

1. GENERAL

- 1.1. The Contractor must conform to all laws, codes, ordinances, and regulations adopted by federal, provincial or municipal government councils and government agencies, applying to work to be carried out.
1.2. Unless otherwise indicated, all materials and construction methods to be in accordance with the latest edition of the Ontario Provincial Standard Specifications and Drawings (OPSS and OPSD), the Ontario Ministry of Environment, Conservation and Parks (MECP), applicable Conservation Authorities (CA), the municipal standard specifications and drawings, and all other governing authorities as they apply.
1.3. Wherever standards, laws and/or regulations are mentioned they refer to their current versions, modifications included.
1.4. The Contractor is responsible for obtaining all permits required to complete all works and bear cost of same, including road cut permit and water permit and their associated costs.
1.5. The Contractor is responsible for the coordination of his activities with others on site.
1.6. Independent geotechnical laboratory for quality control:
1.6.1. An independent geotechnical laboratory hired by the Owner will perform material testing, inspection and quality control services.
1.6.2. Geotechnical laboratory to review asphalt and concrete mix designs as required.
1.6.3. The Contractor must provide equipment required for executing inspection and testing by appointed geotechnical firm.
1.6.4. The Contractor must provide labour and facilities to obtain and handle samples and materials on site. Provide sufficient space to store and cure test samples.
1.6.5. Employment of geotechnical laboratory does not relax responsibility to perform work in accordance with Contract Documents.
1.6.6. If defects are revealed during inspection and/or testing, appointed geotechnical firm will request additional inspection and/or testing to ascertain full degree of defect. Contractor to correct defect and irregularities at no cost to Owner. Contractor to pay costs for retesting and reinspection.
1.7. The location of existing underground municipal services and public utilities as shown on the plans are approximate. The Contractor must determine the exact location, size, material and elevation of all existing utilities (on-site and off-site) prior to any excavation work. Damage to any existing services and/or existing utilities during construction, whether or not shown on the drawings must be repaired by the Contractor at his own expense.
1.8. Site preparation includes clearing, grubbing, stripping of topsoil, demolition, removal of unsuitable materials, cut, fill and road grading of all areas to receive finished surfaces.
1.9. All material must be compacted as per the requirements of the governing authority and be approved by the Consultant prior to delivery to the site.
1.10. Compaction must conform for the following requirements:
1.10.1. Excavated subgrade: 95% Standard Proctor maximum dry density (SPMDD)
1.10.2. Subgrade fill (landscaping areas): 95% Standard Proctor maximum dry density (SPMDD)
1.10.3. Subgrade fill (pavement areas - OPSS Select Subgrade Material): 98% Standard Proctor maximum dry density (SPMDD)
1.10.4. Pavement Granular Subbase Foundations: 100% Standard Proctor maximum dry density (SPMDD)
1.10.5. Pavement Granular Base Foundations: 100% Standard Proctor maximum dry density (SPMDD)
1.10.6. Asphalt pavement: City of Ottawa Specification F-3130
1.10.7. Structural fill/building and light standard footprints OPSS Granular 'A' or Granular 'B' Type II Material): 98% Standard Proctor for Maximum Dry Density (SPMDD)
1.11. It is anticipated that groundwater infiltration into excavations should be low to moderate and controllable using open sumps. The contractor should be prepared to direct water away from all subgrades, regardless of the source to prevent disturbance to the founding medium. Dewatering of excavations to be as per OPSS MUNI 517. As required under the Ontario Water Resources Act (OWRA), the Contractor must register all water taking activities on Ontario's Environmental Activity and Sector Registry (EASR) if water taking exceeds 50,000 l/day, and obtain a Permit to Take Water (PTTW) if water taking exceeds 400,000 l/day. Furthermore, Contractor must provide all necessary measures required to ensure dewatering operations does not affect in any way the integrity of the existing surrounding buildings and must plan his work accordingly. Water Taking and Discharge Plan to be prepared by a Qualified Person as stipulated under O.Reg. 63/16.
1.12. Control disposal or runoff of water containing suspended materials or other harmful substances in accordance with local authority requirements and as follows:
1.12.1. Provide flocculation tanks, settling basins, or other treatment facilities to remove suspended solids or other materials to within the required parameters of the receiving body before discharging to storm sewers, watercourses or drainage areas.
1.12.2. Before discharging to storm sewers, watercourses or drainage areas, discharge water must be sampled and tested to ensure quality requirements in accordance with City of Ottawa Sewer Use By-Law No. 2003-514 and the MECP are adhered to. The Contractor is to perform all additional sampling and testing as required by City of Ottawa. All associated fees to be paid by the Contractor.
1.12.3. Where water is not suitable for discharge into the adjacent storm sewers, watercourses or drainage areas it must be discharged into the on-site sanitary sewer collection system, or disposed off-site at an approved disposal facility.
1.12.4. Combined Sewer Discharge: When discharging to the combined sewer, the Contractor must obtain a Sanitary/Combined Sewer Agreement for Dewatering from the City of Ottawa in accordance with City of Ottawa Sewer Use By-Law No. 2003-514 and pay all associated fees.
1.12.4.1. A copy of the signed Combined Sewer Agreement for Dewatering must be provided to the Departmental Representative in advance of dewatering and discharge.
1.12.4.2. The Contractor must ensure all requirements of the Discharge Agreement are adhered to and all prerequisite requirements of the Agreement are in place prior to commencing dewatering.
1.12.4.3. Provide flow meter and record discharge rate in accordance with City of Ottawa requirements.
1.12.4.4. Dewatering discharge rate to combined sewer not to exceed rate specified by City.
1.13. The Contractor must maintain benchmarks and landmark references as is. Otherwise these references will be repositioned by a certified land surveyor at the Contractor's expense.
1.14. The Contractor is the only person in charge of safety on the building site. The Contractor is responsible for providing adequate protection of the workers, other personnel and the general public, protection of materials, as well as maintaining in good condition the completed works and works to be completed. The Contractor must supply, install and maintain an appropriate safety fence along the work perimeter until the work is complete.
The Contractor must provide at any time:
A sufficient number barriers, posters, guards and others to ensure safety.
Necessary conveniences for the completion of the work such as heating, lighting, ventilation, etc.

- 15. Temporary excavations in the overburden must be completed as per the requirements of the Occupational Health and Safety Act (OHSA), O. Reg. 213/91, Part III - Excavations.
The side slopes of excavations in the soil and fill overburden materials should either be cut back at acceptable slopes or should be retained by shoring systems from the start of the excavation until the structure is backfilled.
The excavation side slopes above the groundwater level extending to a maximum depth of 3 m shouly be for the sack of 1H:1V or flatter. The flatter slope is required for excavation below groundwater level. The subsurface soil is considered to be mainly a Type 2 and 3 soil according to the Occupational Health and Safety Act and Regulations for Construction Projects. Slopes in excess of 3 m in height should be 4:1. The Contractor must engage a geotechnical consultant in order to detect if the slopes are exhibiting signs of distress.
1.16. The Contractor must pace deliveries and removals in order to minimize and control stockpiles.
1.17. Stockpile material must be stored away from excavations at a distance at least equal to the depth of the excavation. Construction traffic should be limited near open excavation.
1.18. Cleanliness on the site:
1.18.1. The Contractor must clean roadways at his own cost as directed by the Owner's representative.
1.18.2. All site roads and walkways to and from the construction zone must be kept clean at all times, from mud, dirt, granular material, debris, etc.,
1.18.3. The Contractor must leave the work area clean at the end of each day.
1.18.4. Materials and equipment must be laid out in an organized and safe manner.
1.18.5. All material, equipment and temporary structures which are no longer necessary for the execution of the Contract must be removed from the site.
1.18.6. If required the Contractor must reduce noise, dust, interference, obstruction, etc., in conformity with the requirements of the provincial and municipal authorities having jurisdiction.
1.19. During the construction period the Contractor is responsible for installing and maintaining temporary traffic signage, including traffic signs, traffic markings and temporary traffic lights, and flagmen, as required by the Owner, the Consultant, the Municipality and other governing authorities.
1.20. The Contractor must control surface runoff from precipitation during construction.

