **SCALE**: AS SHOWN DR. BY: JS CH. BY: JH

DWG.

**JOB No.:** 221119

