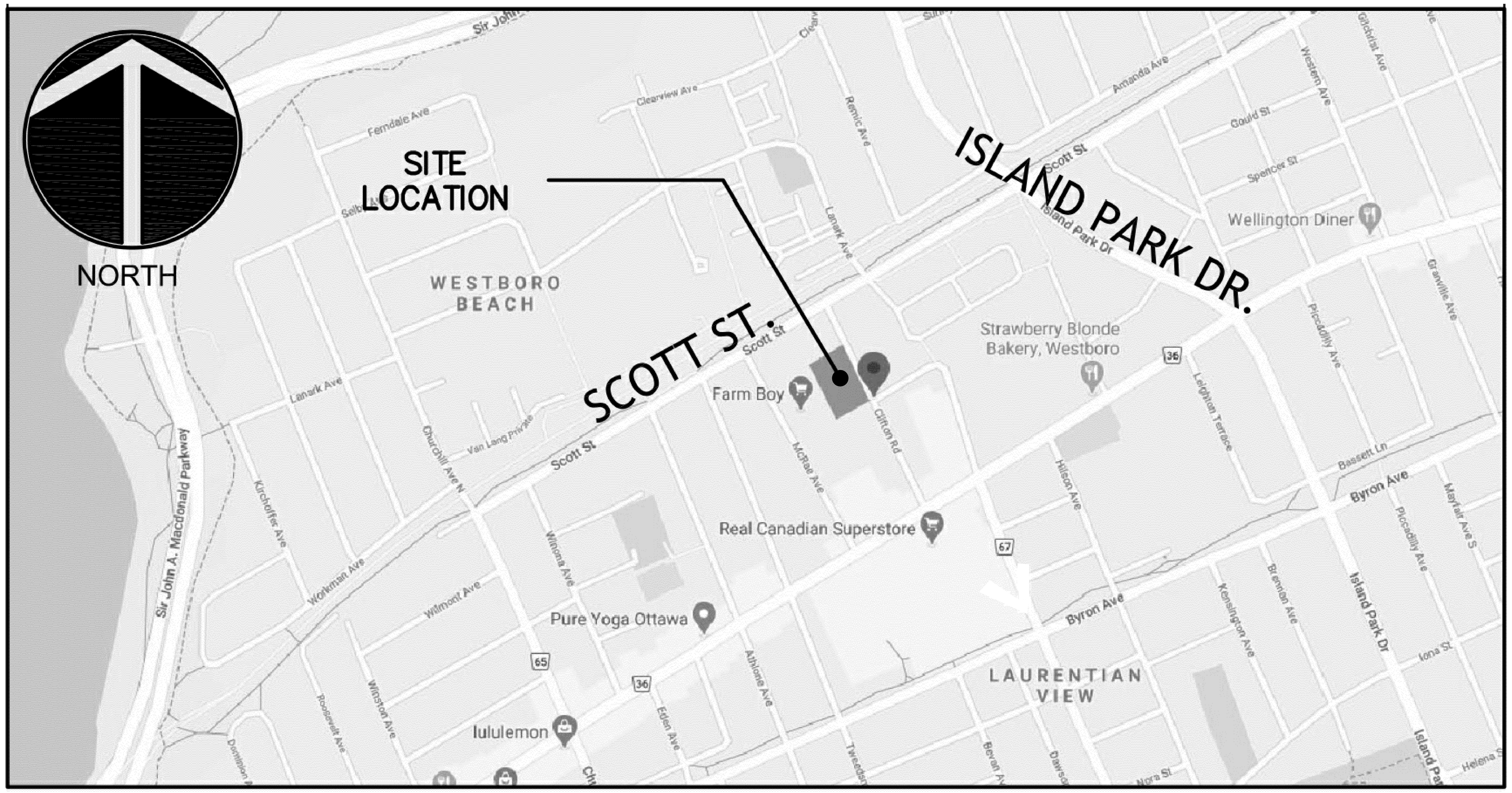
CLIFTON PROPERTY DEVELOPMENT INC.



CLIFTON TOWNS
316-332 CLIFTON ROAD

LIST OF DRAWINGS

PLAN No:	DESCRIPTION
C001	COVER PAGE
C002	TOPOGRAPHICAL SURVEY PLAN
C003	EROSION AND SEDIMENT CONTROL PLAN
C004A	NOTES PLAN – 1 of 2
C004B	NOTES PLAN – 2 of 2
C005	GRADE CONTROL AND DRAINAGE PLAN
C006	SITE SERVICING PLAN
C007	CIVIL DETAILS PLAN – 1 of 10
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C009	CIVIL DETAILS PLAN – 3 of 10
C010	CIVIL DETAILS PLAN – 4 of 10
C011	CIVIL DETAILS PLAN – 5 of 10
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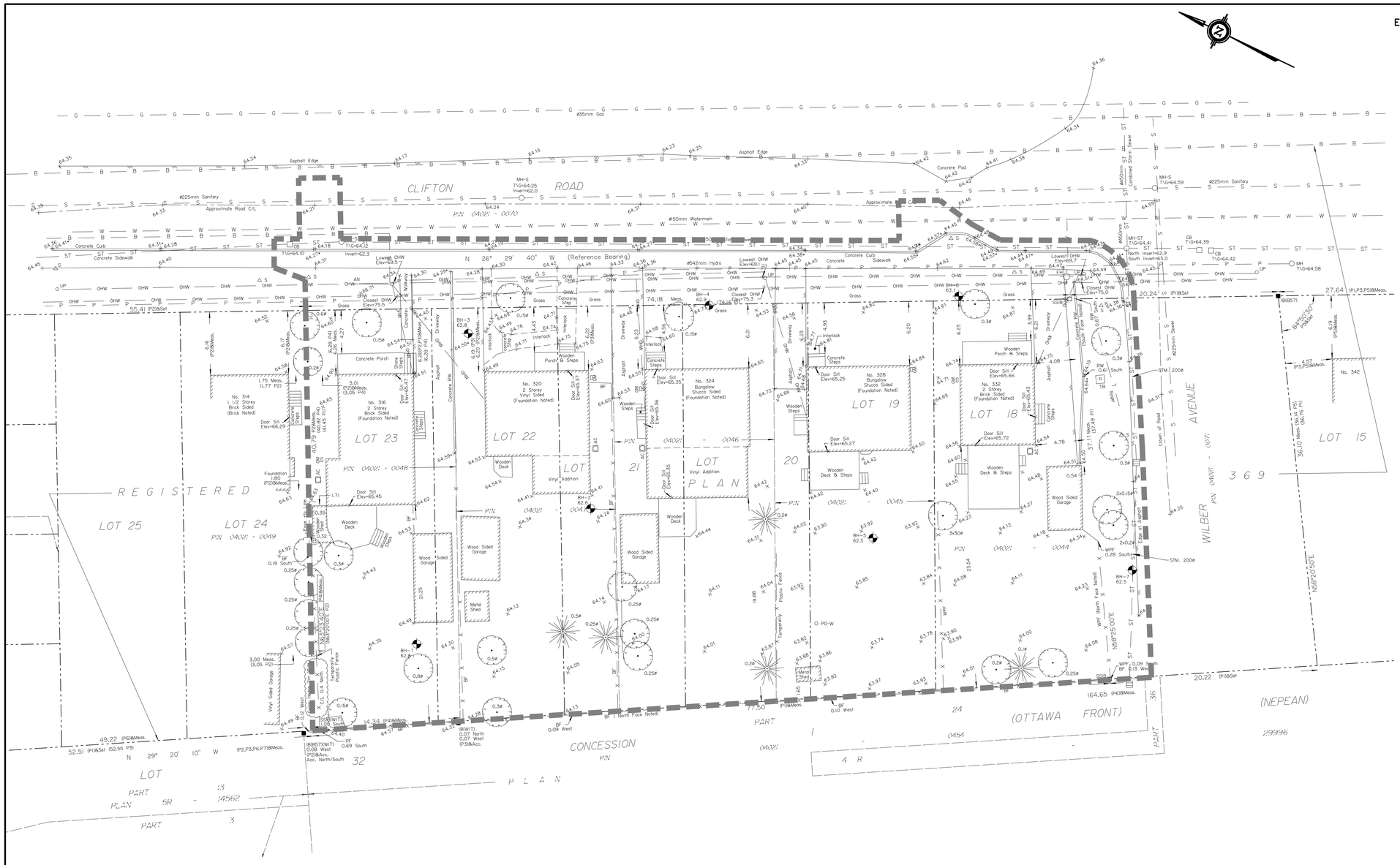
C013	CIVIL DETAILS PLAN – 7 of 10
L001	LANDSCAPING PLAN
L002	LANDSCAPING DETAILS

CLIFTON PROPERTY DEVELOPMENT INC.
CLIFTON TOWNS - 316 - 332 CLIFTON ROAD
SITE PLAN CONTROL - JANUARY 22nd, 2021

CIMA+ T: 613-860-2462 110-240 Catherine Street, Ottawa, ON K2P 2G8 CANADA



EXISTING

LEGEND

	SURVEY MONUMENT PLANTED
■	SURVEY MONUMENT FOUND
SIB	STANDARD IRON BAR
SSIB	SHORT STANDARD IRON BAR
IB	IRON BAR
CC	CUT CROSS
(WIT)	WITNESS
Meas.	MEASURED
(AOG)	ANNIS, O'SULLIVAN, VOLLEBEKK LTD.
Acc.	ACCEPTED
(P1)	REGISTERED PLAN 369
(P2)	(SG) PLAN MAY 29, 2018
(P3)	(1319) PLAN SEPTEMBER 29, 1992
(P4)	(AOG) PLAN JUNE 10, 1985
(P5)	(857) PLAN MAY 31, 1985
(P6)	(AOG) PLAN MAY 8, 2015
(P7)	PLAN 4R-8932
FH	FIRE HYDRANT
○ MH-ST	MAINTENANCE HOLE (STORM SEWER)
○ MH-S	MAINTENANCE HOLE (SANITARY)
○ MH	MAINTENANCE HOLE (UNIDENTIFIED)
— ST —	UNDERGROUND STORM SEWER
— S —	UNDERGROUND SANITARY SEWER
— W —	UNDERGROUND WATER
— P —	UNDERGROUND POWER
— GAS —	UNDERGROUND GAS
— T —	UNDERGROUND TELECOMMUNICATION
— B —	BELL CABLE
— OHW —	OVERHEAD WIRES
☐ CB	CATCH BASIN
▭ GM	GAS METER
▭ HM	HYDRO METER
BF	BOARD FENCE
WPF	WOOD PICKET FENCE
○ UP	UTILITY POLE
◦ AN	ANCHOR
▣ AC	AIR CONDITIONER
RW	RETAINING WALL
Ø	DIAMETER
+ 65.00	LOCATION OF ELEVATIONS
+ 65.00*	TOP OF CONCRETE CURB / RW ELEVATION
C/L	CENTRELINE
	DECIDUOUS TREE
	CONIFEROUS TREE
○ PO-W	WOOD POLE
△ S	SIGN
▫ TB	UNIDENTIFIED TERMINAL BOX
—— - - ——	PROPERTY LINE
— — — —	EASEMENT
▬ ▬ ▬	WORK LIMIT
BH-1 62.8	BOREHOLE LOCATION (APPROX.) BEDROCK ELEVATION

– SURVEY COMPLETED FEB. 5th. 2019 BY Annis, O'Sullivan, Vollebekk Ltd. (R–006)

0 2 4 8 12 16 20

NOTE OF CAUTION

THE GEODETIC COORDINATES OF EVERY ITEM INCLUDED AS PART OF THIS DOCUMENT HAVE NO LEGAL VALUE. THE SITE LAYOUT MUST BE COMPLETED USING THE OFFICIAL BENCHMARKS OF AN ACCREDITED LAND SURVEYOR.

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.

no.	date	revision
01	21/01/25	ISSUED FOR SITE PLAN CONTROL

It is the responsibility of the appropriate contractor to check and verify all dimensions on site and report all errors and/or omissions to the architect.

All contractors must comply with all pertinent codes and by-laws.

Do not scale drawings.

This drawing may not be used for construction until signed.

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hobinarc.com

project title
CLIFTON TOWNS
316-332 CLIFTON ROAD
CLIFTON ROAD, OTTAWA, ONTARIO

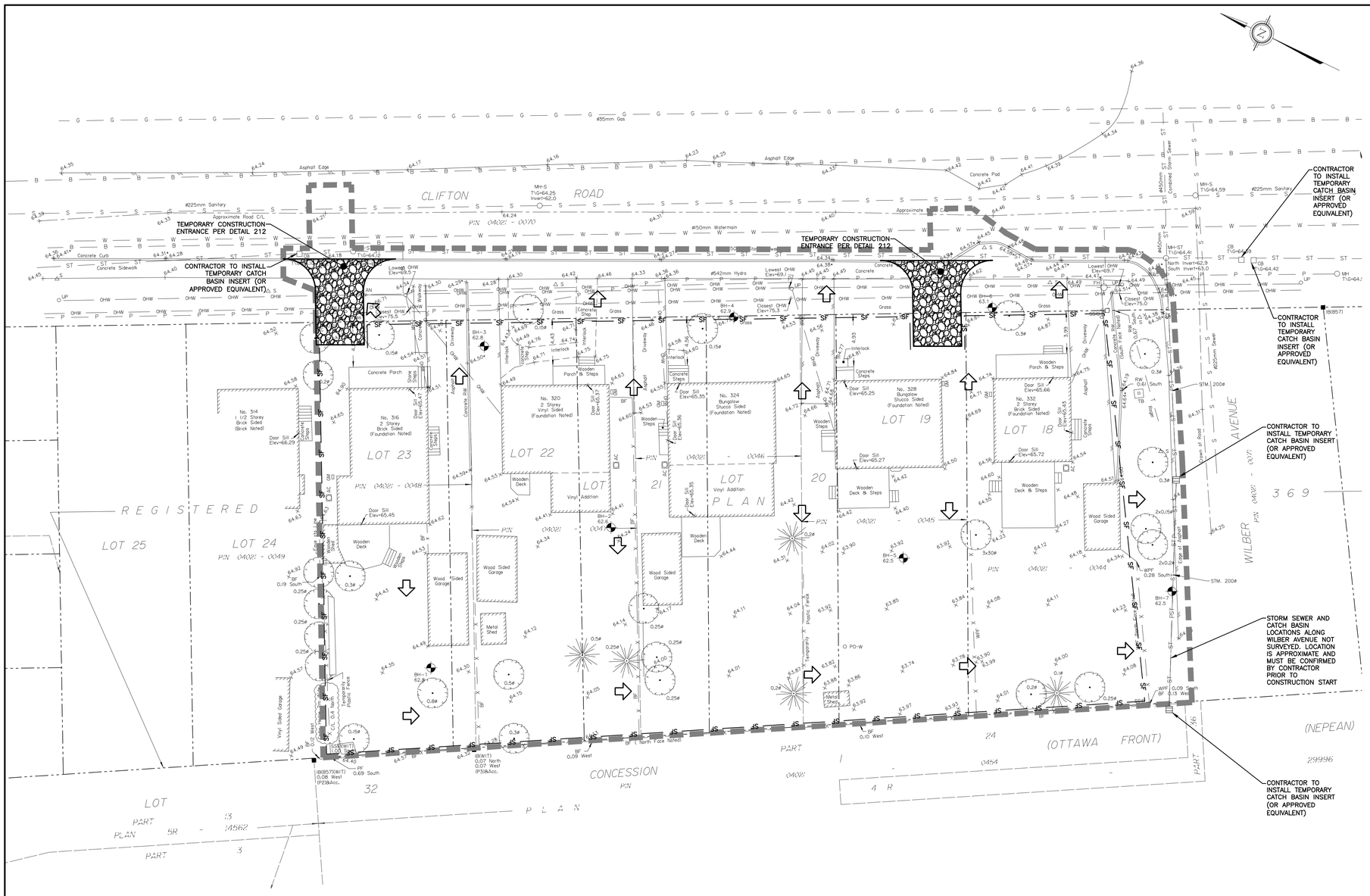
drawing title
TOPOGRAPHICAL SURVEY PLAN

drawn	date	scale
SCP	JAN/21	1:200

project
A001062

drawing no.
C002

revision no.



LEGEND

EXISTING		PROPOSED
FH	FIRE HYDRANT	
MH-ST	MAINTENANCE HOLE (STORM SEWER)	
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	CONIFEROUS TREE	
PO-W	WOOD POLE	
S	SIGN	
TB	UNIDENTIFIED TERMINAL BOX	
	PROPERTY LINE	
	EASEMENT	
	WORK LIMIT	
BH-1 62.8	BOREHOLE LOCATION (APPROX.) BEDROCK ELEVATION	
	SILT FENCE PER OPSD 219.110	SF
	OVERLAND FLOW	
	TEMPORARY CONSTRUCTION ENTRANCE	

0 2 4 8 12 16 20

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HOBIN ARCHITECTURE

project title
CLIFTON TOWNS
316-332 CLIFTON ROAD
CLIFTON ROAD, OTTAWA, ONTARIO

drawing title
EROSION AND SEDIMENT CONTROL PLAN

drawn	date	scale
SCP	JAN/21	1:200

project no. 100062

drawing no. **C003**

revision no.

LICENSED PROFESSIONAL ENGINEER
T. G. KENNEDY
100173201
January 25, 2021
PROVINCE OF ONTARIO

1. SEDIMENT AND EROSION CONTROL

1.1. Unless otherwise indicated, all materials and construction methods to be in accordance with the requirements of 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, the municipal standard specifications and drawings, and all other governing authorities as they apply.

1.2. Wherever standards, laws and/or regulations are mentioned they refer to their current versions, modifications included.

1.3. Specifically, sediment and erosion control measures to be constructed as per OPSS.MUNI 805 / City of Ottawa Special Provision F–1004 and F–1005.

1.4. The Contractor must implement best management practices and provide adequate sediment and erosion control measures during construction:

1. Prevent soil erosion which can result from stormwater runoff or wind erosion during construction;
2. Prevent sediment deposits in the storm sewer and/or collecting streams and;
3. Prevent air pollution from dust and particulate matter.