2. SEDIMENT AND EROSION CONTROL

- 2.1. Specifically, sediment and erosion control measures to be constructed as per OPSS MUNI 805.
2.2. The Contractor must implement best management practices, to provide for protection from the area drainage system and the receiving watercourse as well as air pollution from dust and particle matter, during construction activities. The contractor acknowledges that failure to implement appropriate erosion and sediment control measures may be subject to penalties imposed by any applicable regulatory agency.
2.3. The Contractor must set up the measures shown on the plan, inspect them frequently and clean and repair or replace the deteriorated structures.
2.4. The light duty silt fence barrier must be installed as per OPSS 219.110.
2.5. Provisions must be made for sediment and erosion control measures prior to stripping the site of vegetation and other deleterious materials. Measures such as silt fences, etc. must be constructed and maintained in order to control sediment, as required by the provincial and municipal governing authorities.
2.6. When the sediment and erosion control measures have to be removed in order to complete a portion of the work, these same measures must be reinstated.
2.7. When storing soil on site in piles the Contractor must cover each pile with tarps, straw or a geotextile fabric to avoid fine particle transport by wind and/or streaming rainwater.
2.8. During the construction period, sediment capture silt sacks or filter cloths must be installed and maintained between the frame and cover of all catchbasins and catchbasin/manholes to minimize sediments entering the storm sewer system. All landscaping areas must be completed prior to the removal of the silt sacks or filter cloths.
2.9. At all times the Contractor is responsible to maintain the municipal access roads clean and free of mud, debris and sediments. When clearing the access roads, the Contractor must take the necessary precautions to clear the surfaces covered with sediment prior to cleaning with water.
2.10. At the end of the construction period, the Contractor is responsible for removal of the temporary sediment and erosion control measures and reconditioning the affected areas.
2.11. This plan is a "Living Document" which may be revised in the event that the control measures are not sufficient.

3. DEMOLITION AND REMOVALS

- 3.1. The Contractor must visit the premises in order to be fully aware of existing conditions on site, including all elements to be removed and demolished. No claim will be accepted due to a poor evaluation of the work to be completed.
3.2. The Contractor must protect and maintain in service the existing works which must remain in place. If they are damaged, the Contractor must immediately make the replacements and necessary repairs to the satisfaction of the Owner's representative and without additional expense to the Owner.
3.3. The Contractor must perform the necessary clearing and grubbing in accordance with OPSS MUNI 201.
3.4. The Contractor must carry out necessary saw cuts even if they are not shown on the drawings.
3.5. The Contractor must entirely remove the demolition wreckage from the construction site in accordance with the requirements of the MECP and in accordance with OPSS MUNI 180 and OPSS MUNI 510.
3.5.1. The Contractor must discard recyclable demolition materials in collaboration with a regional recycling company. The Contractor must be able to provide proof, upon request, that the materials were properly recycled and that the chosen recycling company is recognized in the recycling field.
3.5.2. All other demolition materials must be disposed off-site at authorized licensed landfills and in conformity with the applicable laws and regulations. The Contractor must be able to provide, upon request, copies of the disposal tickets.
3.6. The Contractor is responsible for locating existing public utilities and (if required) submit a request for the interruption of public utility services, such as gas, telephone, power, cable, sewers, watermain, etc.
3.7. Sewers and water laterals to be abandoned must be blanked, capped, and fill with unshrinkable concrete conforming to City of Ottawa Special Provisions F-4104, F-4411, and OPSS 510 as well as the City of Ottawa Standard Detail S11.4.
3.8. The Contractor must conduct all removals required to make the work complete.

- 3.9. Unless otherwise specified, all materials, products and others coming from the demolition belong to the Contractor.
3.10. Surfaces and works located outside of the construction work limit must be reinstated as they were before beginning of work.

4. GENERAL SUBGRADE PREPARATION

- 4.1. Earth removal must be inspected by an experienced Geotechnical Engineer to ensure that all unsuitable materials are removed prior to the placement of fill, including concrete and/or others, and to confirm the compaction degree and condition of the founding soils. All unsuitable materials must be hauled off site and disposed as per provincial and municipal regulations.
4.2. Subgrade must be approved by experienced geotechnical personnel before proceeding with placement of fill.
4.3. All soft, wet or disturbed areas revealed under surface compaction must be removed to a minimum depth of 500 mm and replaced with compacted suitable subgrade fill as directed by the Geotechnical Engineer and/or an approved non-woven Class 1 geotextile, as per OPSS MUNI 1950. Transition around sub-excavation, where backfill and native material are not of similar nature, must be sloped at 3 horizontal to 1 vertical, within 1.2 m of finished surface.
4.4. If construction is required during freezing temperatures, the native soils should be protected immediately from freezing using straw, propane heaters, polystyrene insulation, insulated tarpaulins, or other suitable means that prevent the underlying native soils from freezing, which could cause significant frost heave.
4.5. All granular fill must be placed in maximum 300 mm thick loose lifts and compacted using suitable methods as per the requirements.
4.6. All heavy equipment must not operate directly on the subgrade. A minimum of 500 mm of fill must be used to allow traffic over subgrade. Subgrade surfaces will be prone to disturbance by weather and traffic, therefore preparation of the subgrade must be scheduled such that the granular materials are placed as quickly as possible.
4.7. Excess soils generated must be managed in accordance O.Reg. 406/19 made under the Environmental Protection Act, R.S.O. 1990, c.E19 (EPA) and the adopted by reference "Rules for Soil Management and Excess Soil Quality Standards" (the "Soil Rules") as well as other regulatory amendments related to the management of excess soil. Excess soil is defined as non-hazardous soil, or soil mixed with rock that has been excavated as part of a project and removed from the project area for the project. As it relates to this Contract, the Project Leader is "the Client", as per the definition under O.Reg. 406/19.
4.7.1. Where excess soils are anticipated to be generated, a notice is to be filed to the Resource Productivity and Recovery Authority (RPPA or successor organization) Excess Soils Registry (the "Registry") prior to the removal of excess soil from the project area unless exempt in accordance with the Regulation. The Contractor is to provide "the Client" all information required for filing the notice to the Registry.
4.7.2. A Soil Management Plan is to be developed by the Contractor for a submission to "the Client". Where applicable, the Soil Management Plan is to be prepared in accordance with the MECP Management of Excess Soil: A Guide for Best Management Practices and in accordance with O.Reg. 406/19.
4.7.3. The Contractor is responsible for retaining a Qualified Person (QP), as per the definition under O.Reg. 153/04) to evaluate and provide all necessary services required in accordance with O.Reg. 406/19. The services may include but not be limited to an Assessment of Past Uses, Sampling and Analysis Plan, Soil Characterization Report, and Excess Soil Destination Assessment Report, collectively described as the Planning Documents", as specified within the Soil Rules. The Contractor may rely on existing Planning Documents and/or site characterization reports where provided "within the Contract Documents OR by the Engineer" in relation to Excess Soils. The Contractor is responsible to finalize any preliminary Planning Document reports required, identify proposed soil destination (ies) for "the Client" approval, and satisfy all associated requirements specified by the selected destination site.
4.7.4. The Contractor is responsible to notify "the Client" if actual construction activities and/or site conditions encountered are not consistent, or appear not to be consistent, with the information presented within the Planning Documents.
4.7.5. The Contractor is responsible to implement a tracking system in accordance with O.Reg. 406/19, to track each load of excess soil during its transportation and deposit at the approved destination site (i.e. reuse site, Class 1 soil management site, local waste transfer facility, landfilling site or dump, and any transportation to and from a Class 2 soil management site).

- 5. Rock excavation must conform to OPSS MUNI 403 and to all laws, codes, ordinances and regulations adopted by federal, provincial and municipal government councils and government agencies, applying to the work to be carried out.
5.9. Construction operations could cause vibrations, and possibly, sources of nuisance to the community. Vibrations caused by blasting or construction operations (e.g. piling equipment, hoe ram, compactors, dozers, cranes, etc.) could cause detrimental vibrations on the adjoining buildings and structures as well as being a source of nuisance to the community. Therefore, means to reduce the vibration levels as much as possible must be incorporated in the construction operations to maintain a cooperative environment with the residents.
As a general guideline to reduce the risks of damage to the existing structures, peak particle velocity (measured at the structures) during construction must not exceed 20 mm/s for frequencies below 40 Hz, and 50 mm/s for frequencies 40 Hz and higher. The warning level limits are 10 mm/s for frequencies below 40 Hz, and 40 mm/s for frequencies 40 Hz and higher.
5.10. Excavation side slopes in sound bedrock may be completed with almost vertical side walls. A minimum of 1 m horizontal ledge must remain between the bottom of the overburden and the top of the bedrock surface to provide an area for potential sloughing. The 1 m horizontal ledge set back can be eliminated with a shoring program which has drilled piles extending below the proposed founding elevation.