1.5. Provisions must be made for sediment and erosion control measures prior to stripping the site of vegetation and other deleterious materials. Measures such as phase stripping, vegetation buffer zones, silt fences, straw bales, sediment traps/basins, rock checks, etc. must be constructed and maintained in order to control sediment, as required by the provincial and municipal governing authorities.

1.6. The Contractor must set up the measures shown on the plan, inspect them frequently and clean and repair or replace the deteriorated structures.

1.7. 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.

1.8. 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 rain water.

1.9. 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.

1.10. The light duty silt fence barrier must be installed as per OPSD 219.110.

1.11. At all times the Contractor must maintain the municipal access roads clean and free of sediments. When cleaning the access roads, the Contractor must take the necessary precautions to clear the surfaces covered with sediment prior to cleaning with water.

1.12. For dust control, Contractor to apply calcium chloride (Type I – OPSS 2501 and CAN/CGSB–15–1) and water with equipment approved by the Owner's representative at rate in accordance to OPSS.MUNI 506 when directed by Owner's representative.

1.13. 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.

1.14. This plan is a "Living Document" which may be revised in the event that the control measures are not sufficient.

1. GRADE CONTROL AND DRAINAGE – 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 requirements of 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, 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 boreholes and test pits shown on the plan are for information purposes only. Their location on the plan is approximate. The Contractor must refer to the boreholes and test pit records to obtain information about observed stratigraphy on site.

1.5. 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.

1.6. The Contractor is responsible for the coordination of his activities with others on site.

1.7. Independent Geotechnical Firm:

1.7.1. An independent geotechnical firm must be hired by the Contractor for the purpose of material testing, inspection and quality control services. Cost of such services will be borne by the Contractor.

1.7.2. Geotechnical firm to review asphalt and concrete mix designs as requested.

1.7.3. The Contractor must provide equipment required for executing inspection and testing by appointed geotechnical firm.

1.7.4. 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.

1.7.5. Employment of geotechnical firm does not relax responsibility to perform work in accordance with Contract Documents.

1.7.6. 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.

1.8. Submit copies of inspection and test reports to Owner's representative.

1.9. 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.

1.10. Site preparation includes demolitions and removal of existing structures, clearing, grubbing, stripping of topsoil, demolition, removal of unsuitable materials, cut, fill and rough grading of all areas to receive finished surfaces.

1.11. 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.

1.12. Compaction must conform to the following requirements:

- Exposed subgrade:
  95% Standard Proctor maximum dry density (SPMDD)
- Granular Base and Subbase:
  100 percent of the SPMDD.
- Asphalt pavement:
  92 to 97 percent of the MRD (ASTM D2041)
- Subgrade fill (pavement and sidewalk areas):
  95 percent of the SPMDD.
- Structural fill (building footprint):
  100 percent of the SPMDD (ASTM d–698–12e2) under footings and to 98 percent of the SPMDD under the floors

1.13. If groundwater is encountered during construction, dewatering of excavations could be required as per OPSS.MUNI 518. It is assumed that groundwater may be controlled by sump and pumping methods. It is possible that additional localized sumps may be required in areas where the seepage is more extensive.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.

1.14. Control disposal or runoff of water containing suspended materials or other harmful substances in accordance with local authority requirements and as follows:

1.14.1. 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.

1.14.2. 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.

1.14.3. 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.

1.14.4. Sanitary Sewer Discharge:

.a When discharging to the sanitary sewer, the Contractor must obtain a Sanitary 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.

- A copy of the signed Sanitary Sewer Agreement for Dewatering must be provided to the Departmental Representative in advance of dewatering and discharge.
- 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.
- Provide flow meter and record discharge rate in accordance with City of Ottawa requirements.
- Dewatering discharge rate to sanitary sewer not to exceed rate specified by City.

.b For off–site disposal of dewatering effluent, Contractor to provide Departmental Representative proof of receipt that dewatering effluent was received at a licensed landfill facility and pay all associated disposal fees.

- Contractor must provide name of proposed licensed disposal facility to Departmental Representative in advance of any dewatering waste leaving the site.
- Contractor is responsible for paying all costs associated with any water quality sampling and testing required.

1.15. 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.

1.16. 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.

1.17. 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. Excavations at the site in the overburden may be undertaken as open–cut provided they are cut back at a slope of 1H to 1V.

1.18. The Contractor must pace deliveries and removals in order to minimize and control stockpiles.

1.19. 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.

1.20. Cleanliness on the site:

- The Contractor must clean roadways at his own cost as directed by the Owner's representative;
- 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.;
- The Contractor must leave the work area clean at the end of each day;
- Materials and equipment must be laid out in an organized and safe manner;
- All material, equipment and temporary structures which are no longer necessary for the execution of the Contract must be removed from the site;
- If required the Contractor must use screens, bulkheads, or any other recognized means in order to reduce noise, dust, interference, obstruction, etc., in conformity with the requirements of the provincial and municipal authorities having jurisdiction.

1.21. 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.

1.22. The Contractor must control surface runoff from precipitation during construction.

1.23. Protection of existing trees and shrubs:

- The Contractor must ensure that the existing trees and shrubs that are to remain on site will be protected throughout the construction phase in order to minimize the risk of damaging the trunks and branches and to avoid the compaction of the roots;
- As required, the Contractor must coordinate his work with other professionals to ensure that the existing tree and shrub protection measures are in place prior to any other work and that these measures are maintained until the work is complete;
- The Contractor must protect the existing trees in accordance with OPSS.MUNI 801 and OPSD 220.010 / City of Ottawa Special Provision F–8011 and Standard Detail F7;
- The Contractor must define paths for heavy machinery before construction to avoid compaction of the roots of existing trees and shrubs;
- The Contractor cannot store material at the base of trees and shrubs;
- The Contractor cannot backfill the trunk of existing trees and shrubs;
- Prune tree branches, shrubs and roots as needed to complete the work in accordance with Agriculture and Agri–Food Canada's "Pruning trees and shrubs" guidelines.
- The Contractor must perform any tree cutting prior to April 15 (i.e. outside of the core Migratory Birds nesting period, which is April 15 to August 15).

1.24. The Contractor must ensure the following mitigation measures are implemented in order to reduce the risk of ground contamination from petroleum products:

- The list of persons and agencies to contact in the event of an emergency must be posted in plain sight on the work site for the duration of the construction period;
- Machinery must be clean and kept clean to limit any grease or oil deposits inside the work area;
- Frequent inspections must be performed to detect any oil, fuel, grease or other leaks. If a leak is detected, the necessary corrective action must be taken immediately;
- An emergency kit for the recovery of petroleum products must be kept on site at all times. The kit must include at least 30 m of absorbent booms, a box of absorbent pads and solid absorbent material (powder or granules). The kit must be stored near the location of work and machinery, and kept within easy reach at all times to ensure a rapid response;
- In the event of a spill the Contractor must immediately report to the Spills Action Centre of the MECP at 1–800–268–6060. Hydrocarbons and contaminated soils will be recovered by a specialized firm.

1.25. The Contractor must ensure the following measures are implemented regarding the handling of concrete:

- Concrete should either be mixed away from the site or should be prepared on paved surfaces if only small quantities are required (i.e. minor repairs);
- Excess concrete must be disposed off–site at a location that meets all regulatory requirements;
- The washing of concrete trucks and other equipment used for mixing concrete should not be carried out within 30 m of a watercourse or wetland and should take place outside of the work site;
- All concrete trucks should collect their wash water and recycle it back into their trucks for disposal off–site at a location meeting all regulatory requirements.

2. DEMOLITION AND REMOVALS

2.1. 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.

2.2. 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.

2.3. The Contractor must perform the nessessary clearing and grubbing in accordance with OPSS.MUNI 201.

2.4. The Contractor must carry out necessary saw cuts even if they are not shown on the drawings.

2.5. 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.

- 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.
- 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.

2.6. 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.

2.7. Sewer / watermain pipes to be abandoned must be cut, fill with unshrinkable concrete conforming to OPSS.MUNI 1359, and capped.

2.8. The Contractor must conduct all removals required to make the work complete.

2.9. Unless otherwise specified, all materials, products and others coming from the demolition belong to the Contractor.

2.10. Surfaces and works located outside of the construction work limit must be reinstated as they were before beginning of work.

3. GENERAL SUBGRADE PREPARATION

3.1. 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.

3.2. Subgrade must be approved by experienced geotechnical personnel before proceeding with placement of fill.

3.3. As part of the subgrade preparation, the proposed parking area and access and local roadways should be stripped of topsoil and other obviously unsuitable material such as organic materials.

3.4 Any loose, soft, or spongy subgrade areas detected should be sub excavated and properly replaced with suitable approved backfill compacted to 98% SPMDD (ASTM D698–12e2)e.

3.5. The subgrade should be properly shaped, crowned, then proofrolled where possible in the full–time presence of a representative of this office.

3.6 All granular fill must be placed in maximum 300 mm thick loose lifts and compacted using suitable methods as per the requirements.

3.7. 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.

3.8. 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 (C6–C34), 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.

4. EXCAVATION AND BACKFILL – BUILDING FOOTPRINT, ACCESS ROADS AND LANDSCAPE AREAS

4.1. The parking and access road subgrade preparation must be completed as per Section "3.0 General Subgrade Preparation".

4.2. The management of excess materials to comply with OPSS.MUNI 180.

4.3. In the areas of the existing buildings which will be demolished, all building material, footings, foundation walls, construction material must be removed and disposed of site and the excavation backfilled with engineered fill prepared as described below:

4.4 Preparation of the engineered pad should comprise of the excavation of all fill, deleterious material, construction material, old footings, etc. down to the surface of the glacial till or bedrock. The excavation may extend to deeper depths than indicated on the logs in the areas of the existing building footings and services which will be demolished. Following approval of the subgrade, OPSS 1010 Granular B Type II should be placed in 300 mm lifts and each lift compacted to 100 percent of the Standard Proctor Maximum Dry Density (SPMDD). The engineered pad must extend to a minimum of 0.6 m from the edge of the footing then slope down at 1H to 1V to the bottom of the pad. In–place density testing must be undertaken on each lift to ensure that the specified degree of compaction has been achieved.

4.5 As part of the subgrade preparation, the proposed parking area and access and local roadways should be stripped of topsoil and other obviously unsuitable material such as organic materials.

4.6. Subgrade fill used for grading beneath asphalt or concrete pavement must consist of OPSS 1010 Select Subgrade Material (SSM), or on–site approved material free of organics and with a natural moisture content within 2 percent of the optimum moisture content.

4.7. The on–site fill may be used for grading purposes in the landscaped area provided it is free of organics and foreign debris.

4.8. Structural fill used for grading beneath the footings of buildings, signs and light standards must consist of OPSS 1010 Granular B Type II

4.9 Backfilling against exterior basement walls – OPSS 1010 Granular B Type I or II, placed in 300 mm thick lifts and compacted to 95 percent of the SPMDD

4.10. The Contractor is responsible for constructing all temporary access roads, as required to complete the work. The Contractor must also maintain all temporary access roads in good and tidy condition at all times to the satisfaction of the Owner and/or Consultant. All temporary access roads must consist of compacted OPSS Select Subgrade Material to allow heavy equipment traffic. If the building is constructed during the winter period, the Contractor is responsible for snow removal and spreading of abrasive throughout construction work by the building Contractor and his sub–contractors.

4.11. It is expected that some bedrock removal may be required. Excavation of the bedrock would require the use of hoe–ramming and/or line drilling and may be undertaken with near vertical sides. Contractor bidding on this project must review the available data and decide on their own the most suitable method to excavate the bedrock, i.e. line drilling, blasting, etc. It should be noted that lab testing has revealed the bedrock underlaying the site to be strong to very strong.

4.12 Vibrations should be monitored during construction to prevent damage to adjacent structures and services. A precondition survey of all the structures and services situated within the proximity of the site will be required prior to the commencement of construction and during the excavation of the bedrock. Care must be undertaken to ensure that the footings of the neighbouring properties are not undermined or damaged during construction.

4.13. Rock excavation must conform to OPSS 403.MUNI / City of Ottawa Special Provision F–4031 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.

4.14. Rock excavation for the buildings must be 2.0 m wider than the building footprint and to a depth of 2.1 m from surrounding finished grade. The Contractor must confirm rock excavation depths with Consultant prior to starting the work.

5. PAVEMENT STRUCTURES, CURBS, AND SIDEWALKS

5.1. Construction of granular foundation must conform to OPSS.MUNI 314 / City of Ottawa Special Provisions.

5.2. Granular materials used on site must conform to the requirements of OPSS.MUNI 1010.

5.3. Light duty and heavy duty asphalt pavements to be constructed as per Details #201, #202, and #205.

5.4. Road cut reinstatement as per City of Ottawa Detail R10.

5.5. Transition between existing and proposed pavement must be constructed as per Detail #206.

5.6. Construction of asphalt must conform to OPSS.MUNI 310 and OPSS.MUNI 313.

5.6.1. Paving must not be carried out if the roadbed is frozen or wet.

5.6.2. 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 50 °C or less.

5.6.3. As per OPSS.310.07.06.02, 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.

5.6.4. As per OPSS.310.07.06.02, the asphalt surface coarse must not be placed unless the air temperature at the surface of the road is a minimum of 7°C.

5.7. Asphalt concrete material must conform to OPSS.MUNI 1150 for Hot Mix Asphalt and OPSS.MUNI 1151 for Superpave and Stone Mastic Asphalt Mixtures. Minimum Performance Graded (PG) 58–34 asphalt cement must be used for this project.

5.8. Asphalt mix design must be reviewed and approved by a Geotechnical Engineer before paving.

5.9. Concrete curbs and gutters must conform to OPSS 353.MUNI.

5.10. Concrete curbs to be constructed as per City of Ottawa Detail SC1.1.

5.11. Elevation at top of concrete curbs to be 150 mm above the asphalt, unless otherwise indicated on the drawings.

5.12. Landscaping behind concrete curbs as per Detail 120, unless otherwise indicated on the drawings.

5.13. Concrete sidewalks must conform to OPSS.MUNI 351 .

5.14. Concrete sidewalks to be constructed as per City of Ottawa Detail SC2.

5.15. Concrete slab for garbage enclosure to be constructed as per Detail 115.

5.16. For all concrete placement during cold weather Contractor must place material in accordance to OPSS.904.MUNI.

5.16.1. When ambient air temperature is 5°C or less, forms for concrete work must be left in place for the duration of the curing period.

5.16.2. When the ambient air temperature is below 0°C at the time of placing, components must be cured with moisture vapour barrier.

5.16.3. Contractor must conform to OPSS.MUNI 904.07.11 for Control of Temperature when subjected to cold weather.

6. MISCELLANEOUS

6.1. Pavement markings to be "Organic Solvent Based" as per OPSS 710 and OPSS 1712.

6.2. Pavement marking symbols to comply with Detail 405 and 407.

no.	date	revision
01	21/01/25	ISSUED FOR SITE PLAN CONTROL

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HOBIN ARCHITECTURE

project title
CLIFTON TOWNS
316-332 CLIFTON ROAD
CLIFTON ROAD, OTTAWA, ONTARIO

drawing title
NOTES PLAN

drawn	date	scale
SCP	JAN/21	1: 200

project no. 100042

drawing no. **C004A**

revision no.

LICENSED PROFESSIONAL ENGINEER
T. G. KENNEDY
100173201
January 25, 2021
PROVINCE OF ONTARIO

1. MUNICIPAL SERVICES – GENERAL

1.1. Unless otherwise indicated, all materials and construction methods to be in accordance with the requirements of 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, the municipal standard specifications and drawings, and all other governing authorities as they apply.

1.2. Wherever standards, laws and/or regulations are mentioned they refer to their current versions, modifications included.

1.3. The boreholes and test pits shown on the plan are for information purposes only. Their location on the plan is approximate. The Contractor must refer to the boreholes and test pit records to obtain information about observed stratigraphy on site.

1.4. 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.

1.5. The Contractor is responsible for obtaining all permits required to complete all works and bear cost of same, including water permit and associated costs.

1.6. The Contractor is responsible for the coordination of his activities with others on–site.

1.7. Terminate and plug all service connections at 1.0 meter from edge of the building.

1.8. Spacing between lateral service connections must be as per City of Ottawa Detail S11.3.

1.9. The Contractor must complete compaction as per OPSS.MUNI 501 and note the following requirements for service trenching:

MATERIALS	COMPACTION
Pipe bedding	98% SPMDD
Trench backfill and pipe cover	98% SPMDD

1.10. 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/exfiltration tests for sewers and manholes, deformation tests of sewers, watermain hydrostatic leakage test, flushing and disinfecting operations, and bacteriological water analysis.

1.11. Advise the City Public Works at least 72 hours in advance before any connection to the City services. Coordinate with City as required.

1.12. 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, 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.

1.13. 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.

- Asphalt reinstatement must be in accordance with OPSS.MUNI 310.
- Landscape areas to be reinstated with 150 mm of topsoil and sod in accordance with OPSS.MUNI 802 and OPSS.MUNI 803.

1.14. Within landscaping areas, backfill for service trenches may consist of on–site fill material replaced and compacted in lifts provided it is free of organics and foreign debris.

1.15. 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 obvert must also consist of Granular A material. Bedding and cover material must be placed in maximum 200 mm lifts.

1.16. It is expected that services will be placed in both bedrock and overburden materials. Where the bedrock slopes at more than 3H:1V a transition treatment is required. At these locations the bedrock must be excavated and extra bedding material must be placed to provide a 3H:1V (or flatter) transition from the bedrock subgrade towards the soil subgrade.

1.17. Dewatering of pipeline, utility and associated structure in rock excavations to be completed as per OPSS.MUNI 403.

1.18. Trenching, backfilling and compacting must conform to OPSS.MUNI 401.

2. WATERMAIN

2.1. Watermain, water service connections and associated appurtenances must be constructed in accordance with the Ontario Provincial Standard Specifications / City of Ottawa Standards Specifications / Ministry of Environment and Climate Change Requirements. Specifically watermains must conform to OPSS.MUNI 441.

2.2. Watermain must be constructed as per OPSS.MUNI 441 and specifically OPSD 802.010. Bedding and cover material to be OPSS Granular 'A' compacted to 98% Standard Proctor Maximum Dry Density.

2.3. Watermain pipe materials must be class 150 PVC DR 18 or approved equivalent, unless otherwise shown on the Drawings. Materials must conform to OPSS 441.

2.4. All watermain must be installed with a minimum of 2.40 meters cover from finished grade. Where a minimum of 2.40 meters cover is not reached, thermal insulation is required as per City of Ottawa Details W21, W22 and W23.

2.5. Watermain service connections must be installed a minimum of 2.40 meters from any catchbasin, manhole or object that may contribute to freezing. Thermal insulation must be installed as per City of Ottawa Details W22 and W23 where 2.40 meters of separation cannot be achieved.

2.6. Water service connections, 19 and 25 mm diameter in size, to be constructed as per OPSD 1104.010.

2.7. Blow off installation at dead–ends to be installe as per OPSD 1104.030.

2.8. Cathodic protection (if required) must be installed as per City of Ottawa Details W40 and W42.

2.9. Thrust block and restraints must be as per City of Ottawa Details W25.3, W25.4, W25.5 and W25.6.

2.10. Hydrant installation to be as per OPSS 441 and Details W18 and W19.

2.11. Hydrants will comply with AWWA C502. The following hydrant is approved for use by the City on this project: Canada Valve B50–B24:

2.12. Hydrants must conform to the following specifications:

- Size 150 mm; depth of bury 2 m; counter clockwise opening; 2 – 65 mm Canadian Underwriters Association approved hose connections and one No. 47A 100 mm pumper nozzle; two–piece barrels with breakaway flange; drain ring; painted yellow. The Contractor must ensure that the breakaway flange is located above the finished ground (approximately 150 mm). Hydrant pumper connection to face the roadway and nozzles must be parallel to the edge of pavement/curb line.
- Hydrants must have three exits (two 65.5 mm and one 100.0 mm 'storz' of stainless steel) without drain. Fire hydrants must be installed such that the 'storz' exit points towards the building it will service. The Contractor must ensure that the breakaway flange is located above the finished ground (approximately 150 mm).
- Fire flow tests followed by colour coding of hydrants (as per NFPA–291) must be carried out prior to substantial completion of the work.

2.13. Valves to be installed as per City of Ottawa Special Provision F–4413 and conform to the following:

- All valves must open in a counter clockwise direction;
- Designed for cold water working pressure of 1035 kPa;
- Types must be one of the following:
- Valves less than 75 mm to be brass or bronze gate valves;
- Valves greater than or equal to 75 mm, and less than or equal to 300 mm, to be cast or ductile iron gate valves;
- Valves greater than 300 mm up to and including 500 mm to be gate or butterfly valves;
- Valves greater than 500 mm to be butterfly valves.

2.14. A continuous 12 gauge copper tracer wire must be installed over all watermains. Tracer wire must be tied to all fire hydrants.

2.15. Valve box assembly to be as per City of Ottawa Detail W24.

2.16. When a watermain pipe crosses a sewer pipe, installation must be as per City of Ottawa Details W–25 and/or W–25.2.

2.17. Watermains must be thoroughly flushed and cleaned to remove all dirt and debris prior to the disinfection process.

2.18. All watermains 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.

2.19. 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 tie–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.)

2.20. 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.

2.21. Flushing and Disinfecting to be completed as per OPSS 441.07.25 under the supervision of the Contract Administrator.

2.22. The Contractor must obtain a permit from the City before using an existing fire hydrant located within the City's territory.

2.23. The Contractor must coordinate and pay the cost of connection, inspection and disinfection by municipal personnel.

2.24. Contractor must coordinate the supply and installation of water meter and remote water meter for the buildings with the mechanical engineer.

3. STORM SEWER

3.1. Storm sewers, laterals and storm service connections must be constructed in accordance with the Ontario Provincial Standard Specifications / City of Ottawa Standards Specifications / Ministry of Environment and Climate Change Requirements. Specifically storm sewers must conform to OPSS.MUNI 410.

3.2. Concrete storm sewer material to conform to OPSS.MUNI 1820. Concrete storm sewers to be installed as per OPSD 802.030 (Class B Bedding). Bedding and cover material to be OPSS Granular 'A'.

3.3. PVC storm sewer material to conform to OPSS.MUNI 1841. PVC storm sewers to be installed as per OPSD 802.010. Bedding and cover material to be OPSS Granular 'A'.

3.4. The allowable deflected pipe diameter when using flexible pipe is as follows:
- Pipes 100 to 750 mm: 7.5% of the base inside diameter of the pipe
- Greater than 750 mm: 5.0% of the base inside diameter of the pipe

3.5. Final backfill material for storm sewers must be approved native material or select subgrade material in conformance with OPSS.MUNI 212 .

3.6. Storm sewer pipes must be type PVC SDR–35, unless noted otherwise on the drawings.

3.7. Where the storm sewer is located less than 3 m center to center from a watermain the storm water pipes and joints must be equivalent to watermain standards, as per F–6–1 Procedures to govern separation of sewers and watermains – MECP.

3.8. All storm sewers to be C.C.T.V. inspected by the Contractor as per OPSS.MUNI 409. Report must be provided to the Engineer in two (2) copies and the C.C.T.V. inspection in DVD format only.

3.9. Storm manholes, manhole/catchbasins, catchbasins, ditch inlets and valve chambers to be installed as per OPSS 407.

3.10. Adjustment or rebuilding of manholes, manhole/catchbasins, catchbasins, ditch inlets and valve chambers to be completed as per OPSS 408.

3.11. Excavating, backfilling, and compacting for manholes, manhole/catchbasins, catchbasins, ditch inlets and valve chambers to be completed as per OPSS 402.

3.12. Storm manhole, manhole/catchbasin and catchbasin excavations to be backfilled with OPSS Granular 'B' compacted to 100% Standard Proctor Maximum Dry Density (SPMDD). Joints between sections must be wrapped in a non–woven geotextile.

3.13. Precast concrete storm manholes and manhole/catchbasins to be as per OPSD 701.010 and must be equipped with safety platform as per OPSD 404.020 when exceeding 5.0 m to the lowest invert. Additional knockouts needed for connection of subdrains to manhole/catchbasins where required.

3.14. HDPE manhole to be as per detail 304B.

3.15. Storm manhole frame and cover to be as per OPSD 401.010 Type 'A' closed cover.

3.16. Storm manhole/catchbasin frame and cover to be as per OPSD 401.010 Type 'B' open cover.

3.17. All catchbasins to be as per OPSD 705.010 complete with frame and grate as per OPSD 400.020.

3.18. All inline drains to be as per Details 315.

3.19. All catchbasin leads to be 200 mm diameter, PVC SDR–35 with a minimum slope of 2.0% unless otherwise noted. The Contractor may use long radius bends as per City of Ottawa Details S11 and S11.1.

3.20. All catchbasins must have sumps (600 mm deep).

3.21. A maintenance hole drop structure tee is to be used as per OPSD 1003.010 when the drop from the inlet invert to the outlet invert is greater than 600 mm and less than 1200 mm. A drop structure wye is to be used as per OPSD 1003.020 when the drop exceeds 1200 mm.

3.22. Storm service connections to rigid main sewer pipe to be as per City of Ottawa Detail S11. Connections to flexible main sewer pipe to be as per City of Ottawa Detail S11.1.

3.23. Subdrains stubs are recommended to be installed at 3 m distance of the catchbasin in all direction. Subdrains to be constructed as per Detail 305.

3.24. The Contractor must implement best management practices to provide for protection of receiving storm sewer or drainage during construction activities (i.e. catchbasin inserts (or approved equivalent), straw bale check dams, any other sediment control measures required around all disturbed areas). Dewatering must be sumped into sediment traps.

3.25. When a minimum cover of 1.5 meters is not reached, frost protection is required.

3.26. For building roof drain sizes and location refer to architectural and mechanical drawings.

3.27. A storm water tank is required and must be constructed using Stormtech MC–3500 Chambers (5 Chambers) by ADS or approved equivalent and per detail 353. The bottom of the tank will be sloped towards the outlet in order to facilitate sediment removal at self–cleansing velocities. The maintenance hole at the outlet of the tank will be equipped with a pump.

3.28. A pump will be required at the outlet to the storm tank in order to deliver a constant release rate and ensure the proposed private storm sewer system will not be overwhelmed in the event of surcharge in the municipal system (refer to mechanical drawings).

4. SANITARY SEWER

4.1. Sanitary sewers, laterals and service connections must be constructed in accordance with the Ontario Provincial Standard Specifications / City of Ottawa Standards Specifications / Ministry of Environment and Climate Change Requirements. Specifically sanitary sewers must conform to OPSS.MUNI 410.

4.2. PVC sanitary sewer pipe material to type PVC SDR–35, conforming to OPSS.MUNI 1841. PVC sanitary sewers to be installed as per OPSD 802.010 (Class B Bedding). Bedding and cover material to be OPSS Granular 'A'.

4.3. The allowable deflected pipe diameter when using flexible pipe is as follows:
- Pipes 100 to 750 mm: 7.5% of the base inside diameter of the pipe
- Greater than 750 mm: 5.0% of the base inside diameter of the pipe

4.4. Final backfill material for sanitary sewers must be approved native material or select subgrade material in conformance with OPSS.MUNI 212.

4.5. Where the sanitary sewer is located less than 3 m center to center from a watermain and where located next to the storm tank the sanitary pipes and joints must be equivalent to watermain standards, as per F–6–1 Procedures to govern separation of sewers and watermains – MECP.

4.6. All sanitary sewers to be C.C.T.V. inspected by the Contractor as per OPSS.MUNI 409. Report must be provided to the Engineer in two (2) copies and the C.C.T.V. inspection in DVD format only.

4.7. Sanitary manholes to be installed as per OPSS 407.

4.8. Adjustment or rebuilding of sanitary manholes to be completed as per OPSS 408.

4.9. Excavating, backfilling, and compacting for sanitary manholes to be completed as per OPSS.MUNI 402.

4.10. Sanitary manholes to be backfilled with OPSS Granular 'B' compacted to 100% Standard Proctor Maximum Dry Density (SPMDD). Joints between sections must be wrapped in a non–woven geotextile.

4.11. Sanitary manholes to be as per OPSD 701.010 and must be equipped with safety platform as per OPSD 404.020 when exceeding 5.0 m to the lowest invert.

4.12. Sanitary manhole frame and cover to be as per OPSD 401.010 Type 'A' closed cover.

4.13. A maintenance hole drop structure tee is to be used as per OPSD 1003.010 when the drop from the inlet invert to the outlet invert is greater than 600 mm and less than 1200 mm. A drop structure wye is to be used as per OPSD 1003.020 when the drop exceeds 1200 mm.

4.14. Sanitary service connections to rigid main sewer pipe to be as per City of Ottawa Detail S11. Connections to flexible main sewer pipe to be as per City of Ottawa Detail S11.1.

4.15. When a minimum cover of 1.8 meters is not reached, frost protection is required as per Details.

4.16. Benching is required inside the concrete bottom of sanitary manholes as per OPSD 701.021.

no.	date	revision
01	21/01/25	ISSUED FOR SITE PLAN CONTROL

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project title
CLIFTON TOWNS
316-332 CLIFTON ROAD
CLIFTON ROAD, OTTAWA, ONTARIO

drawing title
NOTES PLAN

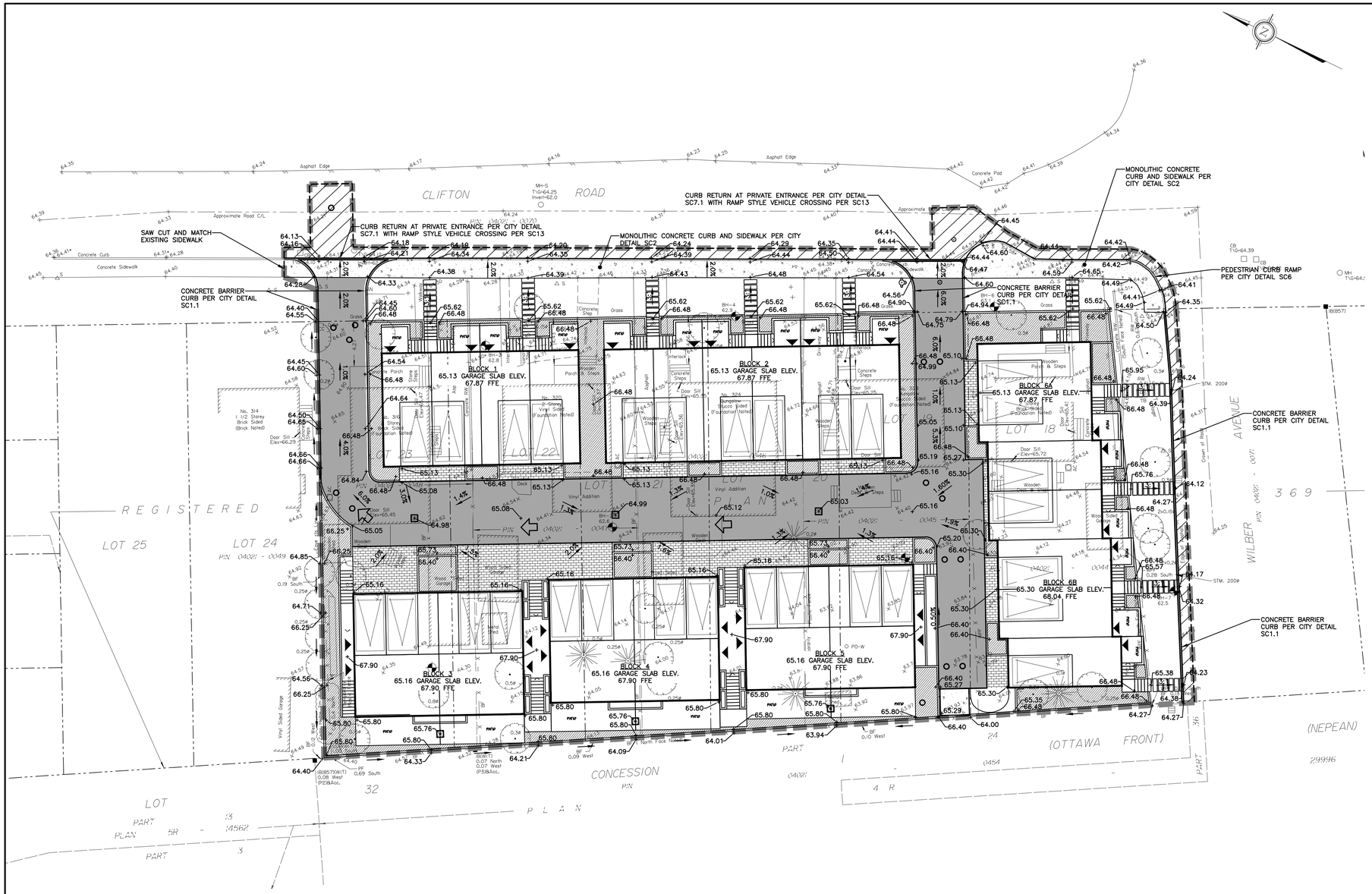
drawn	date	scale
SCP	JAN/21	1: 200

project no.
100008

drawing no.
C004B

revision no.

LICENSED PROFESSIONAL ENGINEER
T. G. KENNEDY
100173201
January 25, 2025
PROVINCE OF ONTARIO



EXISTING LEGEND PROPOSED

EXISTING	LEGEND	PROPOSED
FH	FIRE HYDRANT	
MH-ST	MAINTENANCE HOLE (STORM SEWER)	
MH-S	MAINTENANCE HOLE (SANITARY)	
MH	MAINTENANCE HOLE (UNIDENTIFIED)	
ST	UNDERGROUND STORM SEWER	
S	UNDERGROUND SANITARY SEWER	
W	UNDERGROUND WATER	
P	UNDERGROUND POWER	
GAS	UNDERGROUND GAS	
T	UNDERGROUND TELECOMMUNICATION	
B	BELL CABLE	
OHW	OVERHEAD WIRES	
CB	CATCH BASIN	
GM	GAS METER	
HM	HYDRO METER	
BF	BOARD FENCE	
WPF	WOOD PICKET FENCE	
UP	UTILITY POLE	
AN	ANCHOR	
AC	AIR CONDITIONER	
RW	RETAINING WALL	
Ø	DIAMETER	
+ 65.00	LOCATION OF ELEVATIONS	+ 99,000
+ 65.00*	TOP OF CONCRETE CURB / RW ELEVATION	
C/L	CENTRELINE	
	DECIDUOUS TREE	
	CONIFEROUS TREE	
PO-W	WOOD POLE	
S	SIGN	
TB	UNIDENTIFIED TERMINAL BOX	
	PROPERTY LINE	
	EASEMENT	
	WORK LIMIT	
BH-1 62.8	BOREHOLE LOCATION (APPROX.) BED ROCK ELEVATION	
	DRAINAGE DIRECTION	
	OVERLAND FLOW	
	SAW CUT	
	UNIT PAVERS PER CITY DETAIL SC9	
	ASPHALT ROADWAY REMOVALS AND REINSTATMENT WITH SURFACE COURSE KEY PER CITY DETAIL R10	
	RAISED PLANTER (REFER TO LANDSCAPING AND STRUCTURAL PLANS)	
	HEAVY DUTY ASPHALT PAVEMENT STRUCTURE PER DETAIL 202	

0 2 4 8 12 16 20

NOTE OF CAUTION

THE GEODETIC COORDINATES OF EVERY ITEM INCLUDED AS PART OF THIS DOCUMENT HAVE NO LEGAL VALUE. THE SITE LAYOUT MUST BE COMPLETED USING THE OFFICIAL BENCHMARKS OF AN ACCREDITED LAND SURVEYOR.

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.

no.	date	revision
01	21/01/25	ISSUED FOR SITE PLAN CONTROL

It is the responsibility of the appropriate contractor to check and verify all dimensions on site and report all errors and/or omissions to the architect.

All contractors must comply with all pertinent codes and by-laws.

Do not scale drawings.

This drawing may not be used for construction until signed.

CIMA+

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HOBIN ARCHITECTURE

project title
CLIFTON TOWNS
316-332 CLIFTON ROAD
CLIFTON ROAD, OTTAWA, ONTARIO

drawing title
GRADE CONTROL AND DRANAIGE

drawn	date	scale
SCP	JAN/21	1: 200

project
100062

drawing no.
C005

revision no.