6. PAVEMENT STRUCTURES, CURBS, AND SIDEWALKS

- 6.1. Construction of granular foundation must conform to City of Ottawa Special Provisions.
6.2. Granular materials used on site must conform to the requirements of OPSS MUNI 1010.
6.3. Road cut reinstatement as per City of Ottawa Detail R10.
6.4. Construction of asphalt must conform to City of Ottawa Special Provision F-3130.
6.4.1. Paving must not be carried out if the roadbed is frozen or wet.
6.4.2. The granular grade must be free of standing water at the time of hot mix asphalt placement. The surface of a pavement upon which hot mix asphalt is to be placed must be dry at the time of hot mix asphalt placement. Following the final compaction of a hot mix asphalt course, a 4 hour minimum time laps must be respected before placing a new hot mix asphalt course. Additionally, the temperature of the previous course must be 60°C or less.
6.4.3. The asphalt base coarse must not be placed unless the air temperature at the surface of the road is a minimum of 2°C and rising.
6.4.4. The asphalt surface coarse must not be placed unless the air temperature at the surface of the road is a minimum of 7°C, except for SMA and Superpave 12.5 FC2, where the air temperature at the surface of the road shall be minimum 12°C.
6.5. Asphalt concrete material must conform to City of Ottawa Special Provision F-3104 and OPSS MUNI 1150 for HL, hot mix asphalt mixtures, and City of Ottawa Special Provision F-3106 for Superpave hot mix asphalt mixtures. Minimum Performance Graded (PG) 58-34 asphalt cement must be used for this project.
6.6. Asphalt mix design must be reviewed and approved by a Geotechnical Engineer before paving.
6.7. Concrete curbs must conform to OPSS 353.MUNI and City of Ottawa Special Provisions F-3531, F-9040 and F-9045.
6.8. Concrete curbs to be constructed as per City of Ottawa Detail SC1.1.
6.9. Concrete sidewalks must conform to City of Ottawa Special Provisions F-3510, F-9040 and F-9045.
6.10. Concrete sidewalks to be constructed as per City of Ottawa Details SC2, SC5, SC6 and SC7.1.
6.11. Concrete Pavers (Hardscape) to be constructed as per civil details 217C and 217D.

7. MISCELLANEOUS

- 7.1. Free standing signs to comply with Detail 401.
7.2. Existing pavement markings in municipal right-of-way to be reinstated if erasably/partly removed during construction. Pavement markings to be "Organic Solvent Based" as per OPSS MUNI 710 and OPSS MUNI 1712.
7.3. Tactile Walking Surface Indicators (TWSI) to be constructed as per detail SC7.3. Product shall be from the following list or approved equivalent:
Manufacturer Specific Model (when applicable)
ADA Solutions -- Ironstone
Advantage Cast Iron -- Safety Detection System
Bibby Ste. Croix --
Cedar Infrastructure -- Duralast
Ironped --
Nenah --
OJC --
Star Pipe Products --
7.4. If contaminated material is encountered during the work, the Contractor must dispose off-site all materials from the contaminated area in accordance with the requirements of the MECP and OPSS MUNI 180. Prior to the start of work the Contractor must provide the name and location of landfill(s) where the contaminated materials will be disposed to the Consultant. The Contractor must obtain from the landfill Owner documents confirming that he has the right to accept the contaminated material. During the work, the contractor must provide the Consultant copies of all check-in receipts issued by the landfill Owner.
7.5. The Contractor is responsible for providing a confirmation that the imported material used as subgrade fill is free of any contaminants such as Petroleum Hydrocarbons (C-C6), PAH (Polycyclic Aromatic Hydrocarbons), MAH (Monocyclic Aromatic Hydrocarbons) and metals like mercury, silver, arsenic, cadmium, cobalt, chromium, copper, tin, manganese, molybdenum, nickel, lead and zinc.

8. MUNICIPAL SERVICES - GENERAL

- 8.1. The location of existing underground municipal services and public utilities as shown on the plans are approximate. The contractor must determine the exact location, size, material and elevation of all existing utilities (on-site and off-site) prior to any excavation work. Damage to any existing services and/or existing utilities during construction, whether or not shown on the drawings must be repaired by the contractor at his own expense.
8.2. Prior to any construction, Contractor to perform a C.C.T.V. inspection of the City sewer system within Arlington Avenue and Bell Street North as per OPSS MUNI 409 and City of Ottawa Special Provision F-4090. Report must be provided to the Engineer in two (2) copies and the C.C.T.V. inspection in DVD format only.
8.3. Terminate and plug water and sanitary service connections at 1.0 meter from edge of the building/underground parking. Terminate storm service connections at the cistern.
8.4. Single service lateral trenches must be as per City of Ottawa Detail S7.
8.5. The Contractor must complete trench and backfill compaction as per OPSS MUNI 401 and OPSS MUNI 501.
8.6. The Contractor is responsible for making or arranging all connections to the existing sewers as per municipal requirements. Prior to connection, the Contractor must provide, to the Engineer and the City for approval, all test results performed on the internal services. Test results must include C.C.T.V. inspection of sewers, infiltration/effluent tests for sewers and manholes, deformation tests of sewers, watermain hydrostatic leakage test, flushing and disinfecting operations, and bacteriological water analysis.
8.7. Advise the City Public Works at least 72 hours in advance before any connection to the City services. Coordinate with City as required.
8.8. The Contractor must determine the exact invert (geodetic elevation), diameter and construction material of the existing conduits at the proposed connections. He must also carry out necessary, above ground, measurements and tests to determine the exact location and inverts of existing duct banks. This information must immediately be provided to the Engineer prior to start undertaking any municipal services work and a 48 hour period must be allocated to the Engineer for design review.
8.9. The Contractor is responsible for all excavation, backfill and reinstatement of all areas disturbed during construction to existing conditions or better and all associated works to the satisfaction of the Engineer and municipal authorities.
8.9.1. Asphalt reinstatement must be in accordance with OPSS MUNI 310 and City of Ottawa Standard Detail R10.
8.9.2. Landscaping areas to be reinstated in accordance to landscaping drawings and specifications.
8.10. Within landscaping areas, backfill for service trenches may consist of excavated material replaced and compacted in lifts.
8.11. A minimum of 150 mm of OPSS Granular A must be used for pipe bedding for sewer and water pipes and must extend to the spring line of the pipe. Cover material from the spring line to at least 300 mm above the pipe invert must also consist of Granular A material. Bedding and cover material must be placed in maximum 225 mm lifts.
8.12. Where hard surface areas are considered above the trench backfill, the trench backfill material within the frost zone (below the frost depth) must be placed above the cover material should match the soils exposed at the trench walls to minimize differential frost heaving. The trench backfill should be placed in maximum 225 mm thick loose lifts. All cobbles larger than 200 mm in their longest direction should be segregated from re-use as trench backfill.
8.13. All existing sewer and water services are to be adequately blanked as per City of Ottawa Special Provision F-4104, F-4411, OPSS 510 and Drawing S11.4. Refer to Topographical Survey, Sediment, Erosion Control and Demolition plan.
9. WATERMAIN
9.1. Water pipe materials must be Pressure Class 150, DR 18, manufactured to AWWA C-900 and CSA B137.3 or Pressure Class 235psi/1620 kPa AWWA C-909 and CSA B137.3, 1 standards. Pipe shall have the cast iron outside diameter dimensions, be blue in colour and supplied complete with gaskets. Furthermore, watermain, water service connections and associated appurtenances must be constructed in accordance with the OPSS MUNI 441.
9.2. All watermain must be installed with a minimum of 2.40 metres cover from finished grade. Where a minimum of 2.40 metres cover is not reached, thermal insulation is required as per City of Ottawa Details W22 and W23. Insulation for use in roads over pipe trenches shall:
9.2.1. be type Extruded Polystyrene Foam Insulation Boards (XPS) in 600 x 2400 x 50mm size
9.2.2. meet the requirements of OPSS MUNI 1605;
9.2.3. Grade A (275 kPa compressive strength shall meet ASTM C578 Type VII;
9.2.4. Grade B (400 kPa compressive strength shall meet ASTM C578 Type VI).
9.3. Tracer wire to be as per City of Ottawa Detail W36.
9.4. Cathodic protection must be installed as per City of Ottawa Details W40 and W42.
9.5. Thrust block and restraints must be as per City of Ottawa Details W25.3, W25.4, W25.5 and W25.6.
9.6. Valves to be installed as per City of Ottawa Special Provision F-4413 and conform to the following:
9.6.1. All valves must open in a clockwise direction.
9.6.2. Valves between 100-300mm range to be resilient seat gate valves (AWWA C515) with mechanical joint connections.
9.7. Valve box assembly to be as per City of Ottawa Detail W24. In asphalt, install floating valve boxes equivalent to Bibby-Ste-Croix equipped with a ductile iron floating top extension (i.e. adjustable road leveler). In concrete, installed sliding valve boxes equivalent to Bibby-Ste-Croix equipped with standard sliding flat top (no floating extension).
9.8. When a watermain pipe crosses a sewer pipe, installation must be as per City of Ottawa Details W-25 and/or W-25.2.
9.9. All watermain must be thoroughly flushed and cleaned to remove all dirt and debris prior to the disinfection process.
9.10. All watermain must be hydrostatically and bacteriologically tested as per provincial and municipal regulations. It is the Contractor's responsibility to ensure that all requirements are followed.
9.11. The Contractor must make arrangements with and give a minimum of 24 hours' notice to the City for the closing off of necessary valves in the water distribution system. The City will operate valves at the time of file-ins, etc. at no expense to the Contractor under normal conditions; however the Contractor will be responsible for all costs associated with emergency shutdowns if they occur outside of the normal working hours of the City forces (Monday to Friday, 7:00 a.m. to 5:00 p.m.)