LICENSED PROFESSIONAL ENGINEER
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January 25, 2021
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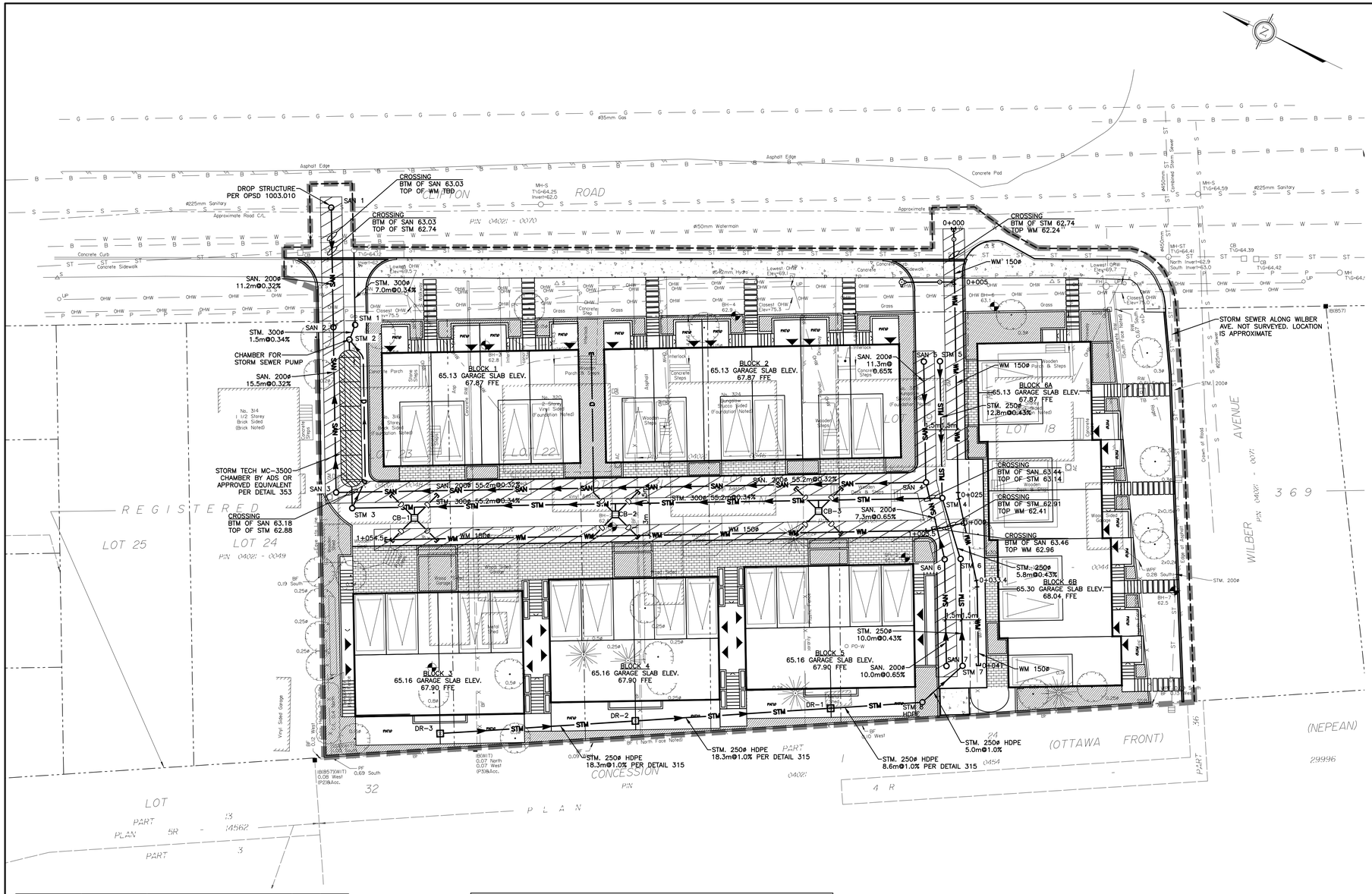

STRUCTURE NUMBER	TOP	INVERTS				MH diam (mm)	TYPE
		NORTH	EAST	SOUTH	WEST		
STM-EXIST	64.12	62.30	-	62.30	62.45	1200	MH
STM-1	64.45	-	62.47	-	62.50	1200	MH
STM-2	64.45	-	62.51	-	62.54	1200	MH
STM-3	64.98	-	62.59	62.65	-	1200	MH
STM-4	65.21	62.84	62.90	-	62.90	1200	MH
STM-5	65.05	-	-	-	62.95	1200	MH
STM-6	65.24	-	62.93	-	62.95	1200	MH
STM-7	65.27	-	63.00	-	-	1200	MH
STM-8	66.10	63.56	63.54	-	-	900	MH
SAN-1	64.22	61.85	-	61.85	63.03	1200	MH
SAN-2	64.42	-	63.06	-	63.08	1200	MH
SAN-3	64.86	-	63.12	63.18	-	1200	MH
SAN-4	65.18	63.35	63.41	-	63.43	1200	MH
SAN-5	65.01	-	-	-	63.49	1200	MH
SAN-6	65.21	-	63.48	-	63.51	1200	MH
SAN-7	65.26	-	63.57	-	-	1200	MH
CB-1	64.98	-	63.58	-	-	600	CB
CB-2	64.99	-	63.59	-	-	600	CB
CB-3	65.30	-	63.63	-	-	600	CB
DR-1	65.76	63.64	-	63.64	-	300	DR
DR-2	65.76	63.83	-	63.83	-	300	DR
DR-3	65.76	-	-	64.01	-	300	DR

MH → MANHOLE
MHCB → MANHOLE CATCH BASIN
CB → CATCH BASIN
OGS → OIL AND GRIT SEPERATOR
DR → INLINE DRAIN

WATERMAIN TABLE			
CHAINAGE	ITEM	FINISHED GRADE	TOP OF WATERMAIN
0+00	CONNECTION TO MAIN	64.44	TBD
0+002.5	STORM SEWER CROSSIN	64.44	62.24
0+005	FIRE HYDRANT LEAD TEE	64.63	63.25
0+005	FIRE HYDRANT	64.56	63.25
0+025	ELBOW	65.25	62.85
0+033.4	ELBOW	65.27	62.87
0+041	END CAP	65.28	62.88
1+000	TEE	65.26	62.86
1+001.5	STORM SEWER CROSSING	65.22	62.41
1+003	SANITARY SEWER CROSSING	65.20	62.96
1003.5	ELBOW	65.19	63.99
1+054.5	END CAP	65.05	63.85

EXISTING | LEGEND | PROPOSED

EXISTING	LEGEND	PROPOSED
FH	FIRE HYDRANT	
MH-ST	MAINTENANCE HOLE (STORM SEWER)	
MH-S	MAINTENANCE HOLE (SANITARY)	
MH	MAINTENANCE HOLE (UNIDENTIFIED)	
ST	UNDERGROUND STORM SEWER	STM
S	UNDERGROUND SANITARY SEWER	SAN
W	UNDERGROUND WATER	WM
	PERFORATED SUBDRAIN	D
P	UNDERGROUND POWER	
GAS	UNDERGROUND GAS	
T	UNDERGROUND TELECOMMUNICATION	
B	BELL CABLE	
OHW	OVERHEAD WIRES	
CB	CATCH BASIN	
GM	GAS METER	
HM	HYDRO METER	
BF	BOARD FENCE	
WPF	WOOD PICKET FENCE	
UP	UTILITY POLE	
AN	ANCHOR	
AC	AIR CONDITIONER	
RW	RETAINING WALL	
ø	DIAMETER	
+65.00 / +65.05*	LOCATION OF ELEVATIONS	
	TOP OF CONCRETE CURB / RW ELEVATION	
C/L	CENTRELINE	
	DECIDUOUS TREE	
	CONIFEROUS TREE	
PO-W	WOOD POLE	
S	SIGN	
TB	UNIDENTIFIED TERMINAL BOX	
	PROPERTY LINE	
	EASEMENT	
	WORK LIMIT	
	SEWER / WATERMAIN INSULATION	

0 2 4 8 12 16 20

NOTE OF CAUTION

THE GEODETIC COORDINATES OF EVERY ITEM INCLUDED AS PART OF THIS DOCUMENT HAVE NO LEGAL VALUE. THE SITE LAYOUT MUST BE COMPLETED USING THE OFFICIAL BENCHMARKS OF AN ACCREDITED LAND SURVEYOR.

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.

no.	date	revision
01	21/01/25	ISSUED FOR SITE PLAN CONTROL

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HOBIN ARCHITECTURE

project title:
CLIFTON TOWNS
316-332 CLIFTON ROAD
CLIFTON ROAD, OTTAWA, ONTARIO

drawing title
SITE SERVICING

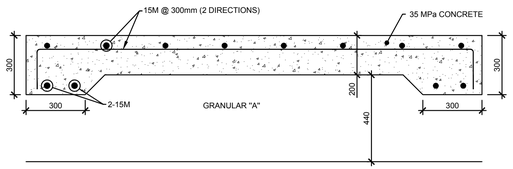
drawn	date	scale
SCP	JAN/21	1: 200

project no.
100082

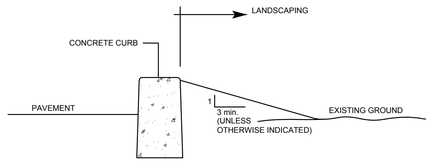
drawing no.
C006

revision no.

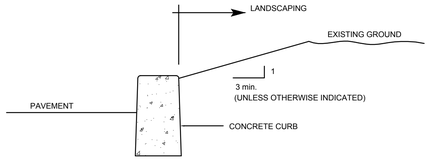
LICENSED PROFESSIONAL ENGINEER
T. G. KENNEDY
100173201
January 25, 2021
PROVINCE OF ONTARIO



115 GARBAGE ENCLOSURE-CONCRETE SLAB

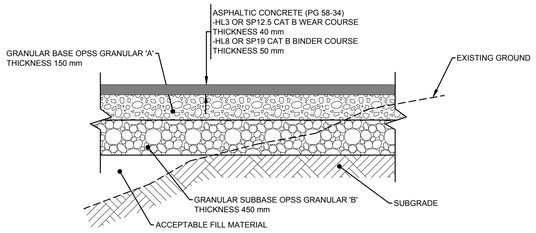


SIDE VIEW - LOWER EXISTING GROUND

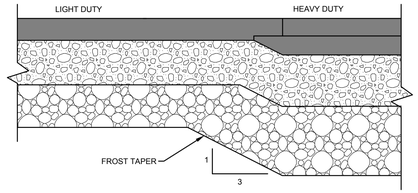


SIDE VIEW - UPER EXISTING GROUND

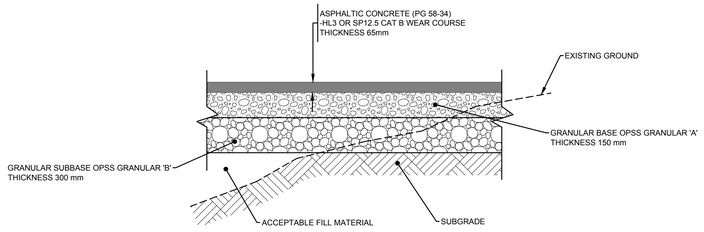
120 LANDSCAPING ADJACENT TO CONCRETE CURB (TYPICAL)



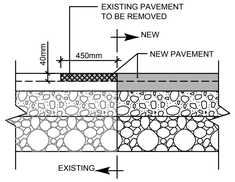
202 TYPICAL SECTION - GRANULAR FOUNDATION AND ASPHALT PAVEMENT (HEAVY DUTY)



205 TYPICAL SECTION - TRANSITION BETWEEN DIFFERING PAVEMENT STRUCTURES

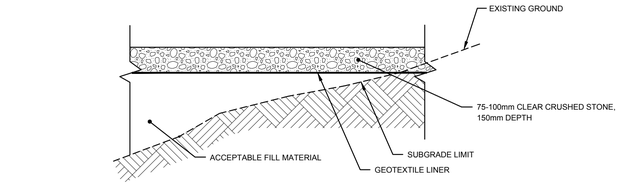


201 TYPICAL SECTION - GRANULAR FOUNDATION AND ASPHALT PAVEMENT (LIGHT DUTY)

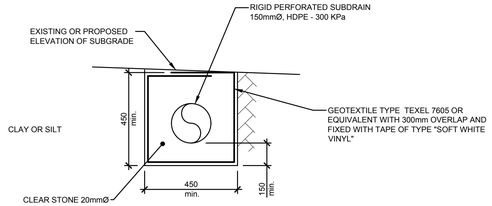


HEAVY-DUTY

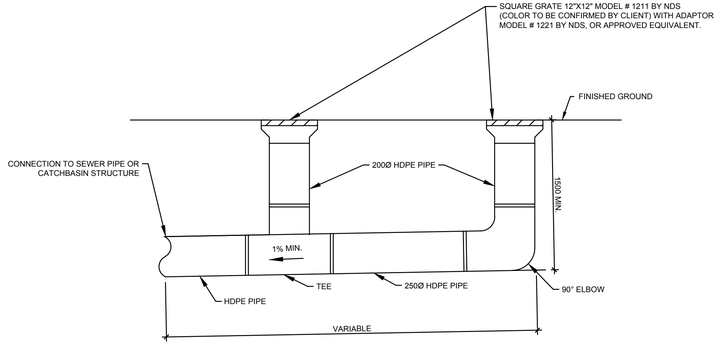
206 TYPICAL SECTION - TRANSITION BETWEEN EXISTING AND NEW PAVEMENT



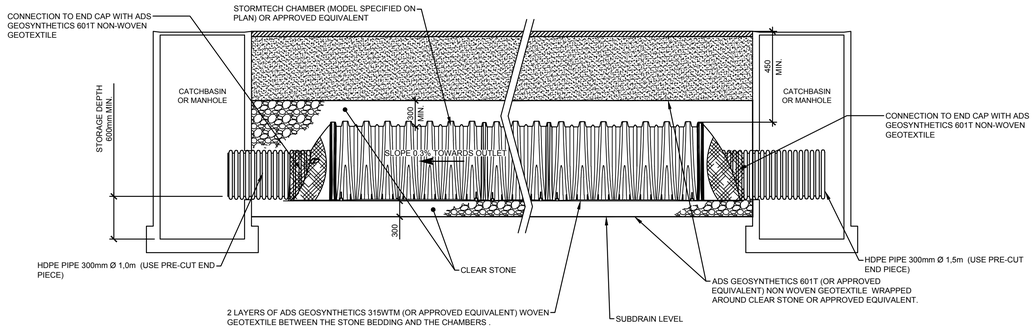
212 TYPICAL SECTION - TEMPORARY CONSTRUCTION ENTRANCE



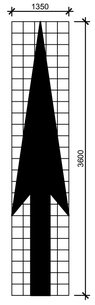
305 PERFORATED SUBDRAIN



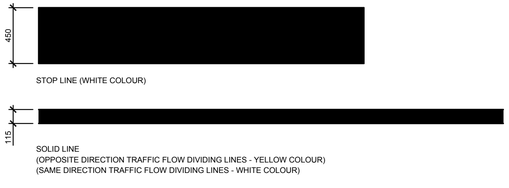
315 INLINE DRAIN DETAIL



353 STORMTECH CHAMBERS



405 TRAFFIC ARROWS AND SYMBOLS



407 PAVEMENT MARKINGS (PAINTED LINES)

01	21/01/25	ISSUED FOR SITE PLAN CONTROL

no. date revision

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HOBIN ARCHITECTURE

project title
CLIFTON TOWNS
316-332 CLIFTON ROAD
CLIFTON ROAD, OTTAWA, ONTARIO

drawing title
DETAILS PLAN

drawn	date	scale
SCP	JAN/21	1: 200

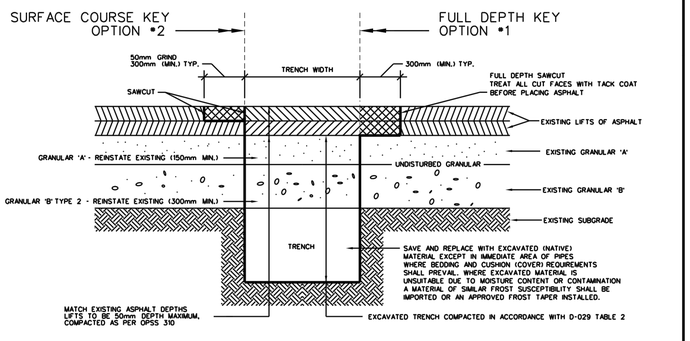
project no. 100092

drawing no. **C007**

revision no.

LICENSED PROFESSIONAL ENGINEER
T. G. KENNEDY
100173201
January 25, 2021
PROVINCE OF ONTARIO

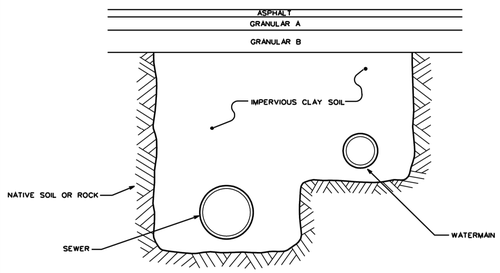
STANDARD TRENCH REINSTATMENT IN PAVED SURFACE



NOTES

1. ALL EXISTING ASPHALT TO BE SAW CUT.
2. UNLESS SPECIFIED ELSEWHERE, SURFACE COURSE ASPHALT SUPERPAVE 12.5mm LEVEL B (PG58-34) AND BASE COURSE ASPHALT SUPERPAVE 19.0mm LEVEL B (PG58-34) IS TO BE USED.
3. UNLESS SPECIFIED ELSEWHERE, WHERE EXISTING PAVEMENT STRUCTURE EXCEEDS 150mm IN DEPTH, ASPHALT REINSTATEMENT SHALL BE 150mm AND GRANULAR "A" FOR THE REMAINDER.
4. UNLESS SPECIFIED ELSEWHERE, WHERE AN UNDERLYING LAYER OF CONCRETE PAVEMENT EXISTS, REINSTATEMENT SHALL CONSIST OF 150mm OF SUPERPAVE 19.0mm LEVEL B (PG58-34) COMPACTED IN LIFTS.
5. UNLESS SPECIFIED ELSEWHERE, HOT MIX ASPHALT PLACEMENT AND CONSTRUCTION SHALL BE IN ACCORDANCE WITH F-3130.