- 9.12. Hydrostatic testing to be completed as per OPSS 441.07.24. Testing must be completed under the supervision of the Contract Administrator. The test section will be either a section between valves or the completed watermain. Test pressure to be 1035 kPa.
9.13. The Contractor must obtain a permit from the City before using an existing fire hydrant located within the City's territory.
9.15. The Contractor must coordinate and pay the cost of connection, inspection and disinfection by municipal personnel. Service connection to be as per City of Ottawa Special Provision F-4411 and F-4418 as well as City of Ottawa Detail W50.
9.16. Contractor must coordinate the supply and installation of water meter and remote water meter for the building with the mechanical engineer.

10. STORM SEWER

- 10.1. Storm pipe materials must be SDR 35 conforming to OPSS 1841, unless noted otherwise on the drawings. Sewer pipe and fittings must be certified to CSA standards B182.2 or CSA B182.7. Furthermore, storm sewer, storm lateral and associated appurtenances must be constructed in accordance with the OPSS MUNI 410.
10.2. The allowable deflected pipe diameter when using flexible pipe is as follows:
10.2.1. Pipes 100 to 750 mm: 7.5% of the base inside diameter of the pipe.
10.3. Final backfill material for storm sewers must be approved native material or select subgrade material in conformance with OPSS MUNI 212 and City of Ottawa Special Provision F-2120.
10.4. All storm sewers to be C.C.T.V. inspected by the Contractor as per OPSS MUNI 409 and City of Ottawa Special Provision F-4090. Report must be provided to the Engineer in two (2) copies and the C.C.T.V. inspection in DVD format only.
10.5. Adjustment or rebuilding of manholes, manhole/catchbasins, catchbasins, ditch inlets and water chambers to be completed as per OPSS MUNI 408 and City of Ottawa Special Provisions F-4080 and F-4081.
10.6. The Contractor must implement best management practices to provide for protection of receiving storm sewer or drainage during construction activities (i.e. catchbasin inlets or approved equivalent), straw bale check dams, any other sediment control measures required around all disturbed areas). Dewatering must be sumped into sediment traps.
10.7. For building roof drain sizes and location refer to architectural and mechanical drawings.
10.8. For the storm section specifications, refer to architectural and mechanical.

11. SANITARY SEWER

- 11.1. Sanitary pipe materials must be SDR 35 conforming to OPSS 1841, unless noted otherwise on the drawings. Sewer pipe and fittings must be certified to CSA standards B182.2 or CSA B182.7. Furthermore, sanitary sewer, sanitary lateral and associated appurtenances must be constructed in accordance with the OPSS MUNI 410.
11.2. The allowable deflected pipe diameter when using flexible pipe is as follows:
11.2.1. Pipes 100 to 750 mm: 7.5% of the base inside diameter of the pipe.
11.3. Final backfill material for sanitary sewers must be approved native material or select subgrade material in conformance with OPSS MUNI 212 and City of Ottawa Special Provision F-2120.
11.4. All sanitary sewers to be C.C.T.V. inspected by the Contractor as per OPSS MUNI 409 and City of Ottawa Special Provision F-4090. Report must be provided to the Engineer in two (2) copies and the C.C.T.V. inspection in DVD format only.
11.5. Sanitary manholes to be installed as per OPSS MUNI 407 and conform to OPSS 1351 and City of Ottawa Special Provisions F-4070.
11.6. Excavating, backfilling, and compacting for sanitary manholes to be completed as per OPSS MUNI 402, except for section 402.07.09.01 - Bedding which is replaced with the following:
Bedding material shall consist of crushed stone Granular A compacted in 150mm layers down to the top of the building slab. Compaction shall be as per OPSS 501 and note 1.10 of this drawing.
11.7. Sanitary manholes to be backfilled with OPSS Granular 'B'. Joints between sections must be wrapped in a non-woven geotextile.
11.8. Sanitary manholes to be as per OPSS 701.010 (sizes specified on drawings).
11.9. Sanitary manhole frames and covers to be as per OPSS 401.010 Type "A" closed cover and insulated as per civil detail 306.
11.10. Sanitary service connections to main sewer pipe to be as per City of Ottawa Detail S11.1 (for flexible main).
11.11. Benching is required inside the concrete bottom of sanitary manholes as per OPSS 701.021, on the inlet pipe connection the benching shall be constructed for the 2000 carrier pipe invert and not the 4500 casing pipe invert.

Signature of Andrew McCreight, Manager, Development Review Central Planning, Development & Building Services Development Department, City of Ottawa. Includes stamp: APPROVED By Andrew McCreight at 8:20 am, Mar 11, 2026.

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150 Elyn St, Suite 1000 Ottawa, ON K2P 1L4
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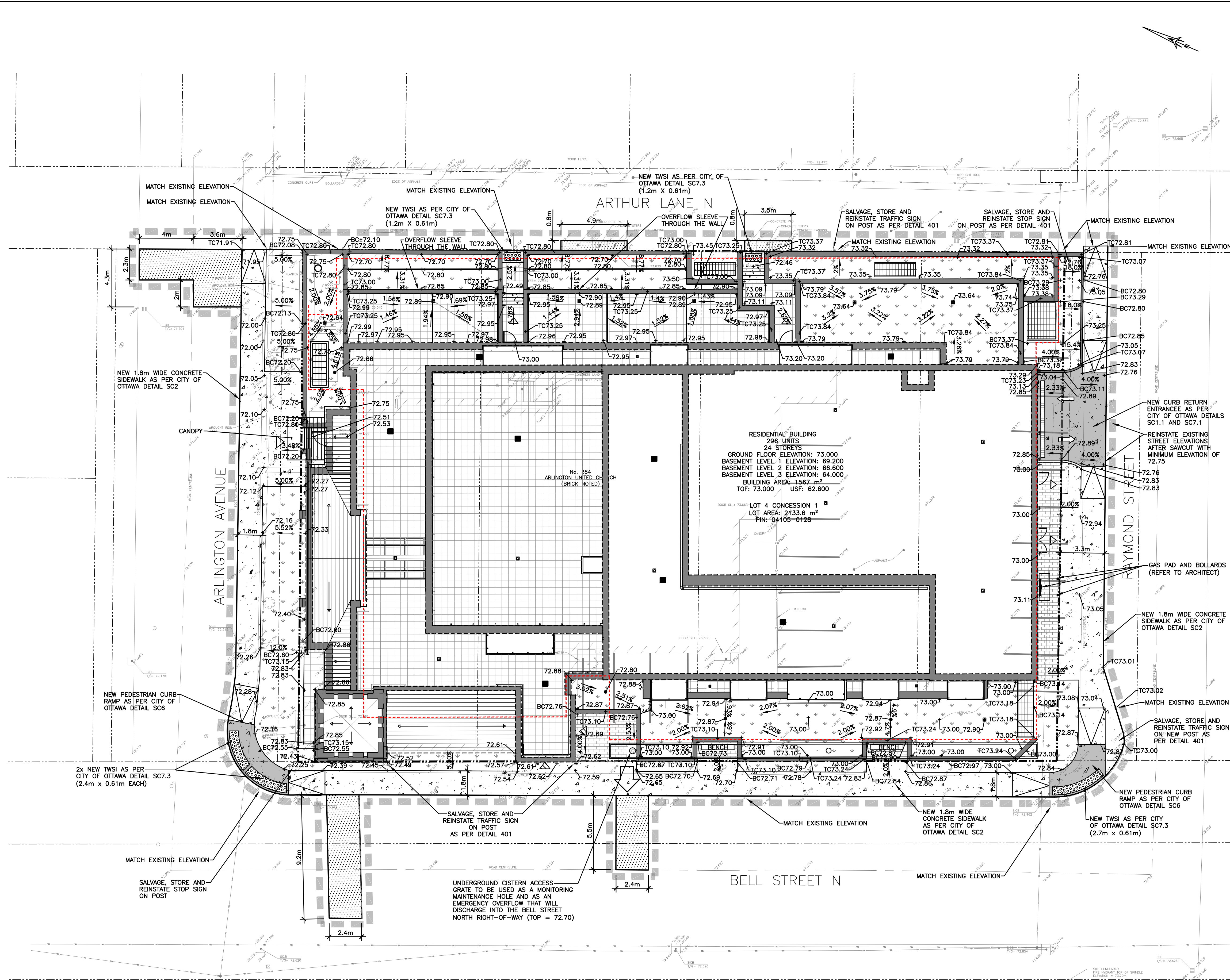
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EMPLACEMENT / Location NO PROJET / No
Adresse / Address 12805

Table with 3 columns: NO, RÉVISION, DATE (aa-mm-jj). Rows include FOR SPC FORMAL REV 1 (2024-10-04), FOR SPC FORMAL REV 1 (2024-12-04), FOR FOUNDATION & EXCAVATION PERMIT (2024-12-18), FOR SPC FORMAL REV 2 (2025-10-03).