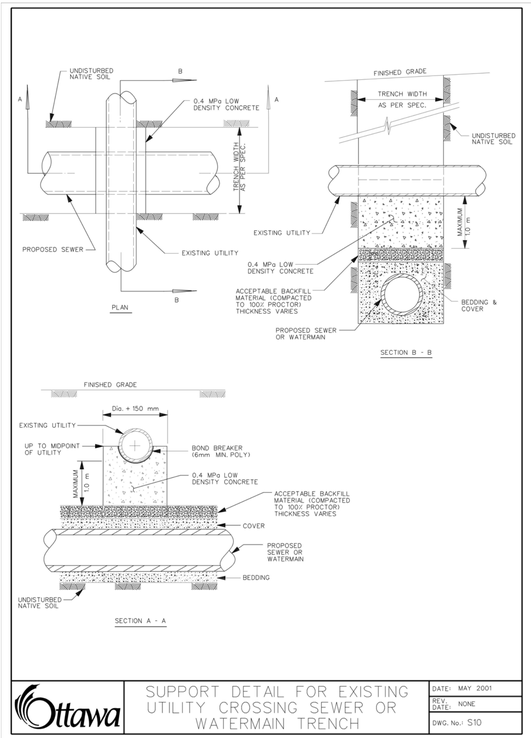
Ottawa | DATE: MAY 2001 | REV. DATE: MARCH 2013 | DWG. No.: R10



NOTES:

1. CLAY SEAL TO EXTEND FROM BOTTOM OF TRENCH EXCAVATION TO UNDERSIDE OF ROAD STRUCTURE.
2. CLAY SEAL TO EXTEND FULL TRENCH WIDTH TO EXISTING NATIVE SOILS WITH A MINIMUM THICKNESS OF 1.0m ALONG PIPES.
3. CLAY SEAL TO BE LOCATED SO THAT NO PIPE JOINTS ARE WITHIN THE CLAY SEAL MATERIAL.

Ottawa | CLAY SEAL FOR PIPE TRENCHES | DATE: MAY 2001 | REV. DATE: MARCH 2006 | DWG. No.: S8



Ottawa | SUPPORT DETAIL FOR EXISTING UTILITY CROSSING SEWER OR WATERMAIN TRENCH | DATE: MAY 2001 | REV. DATE: NONE | DWG. No.: S10

01	21/01/25	ISSUED FOR SITE PLAN CONTROL
no.	date	revision

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project title
CLIFTON TOWNS
316-332 CLIFTON ROAD
CLIFTON ROAD, OTTAWA, ONTARIO

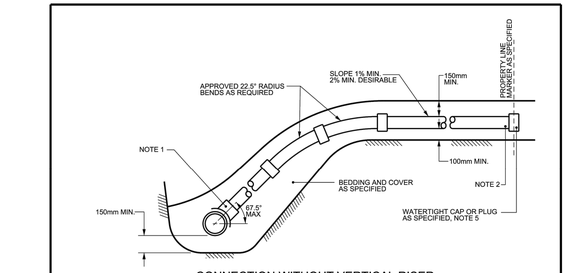
drawing title
DETAILS PLAN

drawn	date	scale
SCP	JAN/21	1:200

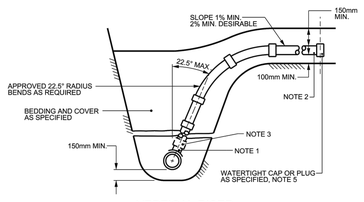
project no. 100002

drawing no. **C008**

revision no.



CONNECTION WITHOUT VERTICAL RISER



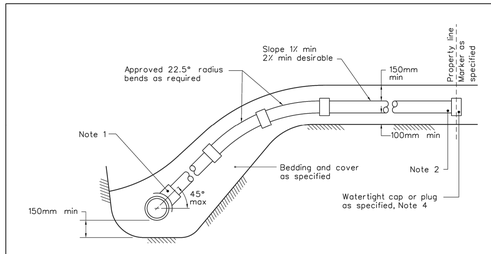
VERTICAL RISER

NOTES:

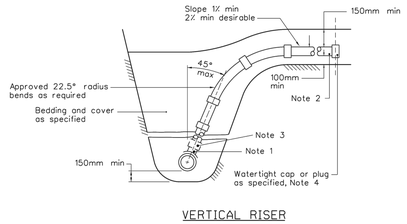
1. ALL DIAMETERES OF SERVICE CONNECTIONS THAT HAVE NOMINAL DIAMETERS NO GREATER THAN 50% OF THE NOMINAL DIAMETER OF THE RIGID SEWER PIPE SHALL BE MADE USING A BELL END INSERT AS PER S11.2 OR AN APPROVED RUBBER GASKETED INSERT, INSTALLED ABOVE THE SPRING LINE.
2. SANITARY SERVICES TO BE 135mm AND STORM SERVICES TO BE 100mm FOR NEW RESIDENCES UNLESS SPECIFIED OTHERWISE. SERVICE PIPE AND RADIUS BENDS TO BE APPROVED CSA B182.2, SDR28 PRODUCTS UNLESS SPECIFIED OTHERWISE.
3. APPROVED CONTROLLED SETTLEMENT JOINTS OPTIONAL FOR SERVICE CONNECTIONS TO MAIN SEWERS UP TO 5m DEEP. WHERE APPROVED, CONNECTIONS TO SEWERS OVER 5m DEEP REQUIRE APPROVED CONTROLLED SETTLEMENT JOINTS.
4. VERTICAL RISER SHALL BE SAME AS SERVICE PIPE UNLESS OTHERWISE SPECIFIED.
5. CAP OR PLUG AT THE PROPERTY LINE SHALL BE ADEQUATELY BRACED TO WITHSTAND TESTING PRESSURE.
6. FOR NEW CONSTRUCTION, INSERTS MUST BE INSTALLED ON THE MAIN PIPE BEFORE THAT PIPE IS LAID. FOR SERVICES/BRANCHES 375mm DIA. OR LESS, APPROVED "CORED TEES" MAY BE USED.
7. APPROVED CUT-IN TOOL MUST BE USED FOR FIELD MADE CONNECTIONS.
8. ALL DIMENSIONS ARE IN MILLIMETRES UNLESS OTHERWISE SHOWN.

N.T.S.

Ottawa | SEWER SERVICE CONNECTIONS FOR RIGID MAIN SEWER PIPE (MODIFIED OPSD-1006.010) | DATE: MARCH 2006 | REV. DATE: MARCH 2014 | DWG. No.: S11



CONNECTION WITHOUT VERTICAL RISER

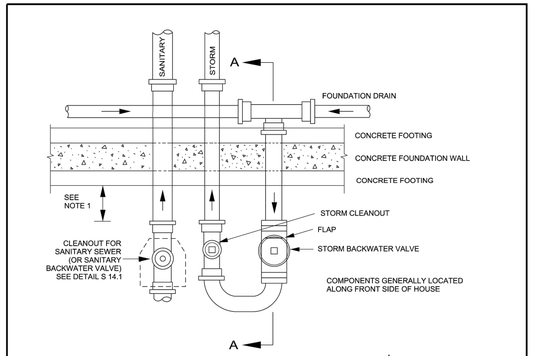


VERTICAL RISER

NOTES:

1. ALL DIAMETERS OF SERVICE CONNECTIONS TO FLEXIBLE MAIN SEWER SHALL BE MADE USING APPROVED TEE OR WYE FITTINGS.
2. SANITARY SERVICES TO BE 135mm AND STORM SERVICES TO BE 100mm FOR NEW RESIDENCES UNLESS SPECIFIED OTHERWISE. SERVICE PIPE AND RADIUS BENDS TO BE APPROVED CSA B182.2, SDR28 PRODUCTS UNLESS SPECIFIED OTHERWISE.
3. APPROVED CONTROLLED SETTLEMENT JOINTS OPTIONAL FOR SERVICE CONNECTIONS TO MAIN SEWERS UP TO 5m DEEP. WHERE APPROVED, CONNECTIONS TO SEWERS OVER 5m DEEP REQUIRE APPROVED CONTROLLED SETTLEMENT JOINTS.
4. CAP OR PLUG AT THE PROPERTY LINE SHALL BE ADEQUATELY BRACED TO WITHSTAND TESTING PRESSURE.
5. ALL DIMENSIONS ARE IN MILLIMETRES UNLESS OTHERWISE SHOWN.

Ottawa | SEWER SERVICE CONNECTIONS FOR FLEXIBLE MAIN SEWER PIPE (MODIFIED OPSD-1006.020) | DATE: MARCH 2006 | REV. DATE: MARCH 2013 | DWG. No.: S11.1



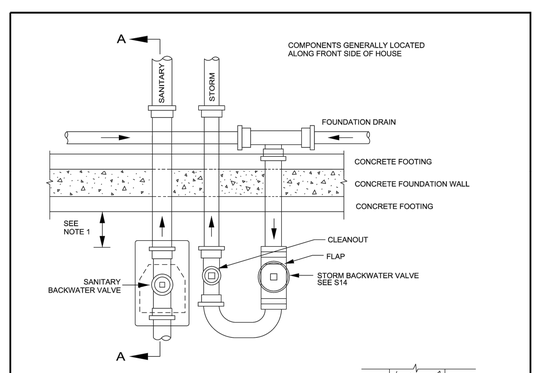
STORM BACKWATER VALVE

NOTES:

1. BACKWATER VALVE, CLEAN-OUTS AND ANY OTHER FITTINGS MUST BE INSTALLED A MINIMUM OF 300mm INSIDE OF THE BASEMENT FOOTING. THIS IS TO ENSURE THERE IS SUFFICIENT ROOM TO REPLACE THESE COMPONENTS IN THE FUTURE WITHOUT HAVING TO DAMAGE THE FOOTING/WALL DURING THE PROCESS
2. JOINTS BETWEEN THE SLEEVE AND THE BACKWATER VALVE AND THE FLOOR SHALL BE WATERTIGHT.

N.T.S.

Ottawa | FOUNDATION DRAIN BACKWATER VALVE INSTALLATION | DATE: DEC. 2002 | REV. DATE: MARCH 2011 | DWG. No.: S14



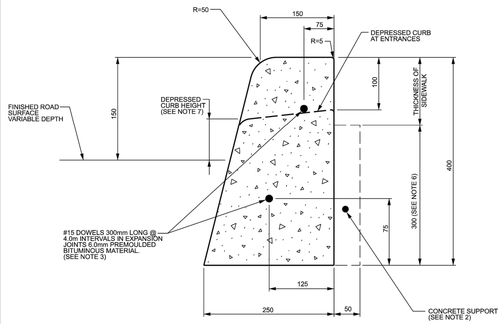
SANITARY BACKWATER VALVE

NOTES:

1. BACKWATER VALVE, CLEAN-OUTS AND ANY OTHER FITTINGS MUST BE INSTALLED A MINIMUM OF 300mm INSIDE OF THE BASEMENT FOOTING. THIS IS TO ENSURE THERE IS SUFFICIENT ROOM TO REPLACE THESE COMPONENTS IN THE FUTURE WITHOUT HAVING TO DAMAGE THE FOOTING/WALL DURING THE PROCESS
2. JOINTS BETWEEN THE ACCESS BOX SECTIONS AND THE ACCESS BOX AND THE BACKWATER VALVE AND THE FLOOR SLAB SHALL BE SEALED.

N.T.S.

Ottawa | SANITARY BACKWATER VALVE INSTALLATION TYPE 1 | DATE: MARCH 2010 | REV. DATE: MARCH 2011 | DWG. No.: S14.1



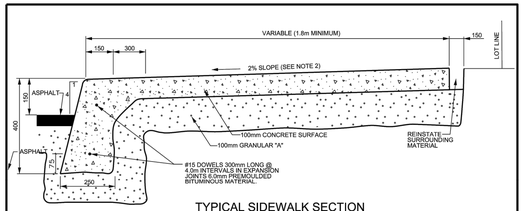
CONCRETE BARRIER CURB

NOTES:

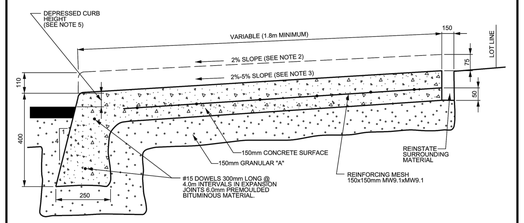
1. THE FULL CURB DEPTH SHALL BE CARRIED THROUGH THE DEPRESSED ACCESS CROSSING.
2. A CONCRETE SUPPORT IS REQUIRED WHEN BUILT ADJACENT TO THE SIDEWALK.
3. IF AN EXTRUSION CURBING MACHINE IS USED, THE EXPANSION BITUMINOUS MATERIAL AND THE #15 DOWELS ARE TO BE PLACED AT THE END OF THE EXTRUSION.
4. ALL DIMENSIONS ARE IN MILLIMETRES UNLESS SHOWN OTHERWISE.
5. DUMMY JOINTS SHALL BE 25mm DEEP, FRONT, BACK AND TOP OF SECTION AT 4m SPACING OR MATCH JOINTING WHERE SIDEWALK IS ADJACENT.
6. FOR DEPRESSED CURB AT ENTRANCES USE 250.
7. DEPRESSED CURB HEIGHT - FOR PEDESTRIAN CURB RAMPS 0 TO 6 mm AND FOR PRIVATE ENTRANCES 0 TO 25mm.

N.T.S.

Ottawa	CONCRETE BARRIER CURB FOR GRANULAR BASE PAVEMENT (MODIFIED OPSD-600.110)	DATE:	JANUARY 2003
		REV. DATE:	MARCH 2019
		DWG. No.:	SC1.1



TYPICAL SIDEWALK SECTION



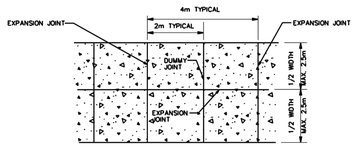
SECTION AT PRIVATE ENTRANCE AND PEDESTRIAN RAMPS

NOTES:

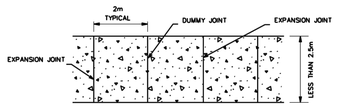
1. ALL DIMENSIONS ARE IN MILLIMETRES UNLESS SHOWN OTHERWISE.
2. THE MAXIMUM SLOPE IS NOT TO EXCEED 2%.
3. FOR CURB RAMPS, SLOPE OF 2% TO 5%, MAXIMUM 8%.
4. EXPANSION AND DUMMY JOINTS AS PER SC5.
5. DEPRESSED CURB HEIGHT - FOR PEDESTRIAN CURB RAMPS 0 TO 6 mm AND FOR PRIVATE ENTRANCES 0 TO 25mm.

N.T.S.

Ottawa	MONOLITHIC CONCRETE CURB AND SIDEWALK	DATE:	MAY 2001
		REV. DATE:	MARCH 2016
		DWG. No.:	SC2



PLAN: SIDEWALK 2,5m WIDE AND OVER



PLAN: SIDEWALK LESS THAN 2,5m WIDE

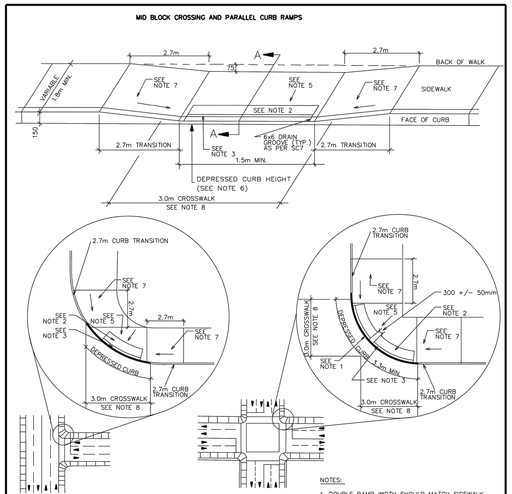
EXPANSION JOINT PROFILE

DUMMY JOINT PROFILE

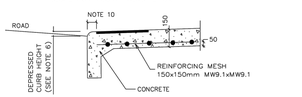
NOTES:

1. EXPANSION JOINTS IN SIDEWALK SHALL BE IN LINE WITH EXPANSION JOINTS IN CURB.
2. TRANSVERSE EXPANSION JOINTS ARE REQUIRED AT THE ENDS, THE MIDPOINT, AT INTERVALS OF 4m MAXIMUM, AND ALSO TO ISOLATE OBSTRUCTIONS FROM SIDEWALK, HYDRANTS, POLES, BUILDINGS, ETC.
3. EDGES AND JOINTS ARE TO BE FINISHED WITH A 75mm EDGING TOOL.
4. ALL CONCRETE SIDEWALKS ARE TO HAVE A BROOM FINISH UNLESS OTHERWISE SPECIFIED.
5. ALL DIMENSIONS ARE IN MILLIMETRES UNLESS SHOWN OTHERWISE.
6. INSTALL DUMMY TRANSVERSE JOINTS AS REQUIRED SO THERE IS A MAXIMUM SPACING OF 2m BETWEEN ALL JOINTS.
7. SMOOTH ALL TOOLED EDGES TO A MAXIMUM DEPTH OF 1 mm.