DESSINÉ PAR / Drawn by D.VAGHELA
VÉRIFIÉ PAR / Checked by É.POTVIN
DATE (aa-mm-jj) 2024-10-04
ÉCHELLE / Scale

TITRE DU DESSIN / Drawing Title
CIVIL NOTES AND SPECIFICATIONS



EXISTING	LEGEND	PROPOSED
	FENCE	
	OVERHEAD WIRES	
	LOT LINE FOR THE PROPERTY	
	DITCH CENTER	
	BOTTOM OF SLOPE	
	WOOD AREA	
	CATCHBASIN	
	MANHOLE/CATCHBASIN	
	MANHOLE	
	FIRE HYDRANT	
	VALVE	
	VALVE CHAMBER	
	PRIVATE UTILITIES (WATERMAIN)	
	SLUCEWAY	
	NATURAL GAS VALVE	
	SIGN	
	ELECTRICITY POLE	
	MANHOLE	
	TELEPHONE MANHOLE	
	SURVEY STATION	
	ELEVATION	+ 99.000
	BOTTOM OF PLANTER CURB/WALL	+ BC99.000
	TOP OF PLANTER CURB/WALL	+ TC99.000
	STORM ROOF TYPE DRAINS (SEE MECHANICAL AND STRUCTURAL)	
	WORK LIMIT	
	UNDERGROUND PARKING LIMIT	
	BUILDING ENTRANCE	
	MAIN ENTRANCE	
	SIAMESE CONNECTION	
	HARD LANDSCAPING AREA (SEE LANDSCAPE AND CIVIL DETAILS 217C AND 217D)	
	SOFT LANDSCAPING AREA (SEE LANDSCAPE)	
	CONCRETE SIDEWALK	
	DEPRESSED CONCRETE SIDEWALK	
	ASPHALT ROADWAY	
	REINSTATEMENT AS PER CITY OF OTTAWA DETAIL R10.	

Andrew McCreight

ANDREW MCCREIGHT
MANAGER, DEVELOPMENT REVIEW CENTRAL
PLANNING, DEVELOPMENT & BUILDING SERVICES
DEVELOPMENT DEPARTMENT, CITY OF OTTAWA

APPROVED
 By Andrew McCreight at 8:20 am, Mar 11, 2026

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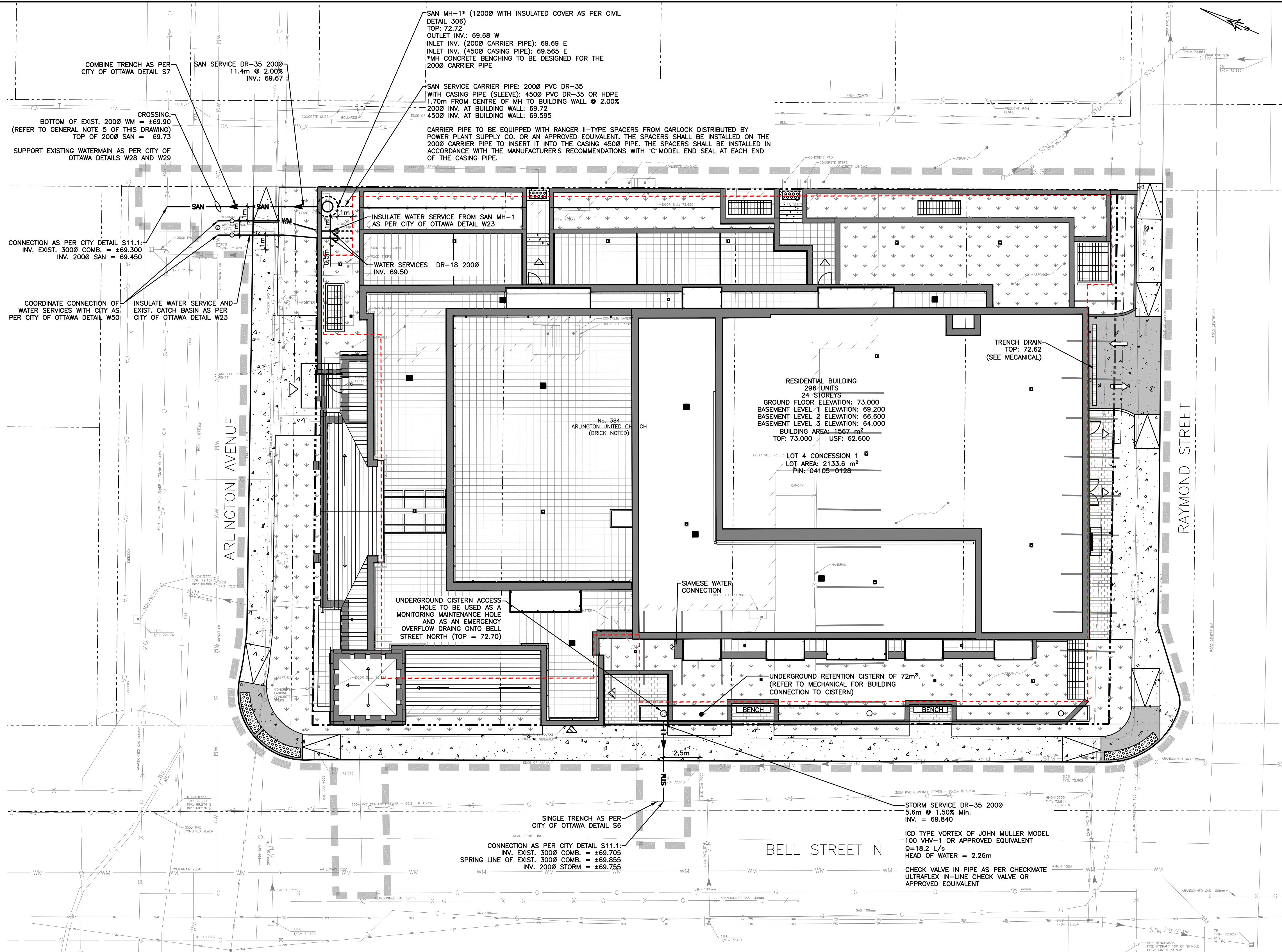
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 2024-10-04

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GRADING AND ROAD REINSTATEMENT PLAN

REVISION Revision
4

NO. DESSIN Orig Number
C003



EXISTING

- WM
- SAN
- STM
- D
- C
- T
- CA
- E
- X

LEGEND

- WATERMAIN
- SANITARY SEWER
- STORM SEWER
- DRAIN
- GAS LINE (APPROX. LOC.)
- UNDERGROUND TELEPHONE (APPROX. LOC.)
- UNDERGROUND CABLE (APPROX. LOC.)
- FENCE
- UNDERGROUND ELECTRICITY (APPROX. LOC.)
- OVERHEAD WIRES
- LOT LINE
- TOP OF SLOPE
- TOP OF SLOPE
- DITCH CENTER
- BOTTOM OF SLOPE
- WOOD AREA
- CATCHBASIN
- MANHOLE/CATCHBASIN
- MANHOLE
- FIRE HYDRANT
- VALVE
- REDUCER
- TEE
- VALVE CHAMBER
- PRIVATE UTILITIES (WATERMAIN)
- NATURAL GAS VALVE
- SIGN
- STOP SIGN
- ELECTRICITY POLE
- TELEPHONE POLE
- ELECTRICITY MANHOLE
- TELEPHONE MANHOLE
- SURVEY STATION
- WORK LIMIT
- UNDERGROUND PARKING LIMIT
- STORM ROOF TYPE DRAINS (SEE MECHANICAL AND STRUCTURAL)
- BUILDING ENTRANCE
- MAIN ENTRANCE
- SIAMESE CONNECTION
- CHECK VALVE
- HARD LANDSCAPING AREA (SEE LANDSCAPE AND CIVIL DETAILS 217C AND 217D)
- SOFT LANDSCAPING AREA (SEE LANDSCAPE)
- CONCRETE SIDEWALK
- DEPRESSED CONCRETE SIDEWALK
- ASPHALT ROADWAY
- REINSTATEMENT AS PER CITY OF OTTAWA DETAIL R10.