Ottawa	SIDEWALK CONSTRUCTION JOINTS	DATE:	MAY 2001
		REV. DATE:	MARCH 2016
		DWG. No.:	SC5



SECTION THROUGH RAMP TOTAL (SEE NOTE 5) SLOPE FOR 1.80m WALKS: 2-5%

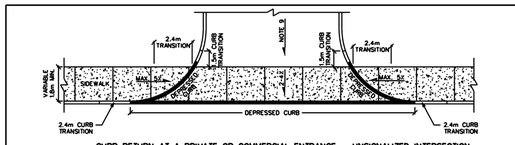


SECTION A - A

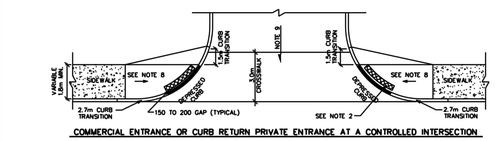
NOTES:

1. DOUBLE RAMP WIDTH SHOULD MATCH SIDEWALK WIDTH, BE A MINIMUM OF 3.3m WIDE AND PERMIT WHEELCHAIRS TO ENTER CROSSING AT RIGHT ANGLES.
2. APPROVED 610 X WIDTH OF CURB RAMP (1500 MIN) TACTILE WALKING SURFACE INDICATOR, RADIUS TO MATCH CURB
3. 150 TO 200 GAP
4. ALL DIMENSIONS ARE IN MILLIMETRES UNLESS SHOWN OTHERWISE.
5. FOR TRANSITION AREA, MAXIMUM SLOPE OF 2%
6. DEPRESSED CURB HEIGHT - FOR PEDESTRIAN CURB RAMPS 0 TO 6 mm AND FOR PRIVATE ENTRANCES 0 TO 25mm.
7. FOR CURB RAMPS SLOPE OF 2% TO 5%, MAXIMUM 8%
8. SUBJECT TO AVOIDANCE OF MEDIANS, CROSSWALK LINES TO CENTRED ON THE CURB RAMP.
9. FOR RETROFIT APPLICATIONS ONLY
10. FOR MONOLITHIC SIDEWALK, TWO SHALL BE 300 TO 350mm BACK FROM CURB FACE.

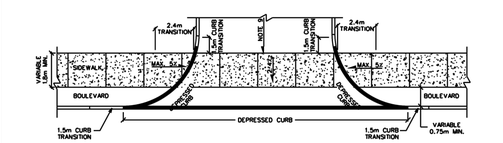
Ottawa	PEDESTRIAN CURB RAMP WITHOUT BOULEVARD	DATE:	MAY 2001
		REV. DATE:	MARCH 2016
		DWG. No.:	SC6



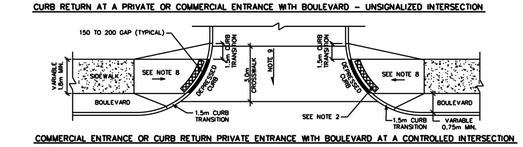
CURB RETURN AT A PRIVATE OR COMMERCIAL ENTRANCE - UNSIGNALIZED INTERSECTION



COMMERCIAL ENTRANCE OR CURB RETURN PRIVATE ENTRANCE AT A CONTROLLED INTERSECTION



CURB RETURN AT A PRIVATE OR COMMERCIAL ENTRANCE WITH BOULEVARD - UNSIGNALIZED INTERSECTION

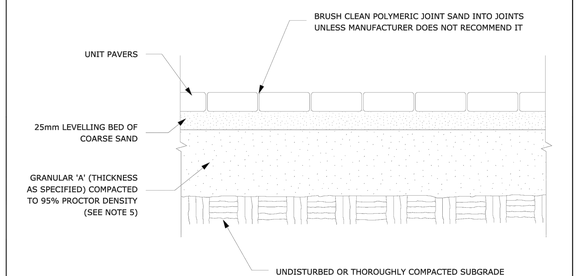


COMMERCIAL ENTRANCE OR CURB RETURN PRIVATE ENTRANCE WITH BOULEVARD AT A CONTROLLED INTERSECTION

NOTES:

1. ALL DIMENSIONS ARE IN MILLIMETRES UNLESS SHOWN OTHERWISE.
2. APPROVED 610 X WIDTH OF CURB RAMP (1500MIN) TACTILE WALKING SURFACE INDICATOR, RADIUS TO MATCH CURB. DRAIN GROOVES AS PER SC7.
3. CURB DETAILS SEE SC1.1, SC1.2 AND SC1.3.
4. SIDEWALK DETAILS SEE SC2 AND SC3.
5. CURB RAMPS AS PER SC6 AND SC7.
6. CONTROLLED MEANS SIGNALIZED OR A 4-WAY STOP INTERSECTION.
7. SUBJECT TO AVOIDANCE OF MEDIANS, CROSSWALK LINES TO BE CENTRED ON THE CURB RAMP.
8. FOR CURB RAMPS, SLOPE OF 2% TO 5%, MAXIMUM 8%
9. MAXIMUM SLOPE VARIES, SEE PRIVATE APPROACH BYLAW

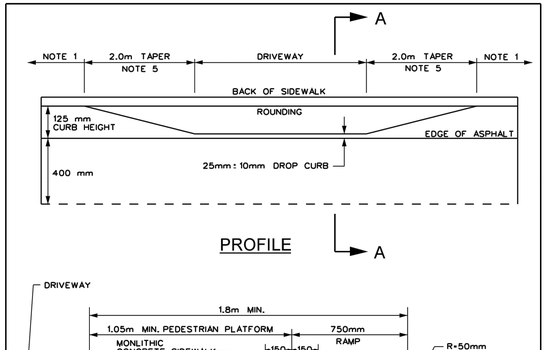
Ottawa	CURB RETURN ENTRANCES	DATE:	MARCH 2007
		REV. DATE:	MARCH 2017
		DWG. No.:	SC7.1



NOTES:

1. THE LEVELING COURSE (BEDDING SAND) SHALL BE PLACED LOOSE, IN A UNIFORM LAYER AT A MAXIMUM DEPTH OF 25mm TO ACHIEVE THE FINAL COMPACTED THICKNESS AND GRADE AS SPECIFIED
2. INSTALL SOLID EDGE RESTRAINT BETWEEN UNIT PAVERS AND ANY SOFT SURFACE (SOD, PLANTING BED, ETC.)
3. UNIT PAVERS ARE THEN PLACED ON TOP OF THE LEVELING COURSE AND ADDITIONAL SAND SWEPT BETWEEN THE UNIT PAVERS
4. THE UNIT PAVERS ARE THEN VIBRATED INTO PLACE WITH A VIBRA-PLATE AND WATER IS ADDED TO ASSIST IN THE SETTLING OF THE JOINT SAND
5. GRANULAR 'A' DEPTH TO BE 100mm FOR PEDESTRIAN AREAS AND 150mm FOR VEHICULAR ACCESSES. OR AS RECOMMENDED BY GEOTECHNICAL INVESTIGATION
6. USE OF THIS DETAIL REQUIRES THE PRIOR APPROVAL OF THE GENERAL MANAGER

Ottawa	TITLE: UNIT PAVING - ON GRANULAR BASE	DATE:	MAY 2001
		REV:	FEB 2016
		DWG No:	SC9



PROFILE

SECTION A - A

NOTES:

1. TYPICAL MONOLITHIC CONCRETE CURB AND SIDEWALK AS PER SC2, EXCEPT USE 125mm CURB HEIGHT.
2. DEPRESSIONS AT INTERSECTIONS AS PER SC6.
3. FOR WIDER SIDEWALKS, PEDESTRIAN PLATFORM TO BE INCREASED ACCORDINGLY.
4. NOT APPLICABLE FOR PROFILE GRADES OVER 5%.
5. TAPERS TO BE 1.5m WHEN ON-STREET PARKING IS PERMITTED.
6. WHERE VEHICLE ACCESS FOR ADJACENT PROPERTIES IS LESS THAN 3.0m APART, DO NOT APPLY TAPER: RAMP ACCESS IS CONTINUOUS - SEE SC13.1.

Ottawa	RAMP STYLE VEHICLE ACCESS CROSSING	DATE:	MARCH 2006
		REV. DATE:	MARCH 2015
		DWG. No.:	SC13

01	21/01/25	ISSUED FOR SITE PLAN CONTROL
no.	date	revision

It is the responsibility of the appropriate contractor to check and verify all dimensions on site and report all errors and/or omissions to the architect.

All contractors must comply with all pertinent codes and by-laws.

Do not scale drawings.

This drawing may not be used for construction until signed.

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HOBIN ARCHITECTURE

project title
CLIFTON TOWNS
316-332 CLIFTON ROAD
CLIFTON ROAD, OTTAWA, ONTARIO

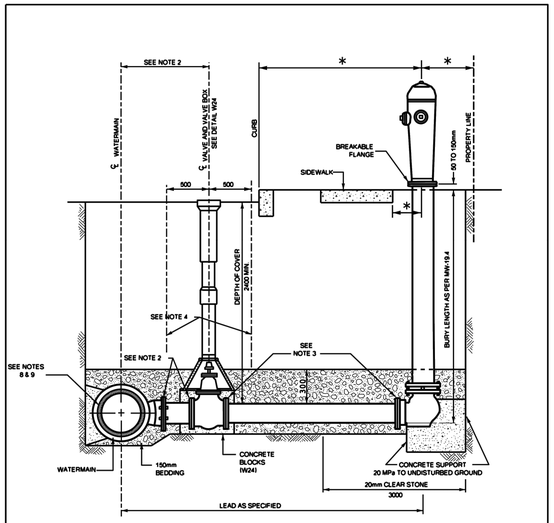
drawing title
DETAILS PLAN

drawn	date	scale
SCP	JAN/21	1:200

project no. 100002

drawing no. C009

revision no.

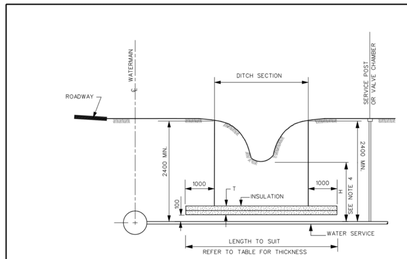


NOTES

FOR ALL WATERMAINS

1. SEE DETAIL W20 FOR HYDRANTS IN DITCH AREAS.
2. FOR WATERMAINS 400mm AND UNDER, LOCATE VALVE WITHIN 1.0m OF CENTRELINE. RETAINING/RESTRAINING DEVICES TO BE UTILIZED. FOR WATERMAINS 600mm AND OVER, BOLT VALVE WITH FLANGED END DIRECTLY TO FLANGED TEE.
3. RETAINING/RESTRAINING DEVICES TO BE UTILIZED.
4. HYDRANT BREAKABLE FLANGE ELEVATION TO BE ESTABLISHED PRIOR TO INSTALLATION. REFER TO MW-19.4 AND F-4414.
5. SEE SPF-2120 FOR BACKFILL REQUIREMENTS IN THIS AREA.
6. ✻ SEE F-4414 FOR HYDRANT LOCATION REQUIREMENTS.
7. ALL DIMENSIONS ARE IN MILLIMETRES UNLESS SHOWN OTHERWISE.
8. ON A TEMPORARY BASIS FOR 200mm WATERMAINS USE 300 X 300 X 150 AWWA C607 PVC BELL X BELL X SPIGOT TEES WITH 150mm SPIGOT AT ABOUT 44° ABOVE THE HORIZONTAL CONNECTED TO AN AWWA C607 PVC 45° BEND ONCE AVAILABLE USE 300 X 300 X 150 AWWA C607 TANGENTIAL TEES WITHOUT THE NEED FOR THE 45° BEND. HYDRANT BURY LENGTH AND DEPTH TO REMAIN AS PER NORMAL INSTALLATION FOR BOTH SCENARIOS.
9. FOR ALL 400mm WATERMAINS USE 400 X 400 X 150 TANGENTIAL TEES/SPECIAL FITTINGS WITH THE 150mm OUTLET ON TOP.

Ottawa	HYDRANT INSTALLATION	DATE: MAY 2001 REV. DATE: MARCH 2019 DWG. No.: W19



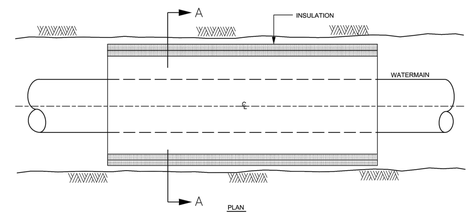
INSULATION REFERENCE TABLE	
EFFECTIVE EARTH COVER (H)	REQUIRED THICKNESS (T)
2400 - 1800 mm	50 mm
1800 - 1500 mm	75 mm
1500 - 1200 mm	100 mm

NOTES

FOR MAINS & SERVICES IN DITCHED AREAS WHERE DEPTH OF COVER OR SEPARATION IS LESS THAN 2400mm.

1. FOR INSULATION NEAR MAINTENANCE HOLES AND CULVERTS SEE DETAIL W23.
2. THE INSULATION SHALL BE MINIMUM 1200mm WIDE AND SHALL BE CENTERED OVER THE PIPE.
3. INSULATION SHALL EXTEND 1000mm BEYOND THE DEFINED DITCH SECTION.
4. DIMENSION "H" TO BE 1200mm MINIMUM.
5. DEPTH OF COVER LESS THAN 1200mm REQUIRES SPECIAL DESIGN.
6. ALL DIMENSIONS ARE IN MILLIMETRES UNLESS SHOWN OTHERWISE.

Ottawa	THERMAL INSULATION IN DITCHED AREAS	DATE: MAY 2001 REV. DATE: NONE DWG. No.: W21



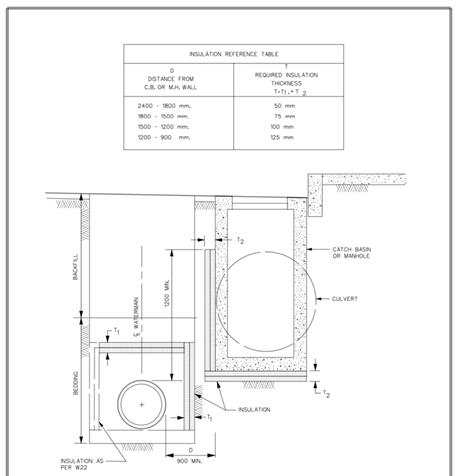
SECTION A - A

NOTES

FOR 150 - 400mm (NOMINAL DIAMETER) WATERMAINS, WHERE THE DEPTH OF COVER IS LESS THAN 2400mm

1. INCREMENTS OF THICKNESS SHALL BE ADJUSTABLE TO 25mm.
2. IN PROXIMITY OF MAINTENANCE HOLES, CULVERTS, CATCHBASINS, ETC., INSULATION SHALL BE PLACED PER DETAIL W23
3. DEPTH OF COVER LESS THAN 1200mm REQUIRES SPECIAL DESIGN
4. STAGGER JOINTS OF MULTIPLE SHEETS.
5. ALL DIMENSIONS ARE IN MILLIMETRES UNLESS SHOWN OTHERWISE.

Ottawa	THERMAL INSULATION FOR WATERMAINS IN SHALLOW TRENCHES	DATE: MAY 2001 REV. DATE: MARCH 2013 DWG. No.: W22

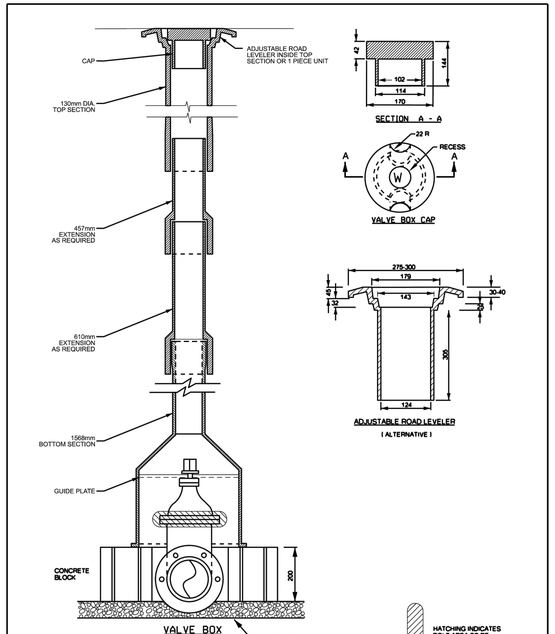


NOTES

FOR WATERMAINS & SERVICES IN PROXIMITY TO CATCHBASINS MAINTENANCE HOLES, CULVERTS ETC.

1. INSULATION SHALL EXTEND 1000 mm. EACH WAY FROM THE ENDS OF THE STRUCTURE, PARALLELED TO THE WATERMAIN.
2. STAGGER JOINTS OF MULTIPLE SHEETS.
3. ALL DIMENSIONS ARE IN MILLIMETRES UNLESS SHOWN OTHERWISE.
4. INSULATION CAN BE AT EITHER LOCATION OR BOTH.

Ottawa	THERMAL INSULATION OF WATER-MAINS AT OPEN STRUCTURES	DATE: MAY 2001 REV. DATE: FEB 2004 DWG. No.: W23



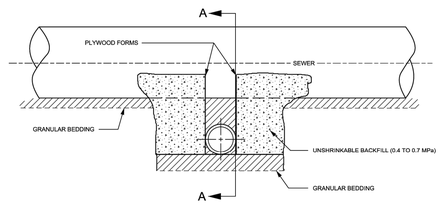
HATCHING INDICATES BOLT AREA TO BE PROTECTED WITH AN APPROVED PETROLATUM TAPE SYSTEM

NOTES:

FOR AUXILIARY, SERVICES AND ISOLATION VALVES.

1. ALL DIMENSIONS ARE IN MILLIMETRES UNLESS SHOWN OTHERWISE.
2. FOR 200 AND 250mm VALVES, ADD BEDDING BELOW THE CONCRETE BLOCKS AS REQUIRED TO RAISE BELL HIGH ENOUGH TO PREVENT CONTACT WITH THE VALVE BONNET

Ottawa	VALVE BOX ASSEMBLY	DATE: MAY 2001 REV. DATE: MARCH 2019 DWG. No.: W24



SECTION A - A

NOTES:

FOR WATERMAIN 100mm (NOMINAL) TO 400mm (NOMINAL)

1. BARREL TO INVERT SEPARATION (D) SHALL BE 500mm MINIMUM.
2. THRUST BLOCKS FOR MAINS LARGER THAN 400mm (NOMINAL) SHALL BE PER SPECIAL DESIGN.
3. FOR 300mm (NOMINAL) AND 400mm (NOMINAL) MAINS, BENDS SHALL BE MAX. 22° 30'.
4. CONCRETE FOR THRUST BLOCKS SHALL BE 20 MPa.
5. REFER TO W25.6 FOR RESTRAINED LENGTH REQUIREMENTS.
6. REFER TO W25.3 AND W25.4 FOR THRUST BLOCK REQUIREMENTS.
7. ALL DIMENSIONS ARE IN MILLIMETRES UNLESS SHOWN OTHERWISE.
8. DESIGNED TO MEET THE INTENT OF THE MOE WATERMAIN DESIGN CRITERIA JUNE 2012.