PROPOSED

- WM
- SAN
- STM
- D

- GENERAL NOTES:**
- FOUNDATION DRAIN BACKWATER VALVE REQUIRED ON SERVICE LATERAL PER CITY DETAIL S14 (REFER TO MECHANICAL).
 - SANITARY BACKWATER VALVE REQUIRED ON SERVICE LATERAL PER CITY DETAIL S14.1 (REFER TO MECHANICAL).
 - ALL FLOOR DRAINS WITHIN THE UNDERGROUND PARKING GARAGE MUST DISCHARGE TO THE SANITARY SERVICE LATERAL VIA SUMP PUMP (REFER TO MECHANICAL).
 - WATER METER TO BE LOCATED INSIDE BUILDING (REFER TO MECHANICAL).
 - SEWER LATERALS MUST CROSS THE WATERMAIN WITH A MINIMUM CLEARANCE OF EITHER: 0.5m ABOVE THE WATERMAIN OR 0.3 m BELOW THE WATERMAIN. THE CONTRACTOR MUST CONFIRM THE EXACT INVERT (GEODETIC ELEVATION), DIAMETER AND CONSTRUCTION MATERIAL OF THE EXISTING WATERMAIN AT THE PROPOSED CROSSINGS. IN THE EVENT OF A CONFLICT BETWEEN NEW SEWER LATERALS AND THE EXISTING WATERMAIN, A PORTION OF THE WATERMAIN CAN BE RECONSTRUCTED LOCALLY AS PER EITHER THE CITY OF OTTAWA DETAIL W28 OR W25.2. HE MUST ALSO CARRY OUT, IF NECESSARY, EXPLORATORY EXCAVATIONS IN ORDER TO DETERMINE THE EXACT LOCATION AND INVERTS OF EXISTING DUCK BANKS. THIS INFORMATION MUST IMMEDIATELY BE PROVIDED TO THE ENGINEER PRIOR TO START UNDERTAKING ANY MUNICIPAL SERVICES WORK AND A 48 HOUR PERIOD MUST BE ALLOCATED TO THE ENGINEER FOR DESIGN REVIEW.
 - BUILDING FOUNDATION DRAIN, BUILDING AIR WELL DRAINS, AND TRENCH DRAIN FOR UNDERGROUND PARKING ENTRANCE FROM RAYMOND STREET TO BE PUMPED INTO UNDERGROUND CISTERN WEST OF BUILDING. BUILDING ROOF DRAIN TO BE DIRECTED INTO UNDERGROUND CISTERN VIA GRAVITY (REFER TO MECHANICAL).

Andrew McCreight

ANDREW MCCREIGHT
MANAGER, DEVELOPMENT REVIEW CENTRAL
PLANNING, DEVELOPMENT & BUILDING SERVICES
DEVELOPMENT DEPARTMENT, CITY OF OTTAWA

APPROVED
By Andrew McCreight at 8:20 am, Mar 11, 2026

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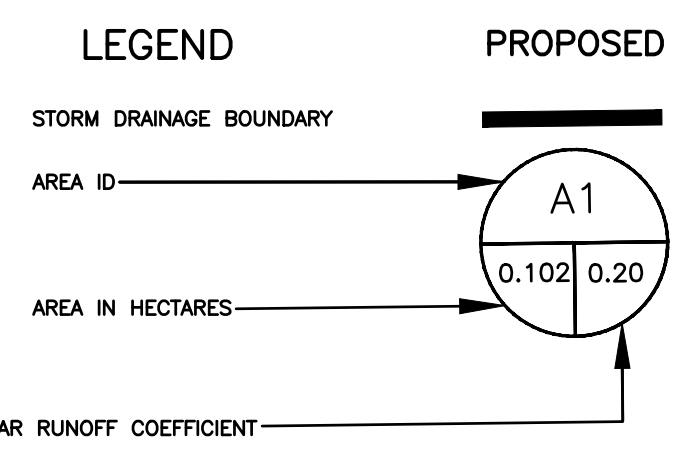
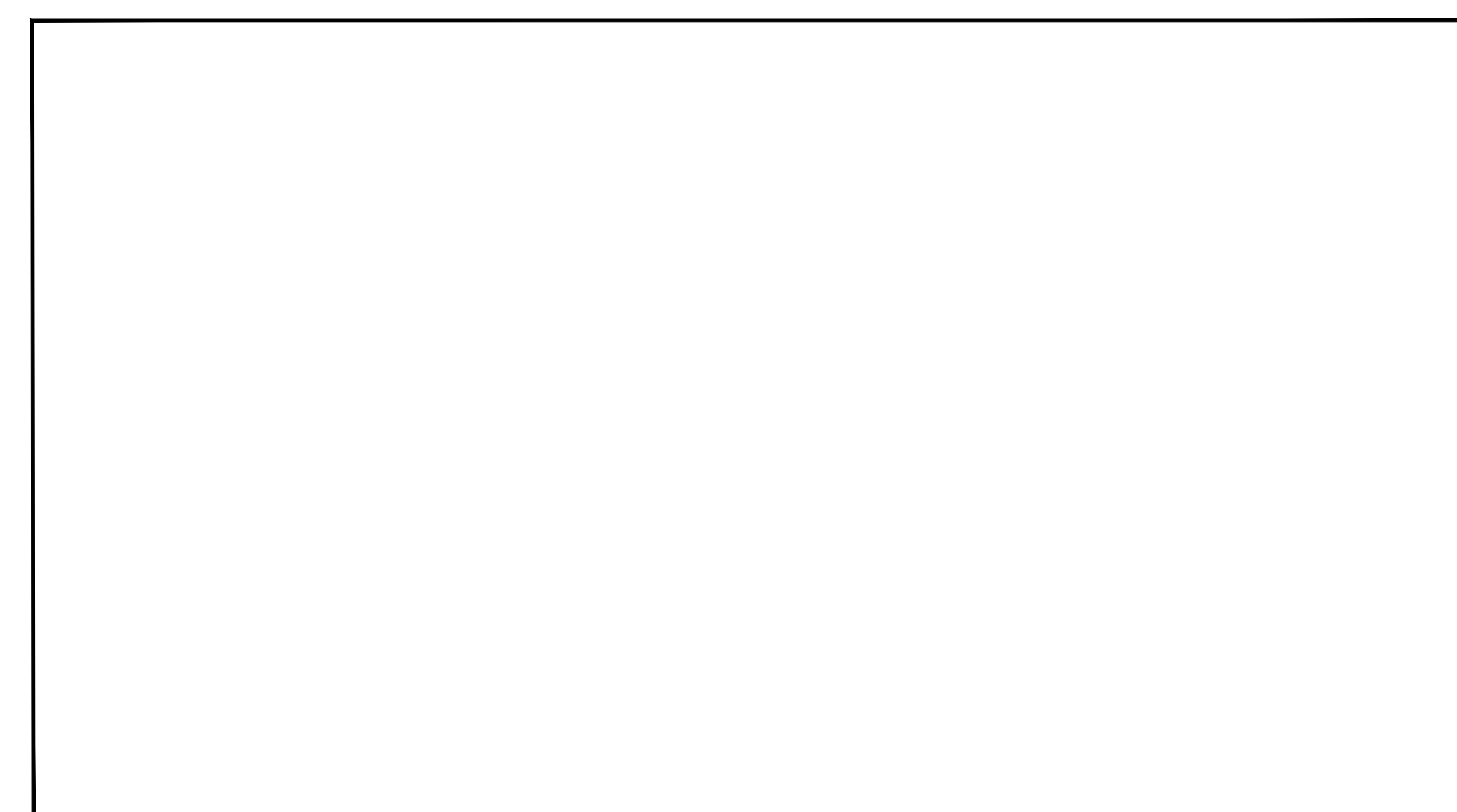
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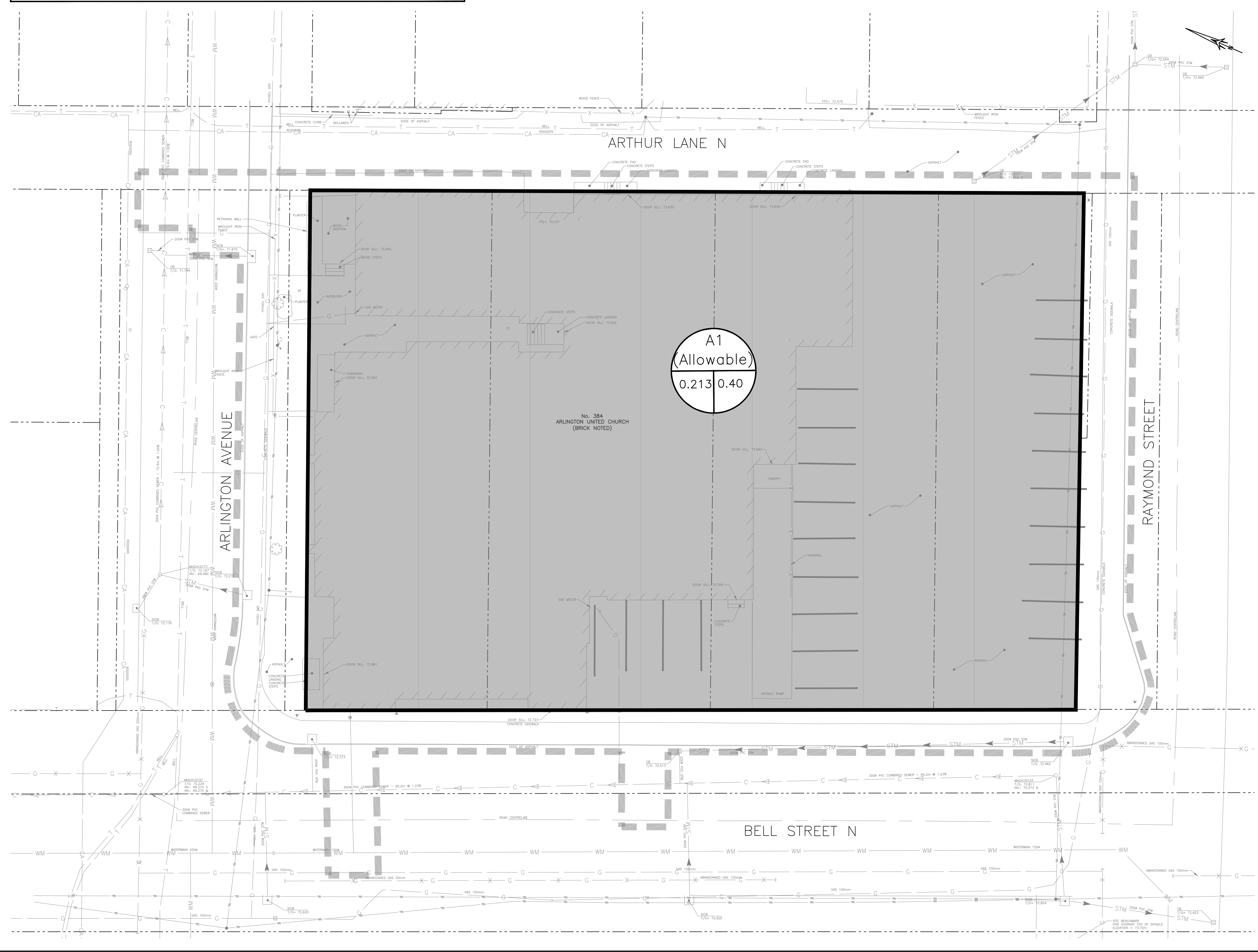
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TITRE DU DESSIN Drawing Title

VERIFIE PAR Checked by E. POTVIN
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SERVICING PLAN



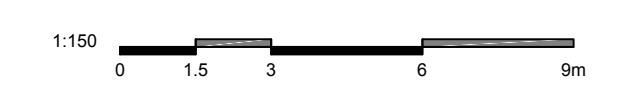
EXISTING	LEGEND	PROPOSED
WM	WATERMAIN	
SS	SANITARY SEWER	
STM	STORM SEWER	
D	DRAIN	
G	GAS LINE (APPROX. LOC.)	
T	UNDERGROUND TELEPHONE (APPROX. LOC.)	
CA	UNDERGROUND CABLE (APPROX. LOC.)	
E	FENCE	
X	UNDERGROUND ELECTRICITY (APPROX. LOC.)	
---	OVERHEAD WIRES	
---	LOT LINE	
---	LOT LINE FOR THE PROPERTY	
---	TOP OF SLOPE	
---	DITCH CENTER	
---	BOTTOM OF SLOPE	
---	WOOD AREA	
---	GRADE CROSSING	
---	FLAGPOLE	
---	CATCHBASIN	
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---	MANHOLE	
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---	TEE	
---	VALVE CHAMBER	
---	PRIVATE UTILITIES (WATERMAIN)	
---	EXTERIOR WATER FAUCET	
---	SLUICeway	
---	NATURAL GAS VALVE	
---	SIGN	
---	STOP SIGN	
---	TRAFFIC LIGHT	
---	ELECTRICITY POLE	
---	TELEPHONE POLE	
---	ELECT.-TEL.-STREET LIGHT POLE	
---	ELECT.-TEL.-TRANSFORMER POLE	
---	PRIVATE STREET LIGHT	
---	ELECTRICITY MANHOLE	
---	TELEPHONE MANHOLE	
---	SURVEY STATION	
---	ELEVATION	
---	WORK LIMIT	



Andrew McCreight

ANDREW MCCREIGHT
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DEVELOPMENT DEPARTMENT, CITY OF OTTAWA

APPROVED
 By Andrew McCreight at 8:20 am, Mar 11, 2026



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CLIENT Client
windmill

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1	FOR SPC FORMAL	2024-10-04
2	FOR SPC FORMAL REV 1	2024-12-04
3	FOR FOUNDATION & EXCAVATION PERMIT	2024-12-18
4	FOR SPC FORMAL REV 2	2025-10-03

DESSINÉ PAR Drawn by
S.C. POGGIOLI

VÉRIFIÉ PAR Checked by
E. POTVIN

DATE (aa-mm-j)
 2024-10-04

ÉCHELLE Scale
 1:150

TITRE DU DESSIN Drawing Title
STORM WATER MANAGEMENT PLAN (PRE-DEVELOPMENT)

REVISION Revision NO DESSIN Draw Number

STORMWATER MANAGEMENT – RETENTION CALCULATIONS

APPLICABLE DESIGN GUIDELINES:
 1. City of Ottawa Sewer Design Guidelines, 2012
 2. City of Ottawa Technical Bulletin ISTB-2018

STORMWATER MANAGEMENT SUMMARY - STORAGE AND DRAWDOWN:

DESIGN CRITERIA:	100 years
Rainfall event	9.1 L/s
Flows from Tank	0.0 L/s
Unattenuated Flow (100 year)	0.0 L/s
Allowable Release Rate	9.1 L/s

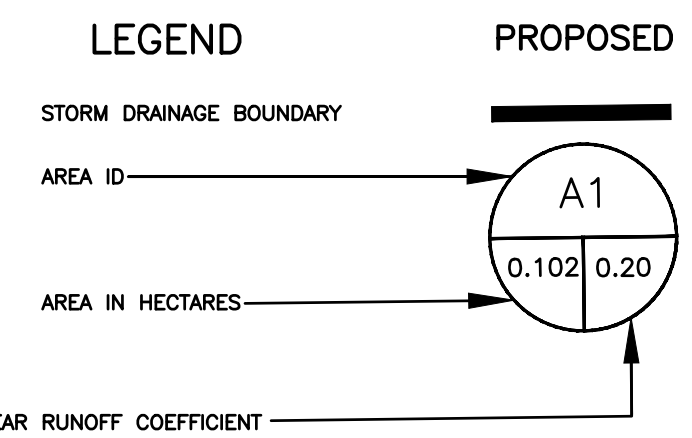
Sub-Area	Total Area (m ²)	Available Storage Area (m ²)	Catchbasin/ Roof Drain Elevation (m)	Maximum Ponding Elevation (m)	V _{acc} (m ³)	V _{rain} (m ³)	V _{max} (m ³)	Y _{max} (m)	Elev _{max} (m)	A _{rain} (m ²)	Cistern Release Rate Q (L/s)	Drawdown Time (min)	Comments
A1	1869	0	-	-	-	75.00	72.2	-	-	-	9.1	-	Building Roof & Drains
NC1 (Unattenuated)	284	0	-	-	-	-	-	-	-	0.0	-	-	Unattenuated
Total	2153	0	-	-	-	75.0	72.2	-	-	-	9.1	-	

NOTES:
 1. Given that the site was oversized per the City's request, using a runoff coefficient of 0.4 instead of the actual 0.90, and since the uncontrolled area conditions within its perimeter are being improved, the City modeler has approved the exclusion of this area from the 18 L/s allowable release rate for the site (see Appendix A for email confirmation). Furthermore, additional landscape areas are proposed outside the property limits, further enhancing the overall site conditions.