Ottawa	WATERMAIN CROSSING BELOW SEWER	DATE: MAY 2001 REV. DATE: MARCH 2013 DWG. No.: W25

no.	date	revision
01	21/01/25	ISSUED FOR SITE PLAN CONTROL

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project title
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316-332 CLIFTON ROAD
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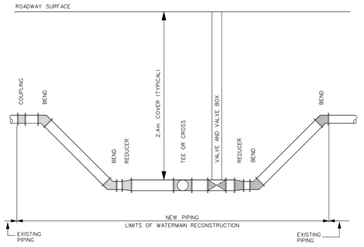
drawing title
DETAILS PLAN

drawn	date	scale
SCP	JAN/21	1:200

project no. 100028

drawing no. C010

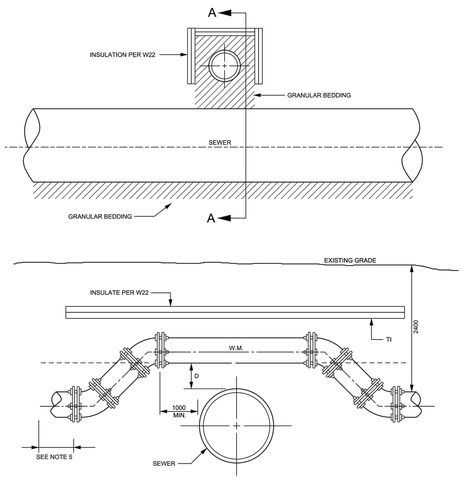
revision no.



NOTES:

1. FOR 300mm OR GREATER DIAMETER WATERMAIN, BENDS SHALL BE MAXIMUM 22½°
2. INSULATION PER W22 AT EXISTING WATERMAIN.
3. REFER TO W25.6 FOR RESTRAINED LENGTH REQUIREMENTS.
4. REFER TO W25.3 AND W25.4 FOR THRUST BLOCK REQUIREMENTS.
5. ALL DIMENSIONS ARE IN MILLIMETRES UNLESS SHOWN OTHERWISE.

Ottawa	TYPICAL CONNECTION DETAIL FROM NEW TO EXISTING WATERMAIN	DATE: MAY 2001 REV. DATE: NONE DWG. No.: W25.1



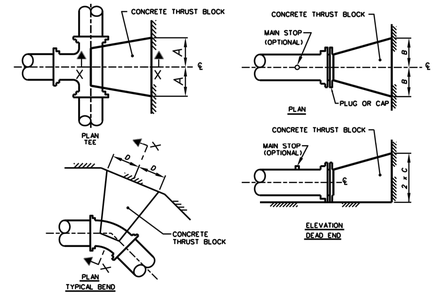
SECTION A - A

NOTES:

FOR WATERMAIN 100mm (NOMINAL) TO 400mm (NOMINAL)

1. BARREL TO BARREL SEPARATION (D) SHALL BE 250mm MINIMUM.
2. THRUST BLOCKS FOR MAINS LARGER THAN 400mm (NOMINAL) SHALL BE PER SPECIAL DESIGN.
3. FOR 300mm (NOMINAL) AND 400mm (NOMINAL) MAINS, BENDS SHALL BE MAX. 22° 30'.
4. CONCRETE FOR THRUST BLOCKS SHALL BE 20 MPa.
5. REFER TO W25.6 FOR RESTRAINED LENGTH REQUIREMENTS.
6. REFER TO W25.3 AND W25.4 FOR THRUST BLOCK REQUIREMENTS.
7. ALL DIMENSIONS ARE IN MILLIMETRES UNLESS SHOWN OTHERWISE.
8. DESIGNED TO MEET THE INTENT OF THE MOE WATERMAIN DESIGN CRITERIA JUNE 2012.

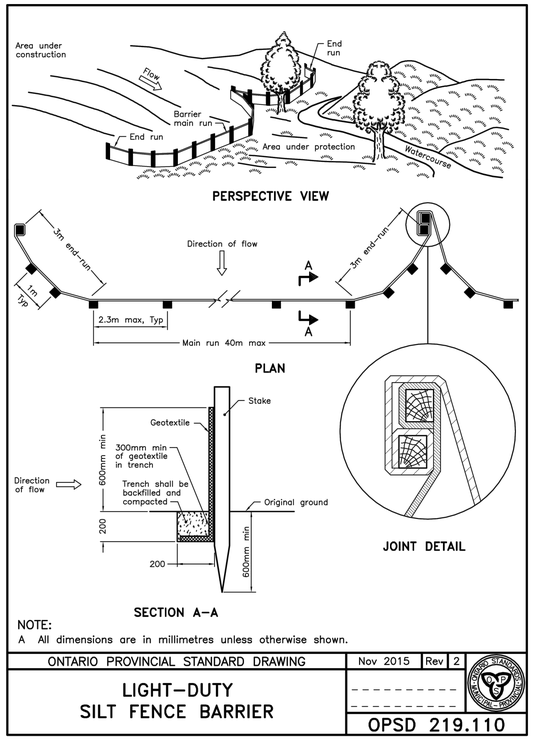
Ottawa	WATERMAIN CROSSING OVER SEWER	DATE: MAY 2001 REV. DATE: MARCH 2013 DWG. No.: W25.2



NOTES:

1. CONCRETE SHALL BE PLACED TO WITHIN 50mm OF FACE OF THE BELL.
2. BOND BREAKER TO BE USED BETWEEN CONCRETE AND FITTINGS.
3. ALL DIMENSIONS ARE IN MILLIMETERS UNLESS OTHERWISE SHOWN.
4. REFER TO W25.4 FOR ADDITIONAL REQUIREMENTS.
5. THRUST BLOCKS SHALL BE 20 MPa CONCRETE AND AS SHOWN ON ABOVE DRAWINGS UNLESS OTHERWISE DIRECTED BY THE CONTRACT ADMINISTRATOR. THE BLOCK SHALL BE CENTERED ON THE THRUST FORCE AND SHALL ALSO PARTIALLY CRADLE THE FITTING TO DISTRIBUTE THE FORCE. THE SIDES OF THE BLOCK SHALL BE 80mm FROM THE JOINT ON EITHER SIDE OF THE BEND OR TEE.
6. THE CONCRETE WHERE POSSIBLE SHALL BE PLACED AGAINST UNDISTURBED SOIL AT THE BOTTOM AND SIDE OF THE TRENCH. WHERE IT IS NOT POSSIBLE, THE FILL BETWEEN THE BEARING SURFACE AND THE UNDISTURBED SOIL MUST BE COMPACTED IN ACCORDANCE WITH D-029.
7. EXCEPT FOR THE ADDITION OF WATER, CONCRETE FOR THRUST BLOCKS SHALL COME PREMIXED FROM CONCRETE SUPPLIER, AS 'READY MIX' FROM A CONCRETE TRUCK. ON-SITE MIXING OF CEMENT, SAND AND AGGREGATE ETC. BY THE CONTRACTOR, FOR THE PURPOSE OF MAKING CONCRETE THRUST BLOCKS/ ANCHORS WILL NOT BE ACCEPTED.

Ottawa	CONCRETE THRUST BLOCKS FOR PVC AND DI PIPE 400mm AND UNDER	DATE: MAY 2001 REV. DATE: MARCH 2016 DWG. No.: W25.3



NOTE:
A All dimensions are in millimetres unless otherwise shown.

ONTARIO PROVINCIAL STANDARD DRAWING		Nov 2015	Rev 2
LIGHT-DUTY SILT FENCE BARRIER			OPSD 219.110

1. SOIL DESCRIPTION: VERY FINE SANDS, SANDY CLAYS, CLAYS.
SOILS WITH TYPICAL BEARING STRENGTH OF 100 TO 199 KPa

PIPE DIAMETER	DIMENSION NOTED ON W25.3			
	A	B	C	D
102	250	250	200	200
152	400	400	250	300
203	550	550	300	450
254	650	650	400	500
305	800	800	450	650
406	1050	1050	600	850

2. SOIL DESCRIPTION: SILTY SAND GRAVELS OR CLAYEY SAND GRAVEL MIXTURES. MODERATE AMOUNT OF FINES.
SOILS WITH TYPICAL BEARING STRENGTH OF 200 TO 299 KPa

PIPE DIAMETER	DIMENSION NOTED ON W25.3			
	A	B	C	D
102	200	200	150	150
152	250	250	200	200
203	350	350	250	270
254	450	450	300	350
305	500	500	350	400
406	750	750	400	600

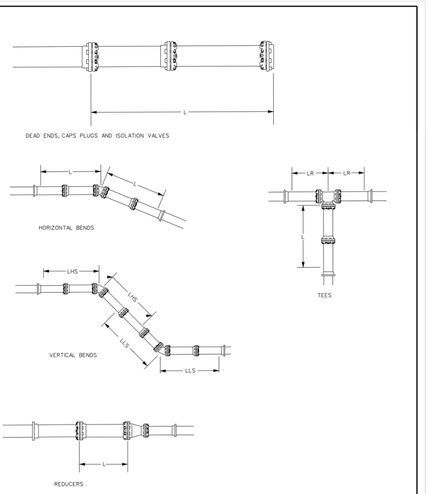
3. SOIL DESCRIPTION: SANDS, GRAVELS AND GRAVEL-SAND MIXTURES, LITTLE OR NO FINES.
SOILS WITH TYPICAL BEARING STRENGTH OF 300 KPa AND OVER

PIPE DIAMETER	DIMENSION NOTED ON W25.3			
	A	B	C	D
102	150	150	150	150
152	200	200	200	200
203	300	300	200	230
254	400	400	250	270
305	450	450	300	300
406	650	650	350	450

NOTES:

1. THE ABOVE THRUST BLOCK DIMENSIONS MEET OR EXCEED THE WATERMAIN DESIGN CRITERIA FOR FUTURE ALTERATIONS AUTHORIZED UNDER A DRINKING WATER WORKS PERMIT.
2. THE ASSUMPTIONS MADE FOR THE ABOVE CALCULATIONS ARE AS FOLLOWS:
   a) MAXIMUM OPERATING PRESSURE OF 100 psi.
   b) MAXIMUM SURGE PRESSURE WITH A FLOW VELOCITY CHANGE OF 0.6 m/s OF 115 psi (115 psi FOR CLASS 52 DI AND FOR PVC MAX. SURGE IS 35 psi)
3. THE TABLES APPLY TO BOTH DUCTILE IRON AND PVC. WHERE ONE LENGTH EXCEEDED THE OTHER THE LONGER LENGTH WAS USED.
4. DIMENSIONS MAY BE ADJUSTED SO LONG AS THE BEARING SURFACE AREA OF THE THRUST BLOCK IS NOT REDUCED.
4. TO BE USED IN CONJUNCTION WITH W25.3.

Ottawa	THRUST BLOCK DIMENSION TABLES FOR PVC AND DI PIPE 400mm AND UNDER	DATE: MAY 2001 REV. DATE: MARCH 2011 DWG. No.: W25.4



NOTES:

1. ANY JOINT THAT FALLS WITHIN THE RECOMMENDED LENGTH (L) SHALL BE RESTRAINED. SEE DRAWING W25.6
2. TO REDUCE THE NUMBER OF RESTRAINERS REQUIRED THE USE OF FULL PIPE LENGTHS IS RECOMMENDED IN THESE AREAS.

Ottawa	RESTRAINING AND RETAINING RINGS FOR PVC AND DI PIPE 400mm AND UNDER	DATE: MAY 2001 REV. DATE: NONE DWG. No.: W25.5

TABLE OF RESTRAINED LENGTHS FOR DI AND PVC WATERMAIN PIPE IN STANDARD GRANULAR 'A' EMBEDMENT IN SOILS OF BEARING CAPACITY OF 100 KPa AND OVER

REDUCERS	LARGER DIAMETER SIDE (TO BE RESTRAINED)					
SMALLER DIAMETER (UNRESTRAINED)	100mm	150mm	200mm	250mm	300mm	400mm
100mm	N/A	3	6	8	10	14
150mm	N/A	N/A	4	6	9	13
200mm	N/A	N/A	N/A	3	6	11
250mm	N/A	N/A	N/A	N/A	4	9
300mm	N/A	N/A	N/A	N/A	N/A	7
400mm	N/A	N/A	N/A	N/A	N/A	N/A

	PIPE DIAMETER					
	100mm	150mm	200mm	250mm	300mm	400mm
DEAD ENDS, CAPS, PLUGS, VALVES						
BEFORE CAPS AND EITHER SIDE OF VALVES - L	5	6	9	10	12	16
VERTICAL BENDS						
LENGTH HIGH SIDE - LHS	3	4	5	6	7	9
LENGTH LOW SIDE - LLS	1.5	2	2.5	3	3.5	4.5
TEES						
LENGTH ALONG THE BRANCH - L	1	1	1	1	1	1
LENGTH ALONG THE RUN - Lr	3	3	3	3	3	3
HORIZONTAL BENDS						
11.25, 22.5, AND 45 DEGREE BENDS	1	1.5	1.5	2	2	2.5

NOTES:

1. THE ABOVE RESTRAINED LENGTHS MEET OR EXCEED THE WATERMAIN DESIGN CRITERIA FOR FUTURE ALTERATIONS AUTHORIZED UNDER A DRINKING WATER WORKS PERMIT.
2. THE ASSUMPTIONS MADE FOR THE ABOVE CALCULATIONS ARE AS FOLLOWS:
   a) MAXIMUM OPERATING PRESSURE OF 100 psi.
   b) MAXIMUM SURGE PRESSURE WITH A FLOW VELOCITY CHANGE OF 0.6 m/s OF 115 psi (115 psi FOR CLASS 52 DI AND FOR PVC MAX. SURGE IS 35 psi)
3. FOR SOFTWARE CALCULATIONS A TEST PRESSURE OF 150 psi AND A SAFETY FACTOR OF 1.5 WAS USED WHICH RESULTS IN 225 psi MAXIMUM PRESSURE.
4. TYPE 5 TRENCH BEDDING.
5. DEPTH TO BURY 2.4 METRES EXCEPT FOR VERTICAL BENDS WHERE THE HIGH SIDE IS AT 1.8 METRES.
6. EMBEDMENT MATERIAL GRANULAR 'A' WITH CHARACTERISTICS OF ASTM D2487 GP.
7. GP SOILS ARE DESCRIBED AS POORLY GRADED GRAVEL AND SAND-GRAVEL MIXES WITH LITTLE OR NO FINES.
8. (Lr) MUST BE OF SOLID PIPE WITHOUT JOINTS, FITTINGS, ETC.
9. THE TABLES APPLY TO BOTH DUCTILE IRON AND PVC. WHERE ONE LENGTH EXCEEDED THE OTHER THE LONGER LENGTH WAS USED.
10. RESTRAINED LENGTHS ARE IN METRES.

Ottawa	TABLES OF RESTRAINED LENGTHS FOR PVC AND DI PIPE 400mm AND UNDER	DATE: MAY 2001 REV. DATE: MARCH 2011 DWG. No.: W25.6

01	21/01/25	ISSUED FOR SITE PLAN CONTROL
no.	date	revision

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HOBIN ARCHITECTURE

project title
CLIFTON TOWNS
316-332 CLIFTON ROAD
CLIFTON ROAD, OTTAWA, ONTARIO

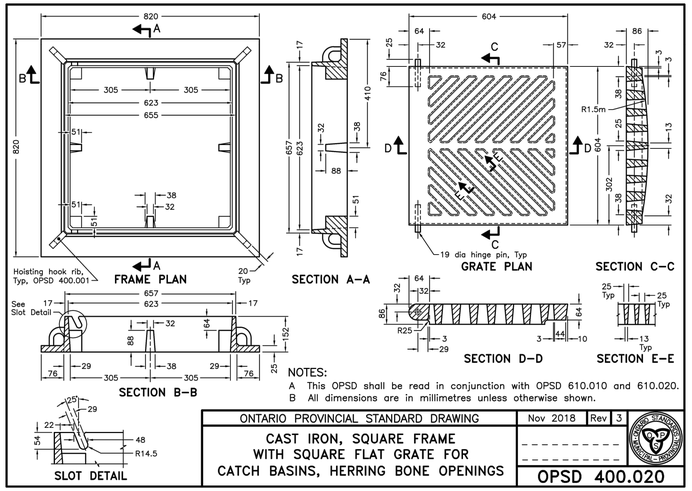
drawing title
DETAILS PLAN

drawn	date	scale
SCP	JAN/21	1:200

project no. 100062

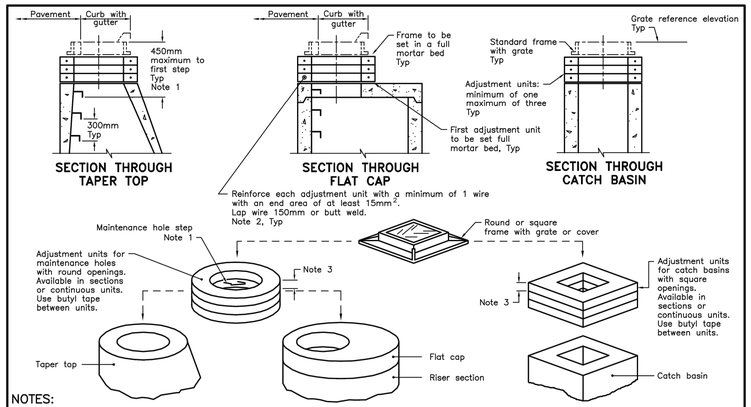
drawing no. **C011**

revision no.



NOTES:
A This OPSD shall be read in conjunction with OPSD 610.010 and 610.020.
B All dimensions are in millimetres unless otherwise shown.