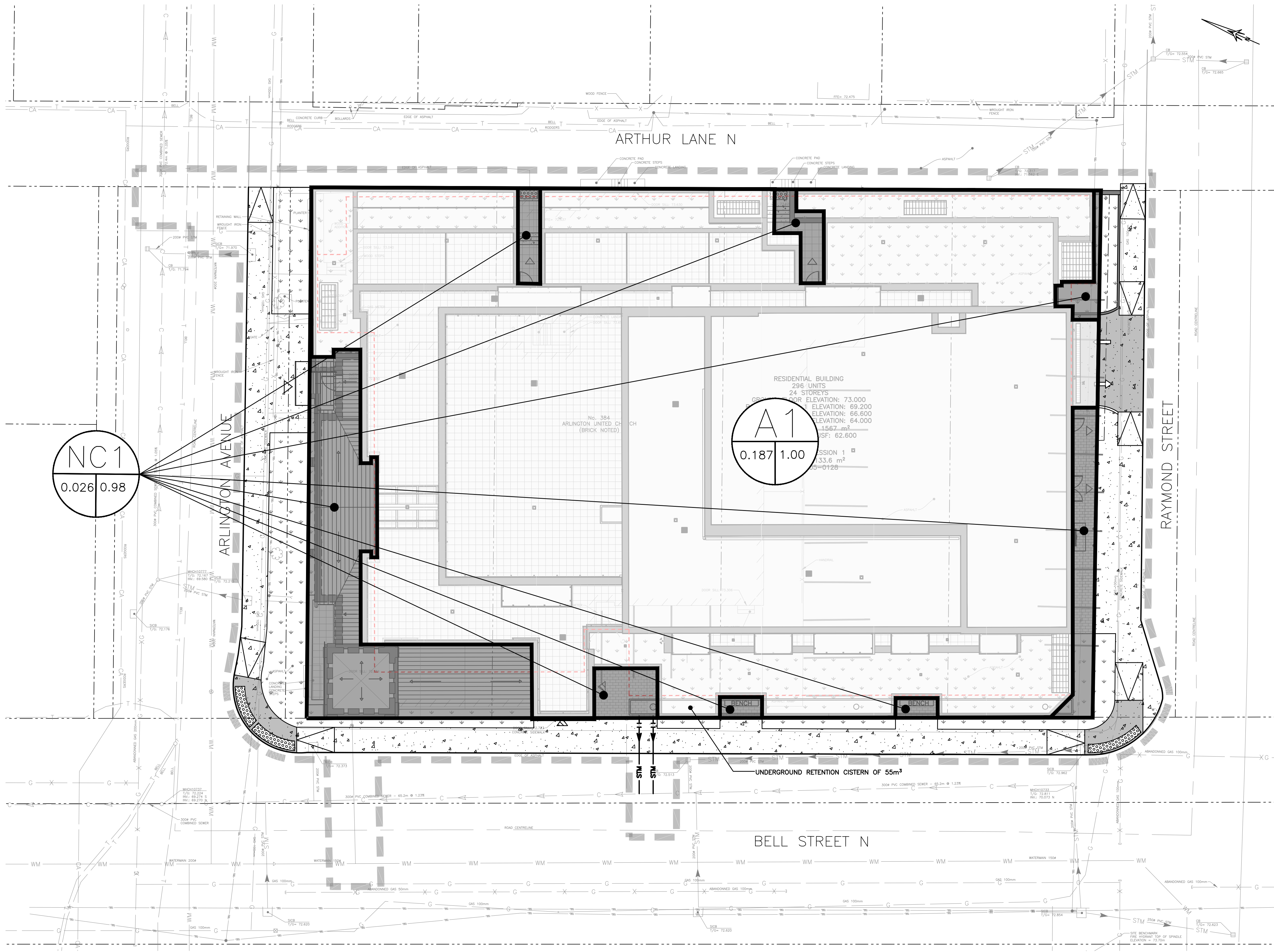
DEFINITIONS OF ABBREVIATIONS USED IN CALCULATION TABLE:

NC = Area is not controlled (unattenuated)
 Available Area = Area of water accumulated in sub-area at Max. Elev.
 Catchbasin Elev. = Elevation of catchbasin inlet (top of grate).
 Max. Elev. = Maximum elevation of water that may be accumulated within sub-area.
 V_{max} = Maximum depth of water that may be accumulated within the sub-area.
 V_{acc} = Maximum volume of water (capacity) that may be accumulated within the sub-area.
 V_{rain} = Volume of water generated by rainfall.

V_{acc} = Total volume of water accumulated within the sub-area in the event of a specific rainfall.
 Y_{max} = Depth of water generated by rainfall.
 Elev_{max} = Elevation of water generated by rainfall.
 A_{rain} = Area of water generated by rainfall.
 Q = Release flow rate.
 Tank Release Rate = Release rate from the underground storage tank equal to 1/2 the allowable release rate.
 Drawdown Time = Time required for the total volume of water accumulated within sub-area to subside.



EXISTING	LEGEND	PROPOSED
WM	WATERMAIN	
SS	SANITARY SEWER	
ST	STORM SEWER	
D	DRAIN	
G	GAS LINE (APPROX. LOC.)	
T	UNDERGROUND TELEPHONE (APPROX. LOC.)	
CA	UNDERGROUND CABLE (APPROX. LOC.)	
F	FENCE	
E	UNDERGROUND ELECTRICITY (APPROX. LOC.)	
X	OVERHEAD WIRES	
---	LOT LINE	
---	LOT LINE FOR THE PROPERTY	
---	TOP OF SLOPE	
---	BOTTOM CENTER	
---	DITCH OF SLOPE	
---	WOOD AREA	
---	GRADE CROSSING	
---	FLAGPOLE	
---	CATCHBASIN	
---	MANHOLE/CATCHBASIN	
---	MANHOLE	
---	FIRE HYDRANT	
---	VALVE	
---	REDUCER	
---	TEE	
---	VALVE CHAMBER	
---	PRIVATE UTILITIES (WATERMAIN)	
---	EXTERIOR WATER FAUCET	
---	SLUICEWAY	
---	NATURAL GAS VALVE	
---	SIGN	
---	STOP SIGN	
---	TRAFFIC LIGHT	
---	ELECTRICITY POLE	
---	TELEPHONE POLE	
---	ELECT.-TEL.-STREET LIGHT POLE	
---	ELECT.-TEL.-TRANSFORMER POLE	
---	PRIVATE STREET LIGHT	
---	ELECTRICITY MANHOLE	
---	TELEPHONE MANHOLE	
---	SURVEY STATION	
---	ELEVATION	
---	WORK LIMIT	



Andrew McCreight
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 MANAGER, DEVELOPMENT REVIEW CENTRAL
 PLANNING, DEVELOPMENT & BUILDING SERVICES
 DEVELOPMENT DEPARTMENT, CITY OF OTTAWA

APPROVED
 By Andrew McCreight at 8:20 am, Mar 11, 2026

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NO	REVISION	DATE (aa-mm-j)
0	FOR SPC	2024-08-08
1	FOR SPC FORMAL	2024-10-04
2	FOR SPC FORMAL REV 1	2024-12-04
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THE UNDERGROUND FEATURES AND INFORMATION THAT APPEAR ON THE DRAWINGS WERE OBTAINED FROM THE PUBLIC UTILITY COMPANIES AND/OR FROM THE CITY EACH RESPECTIVELY.

ALL INFORMATION UNDER THE LEGEND 'EXISTING' IS FOR INFORMATION ONLY. COMPLETE OR EXACT LOCATION AND ELEVATION OF UNDERGROUND SERVICES ARE NOT GUARANTEED.

CERTAIN UNDERGROUND FEATURES ON PRIVATE PROPERTY ARE NOT SHOWN ON THE CURRENT DRAWING.

ANYONE WHO PROCEEDS WITH EXCAVATION WORK SHALL VERIFY THE EXACT LOCATION OF ALL UNDERGROUND FEATURES, BY EXPLORATORY EXCAVATIONS, AND SHALL ASSUME FULL RESPONSIBILITY IF THERE IS ANY DAMAGE THAT OCCURS DURING WORK.

THE CONTRACTOR WILL HAVE THE RESPONSIBILITY AND THE OBLIGATION TO VALIDATE, BY EXPLORATORY EXCAVATION, THE SIZE OF THE PUBLIC UTILITIES UNDERGROUND SERVICES AND TO WARN THE ENGINEER OF ANY CONFLICT WITH THE PROJECTED WORK.

DESIGNÉ PAR / Drawn by
S.C. POGGIOLI

VÉRIFIÉ PAR / Checked by
É. POTVIN

DATE (aa-mm-j)
 2024-10-04

ÉCHELLE / Scale
 1:150

TITRE DU DESSIN / Drawing Title
STORM WATER MANAGEMENT PLAN (POST-DEVELOPMENT)

REVISION / Revision
4

NO DESSIN / Drawing Number
C006