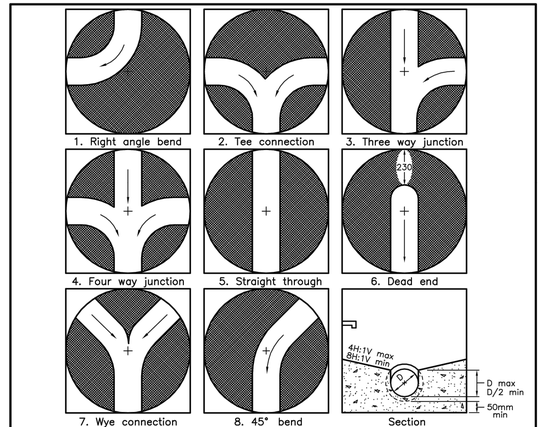
ONTARIO PROVINCIAL STANDARD DRAWING	Nov 2018	Rev 3
CAST IRON, SQUARE FRAME WITH SQUARE FLAT GRATE FOR CATCH BASINS, HERRING BONE OPENINGS		OPSD 400.020



NOTES:
1 If first step is in an adjustment unit, the adjustment unit shall be of the type manufactured with a step in place.
2 Centre reinforcing in adjustment unit ±10mm.
3 Round and square adjustment units are available in sizes of 50, 75, 100, 150, and 300mm.

A Adjustment units shall not extend beyond the outside edge of the structure.
B All dimensions are in millimetres unless otherwise shown.

ONTARIO PROVINCIAL STANDARD DRAWING	Nov 2014	Rev 3
PRECAST CONCRETE ADJUSTMENT UNITS FOR MAINTENANCE HOLES, CATCH BASINS, AND VALVE CHAMBERS		OPSD 704.010

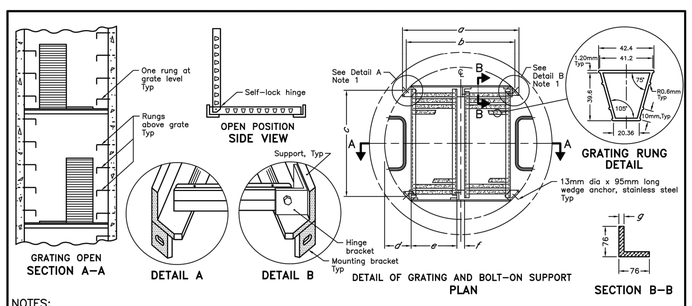


MAXIMUM SIZE HOLE IN THE WALL IN PRECAST RISER SECTIONS

Maintenance Hole Diameter	No. 1–4	No. 5 and 6	No. 8	No.7	
				Inlet Hole	Outlet Hole
1200	700	860	780	700	860
1500	860	1220	960	860	1170
1800	1220	1485	1220	1220	1485
2400	1485	2020	1760	1485	2020
3000	1930	2450	2300	1930	2450
3600	2470	3085	2730	2470	3085

NOTES:
1 Slopes shall be maintained from the outlet hole opening for top of benching.
A Concrete for benching shall be 30MPa.
B When benching is hand–finished, it shall be given wood float finish, channel shall be given steel trowel finish.
C Benching slope and height shall be as specified.
D When specified, maintenance holes that are 1200mm in diameter with a uniform channel for 200 or 250mm pipe may be prebenched at the manufacturer with standardized benching slope and channel orientation.
E All dimensions are nominal.
F All dimensions are in millimetres unless otherwise shown.

ONTARIO PROVINCIAL STANDARD DRAWING	Nov 2014	Rev 4
MAINTENANCE HOLE BENCHING AND PIPE OPENING ALTERNATIVES		OPSD 701.021



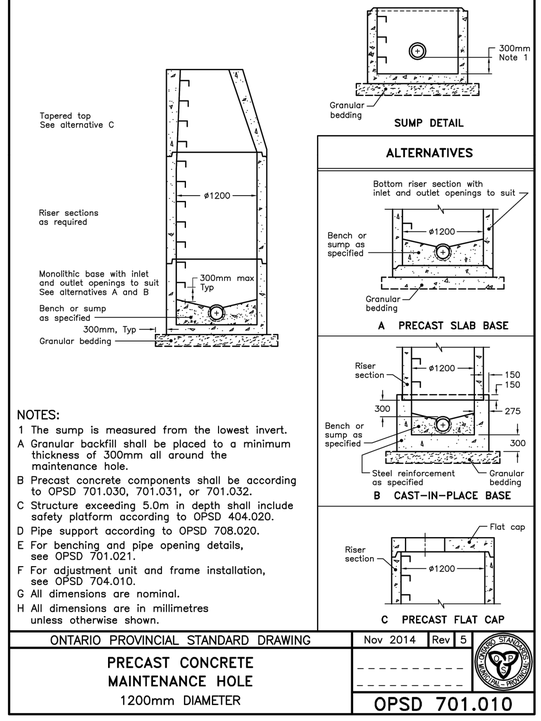
NOTES:
A Covers shall be Type A or Type B, as specified.
B All dimensions are in millimetres unless otherwise shown.

ONTARIO PROVINCIAL STANDARD DRAWING	Nov 2018	Rev 4
CAST IRON, SQUARE FRAME WITH CIRCULAR CLOSED OR OPEN COVER FOR MAINTENANCE HOLES		OPSD 401.010

NOTES:
1 All hinge brackets and mounting brackets shall be welded all around to support angle.
A All aluminum in contact with concrete shall be thoroughly coated with asphalt paint.
B Maintenance hole depth between 5.0m and 10.0m, grate shall be placed at midpoint. Maintenance hole depth between 10.0m and 15.0m, grates shall be placed at third–points.
C All fasteners shall be 304 stainless steel.
D All welding shall be according to CSA W47.2 and W59.2.
E All aluminum components shall be 6000 series structural aluminum.
F All dimensions are in millimetres unless otherwise shown.

MH Diameter	No of Grates	a	b	c	d	e	f	g
1200	2	900	850	850	225	352	65	10
1500	2	1128	1078	1078	311	419	65	12
1800	3	1344	1293	1293	308	360	65	12
2400	4	1774	1724	1724	401	360	65	12

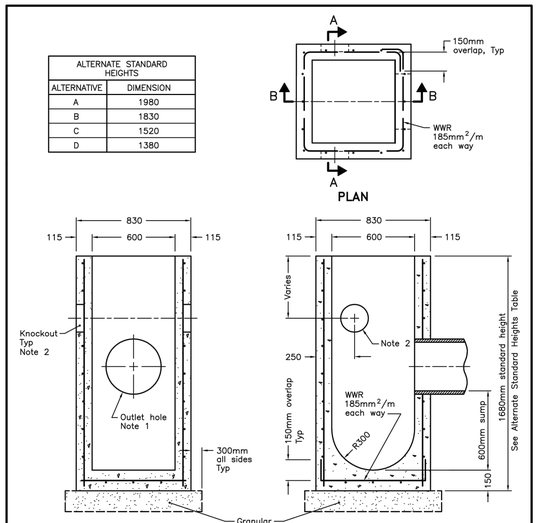
ONTARIO PROVINCIAL STANDARD DRAWING	Nov 2018	Rev 4
ALUMINUM SAFETY PLATFORM FOR CIRCULAR MAINTENANCE HOLES		OPSD 404.020



NOTES:
1 The sump is measured from the lowest invert.
A Granular backfill shall be placed to a minimum thickness of 300mm all around the maintenance hole.
B Precast concrete components shall be according to OPSD 701.030, 701.031, or 701.032.
C Structure exceeding 5.0m in depth shall include safety platform according to OPSD 404.020.
D Pipe support according to OPSD 708.020.
E For benching and pipe opening details, see OPSD 701.021.
F For adjustment unit and frame installation, see OPSD 704.010.
G All dimensions are nominal.
H All dimensions are in millimetres unless otherwise shown.

ONTARIO PROVINCIAL STANDARD DRAWING	Nov 2014	Rev 5
PRECAST CONCRETE MAINTENANCE HOLE 1200mm DIAMETER		OPSD 701.010

ALTERNATE STANDARD HEIGHTS	
ALTERNATIVE	DIMENSION
A	1980
B	1830
C	1520
D	1380



NOTES:
1 Outlet hole size 525mm diameter maximum, location as required.
2 200mm diameter knockout to accommodate subdrain. Knockout shall be 60mm deep.
A Centre reinforcing in base slab and walls ±20mm.
B Granular backfill shall be placed to a minimum thickness of 300mm all around the catch basin.
C Frame, grate, and adjustment units shall be installed according to OPSD 704.010.
D Pipe support shall be according to OPSD 708.020.
E All dimensions are nominal.
F All dimensions are in millimetres unless otherwise shown.

ONTARIO PROVINCIAL STANDARD DRAWING	Nov 2019	Rev 4
PRECAST CONCRETE CATCH BASIN 600x600mm		OPSD 705.010

no.	date	revision
01	21/01/25	ISSUED FOR SITE PLAN CONTROL

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project title
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316-332 CLIFTON ROAD
CLIFTON ROAD, OTTAWA, ONTARIO

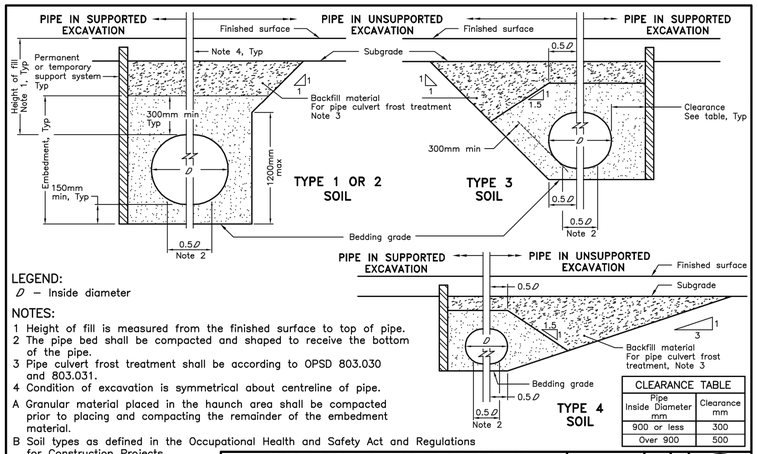
drawing title
DETAILS PLAN

drawn	date	scale
SCP	JAN/21	1:200

project 100062

drawing no. **C012**

revision no.

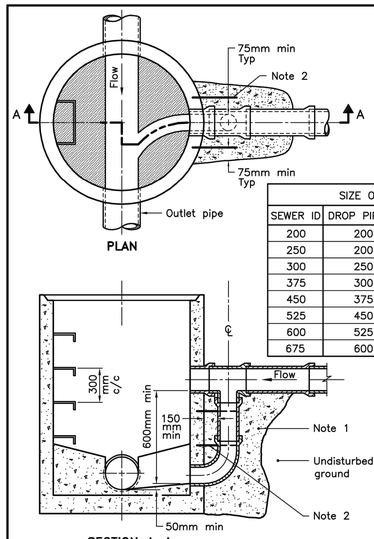


LEGEND:
Ø – Inside diameter

NOTES:
1 Height of fill is measured from the finished surface to top of pipe.
2 The pipe bed shall be compacted and shaped to receive the bottom of the pipe.
3 Pipe culvert frost treatment shall be according to OPSD 803.030 and 803.031.
4 Condition of excavation is symmetrical about centreline of pipe.
A Granular material placed in the haunch area shall be compacted prior to placing and compacting the remainder of the embedment material.
B Soil types as defined in the Occupational Health and Safety Act and Regulations for Construction Projects.
C All dimensions are in metres unless otherwise shown.

CLEARANCE TABLE	
Pipe Inside Diameter mm	Clearance mm
900 or less	300
Over 900	500

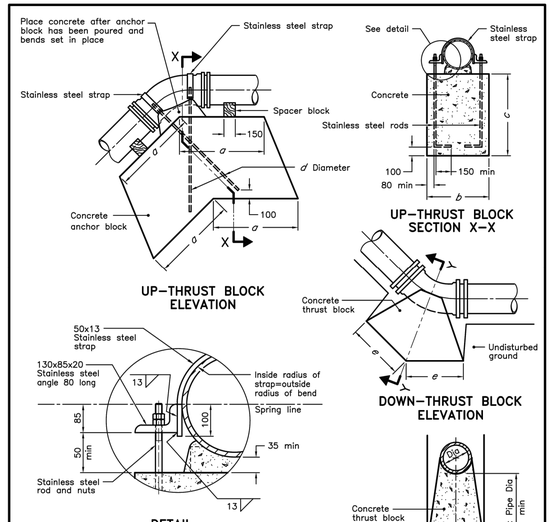
ONTARIO PROVINCIAL STANDARD DRAWING	Nov 2014	Rev 3
FLEXIBLE PIPE EMBEDMENT AND BACKFILL EARTH EXCAVATION		OPSD 802.010



SIZE OF DROP PIPE		
SEWER ID	DROP PIPE ID	APPLICATION
200	200	Storm and Sanitary
250	200	Storm and Sanitary
300	250	Storm and Sanitary
375	300	Storm and Sanitary
450	375	Storm
525	450	Storm
600	525	Storm
675	600	Storm

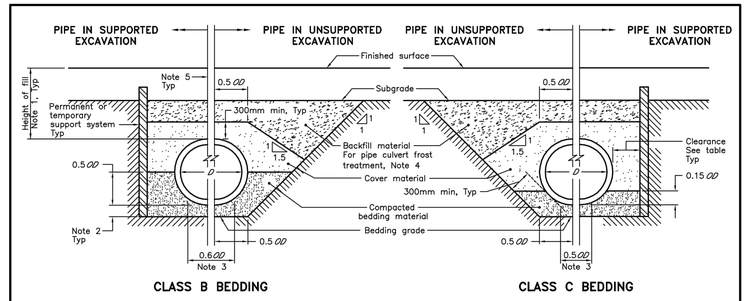
NOTES:
1 Concrete shall be placed to undisturbed ground and the outside face of the maintenance hole, but there shall be a minimum of 150mm of 15MPa concrete around the drop pipe.
2 Concrete shall be secured to the maintenance hole with 450mm long, 13mm diameter threaded rods and drilled expansion anchors down either side of the drop pipe at 300mm centres.
A All dimensions are in millimetres unless otherwise shown.

ONTARIO PROVINCIAL STANDARD DRAWING	Nov 2016	Rev 3
CAST–IN–PLACE MAINTENANCE HOLE DROP STRUCTURE TEE		OPSD 1003.010



NOTES:
A Concrete shall be placed to within 50mm of the face of the bell.
B Bond breaker shall be used between concrete and fittings.
C This blocking is for bends up to 45° for up–thrust and 90° for down–thrust.
D This OPSD shall be read in conjunction with OPSD 1103.021.
E All stainless steel to be type 316.
F Stainless steel rods and nuts to be designed based on actual watermain diameter and surge pressure.
G All dimensions are in millimetres unless otherwise shown.

ONTARIO PROVINCIAL STANDARD DRAWING	Nov 2018	Rev 4
CONCRETE THRUST BLOCKS FOR VERTICAL BENDS		OPSD 1103.020

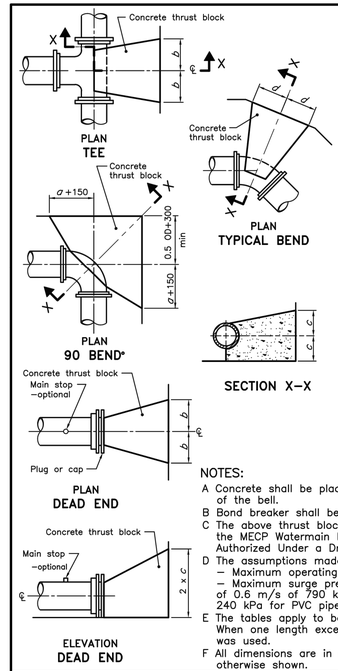


LEGEND:
Ø – Inside diameter
ØØ – Outside diameter

NOTES:
1 Height of fill is measured from the finished surface to top of pipe.
2 The minimum bedding depth below the pipe shall be 0.15Ø, in no case shall this dimension be less than 150mm or greater than 300mm.
3 The pipe bed shall be compacted and shaped to receive the bottom of the pipe.
4 Pipe culvert frost treatment shall be according to OPSD 803.030 and 803.031.
5 Condition of excavation is symmetrical about centreline of pipe.
A Soil types as defined in the Occupational Health and Safety Act and Regulations for Construction Projects.
B All dimensions are in metres unless otherwise shown.

CLEARANCE TABLE	
Pipe Inside Diameter mm	Clearance mm
900 or less	300
Over 900	500

ONTARIO PROVINCIAL STANDARD DRAWING	Nov 2015	Rev 3
RIGID PIPE BEDDING, COVER, AND BACKFILL TYPE 3 SOIL – EARTH EXCAVATION		OPSD 802.031



SOILS WITH TYPICAL BEARING STRENGTH OF 100 TO 199 kPa

PIPE DIA	Dimensions a	b	c	d
100	150	250	200	200
150	250	400	250	300
200	400	550	300	450
250	500	650	400	500
300	650	800	450	650
350	700	900	550	700
400	900	1050	600	850

SOILS WITH TYPICAL BEARING STRENGTH OF 200 TO 299 kPa

PIPE DIA	Dimensions a	b	c	d
100	150	200	150	150
150	250	250	200	200
200	400	350	250	300
250	500	450	300	350
300	650	500	350	400
350	700	600	400	500
400	900	750	400	600

SOILS WITH TYPICAL BEARING STRENGTH OF 300 kPa AND OVER

PIPE DIA	Dimensions a	b	c	d
100	150	150	150	150
150	250	200	200	200
200	400	300	200	250
250	500	400	250	300
300	650	450	300	300
350	700	550	350	350
400	900	650	350	450

NOTES:
A Concrete shall be placed to within 50mm of the face of the bell.
B Bond breaker shall be used between concrete and fittings.
C The above thrust block dimensions meet or exceed the MECP Watermain Design Criteria for Future Alterations Authorized Under a Drinking Water Works Permit.
D The assumptions made for the above calculations are:
– Maximum operating pressure of 690 kPa,
– Maximum surge pressure with a flow velocity change of 0.6 m/s of 790 kPa for Class 52 DI pipe and 240 kPa for PVC pipe.
E The tables apply to both ductile iron and PVC pipe. When one length exceeded the other, the longer length was used.
F All dimensions are in millimetres unless otherwise shown.

ONTARIO PROVINCIAL STANDARD DRAWING	Nov 2018	Rev 3
CONCRETE THRUST BLOCKS FOR TEES, PLUGS, AND HORIZONTAL BENDS		OPSD 1103.010

no.	date	revision
01	21/01/25	ISSUED FOR SITE PLAN CONTROL

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drawing title
DETAILS PLAN

drawn	date	scale
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C013

revision no.