# GRADING NOTES

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 their associated costs.

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

1.7. The location of existing underground municipal services, wells, 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, wells and/or existing utilities during construction, whether or not shown on the drawings must be repaired by the Contractor at his own expense.

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

1.9. All material must be compacted as per the requirements of the governing authority and be approved by the Consultant prior to delivery to the site.

1.10. Compaction must conform to the following requirements:
- Exposed subgrade & building pad preparation:
  95% Standard Proctor maximum dry density (SPMDD)
- Granular subbase foundations:
  100% Standard Proctor maximum dry density (SPMDD)
- Granular base foundations:
  100% Standard Proctor maximum dry density (SPMDD)
- Asphalt pavement:
  As per OPSS.MUNI 310
- Roller compacted concrete pavement
  98% Mix Design Density
- Subgrade fill (pavement areas - OPSS Select Subgrade Material):
  98% Standard Proctor Maximum Dry Density (SPMDD)
- Structural fill (building footprints, foundation slabs, OPSS Granular 'A' or Granular 'B' Type II Material):
  100% Standard Proctor Maximum Dry Density (SPMDD)

1.11. 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. As required under the "Ontario Water Resources Act (OWRA)", the Contractor must register all water taking activities on Ontario's 'Environmental Activity and Sector Registry (EASR)' if water taking exceeds 50,000 l/day, and obtain a "Permit to Take Water (PTTW)" if water taking exceeds 400,000 l/day. Furthermore, Contractor must provide all necessary measures required to ensure dewatering operations does not affect in any way the integrity of the existing surrounding buildings and must plan his work accordingly. Water Taking and Discharge Plan to be prepared by a Qualified Person as stipulated under O.Reg. 63/16.

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

1.12.1. Before discharging to storm sewers, watercourses or drainage areas, discharge water must be sampled and tested to ensure quality requirements in accordance with City of Ottawa Sewer Use By-Law No. 2003-514 and the MECP are adhered to. The Contractor is to perform all additional sampling and testing as required by City of Ottawa. All associated fees to be paid by the Contractor.

1.12.2. 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.

1.13. The Contractor must maintain benchmarks and landmark references as is. Otherwise, these references will be repositioned by a certified land surveyor at the Contractor's expense.

1.14. The Contractor is the only person in charge of safety on the building site. The Contractor is responsible for providing adequate protection of the workers, other personnel and the general public, protection of materials, as well as maintaining in good condition the completed works and works to be completed. The Contractor must supply, install and maintain an appropriate safety fence along the work perimeter until the work is complete.
The Contractor must provide at any time:
- A sufficient number of barriers, posters, guards and others to ensure safety;
- Necessary conveniences for the completion of the work such as heating, lighting, ventilation, etc.

1.15. Temporary excavations in the overburden must be completed as per the requirements of the Occupational Health and Safety Act (OHSA), O. Reg. 213/91, Part III - Excavations.
The side slopes of excavations in the soil and fill overburden materials should either be cut back at acceptable slopes or should be retained by shoring systems from the start of the excavation until the structure is backfilled.
The excavation side slopes above the groundwater level extending to a maximum depth of 3 m should be cut back at 1H:1V or flatter. The flatter slope is required for excavation below groundwater level. The subsurface soil is considered to be Type 3 soil according to the Occupational Health and Safety Act and Regulations for Construction Projects. Slopes in excess of 3 m in height should be periodically inspected by the geotechnical consultant in order to detect if the slopes are exhibiting signs of distress.

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

1.16. 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.

1.17. Cleanliness on the site:
- The Contractor must clean roadways at their own cost as directed by the Owner's representative;

1.18.
- 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.

1.19. During the construction period the Contractor is responsible for installing and maintaining temporary traffic signage, including traffic signs, traffic markings and temporary traffic lights, and flaggers, as required by the Owner, the Consultant, the Municipality, the MTO, and other governing authorities.

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

1.21. Where trees and other vegetation are proposed within close proximity to hard surface (i.e. sidewalks or pavement structures) it is recommended that the vegetation be panted in CU-Structural Soils or approved equivalent. Under the areas of hard surfaces, the CU soil should be compacted to 100% SPMDD using suitable compaction equipment. The CU-structural soil must extend at least 1.0 m below grade and extend to a 3.0 m radius around the trees/vegetation.

1.22. 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.
- 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.
- 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).
- The contractor must not do any in-water work between march 15 to july anf oct 1 to may 31.

1.23. 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.

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

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

2.9. Surfaces and works located outside of the construction work limit must be reinstated as they were before beginning of work.
The existing Well will be abandoned in accordance with O.Reg 903.

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. All granular fill must be placed in maximum 200 mm thick loose lifts and compacted using suitable methods as per the requirements.

3.4. All soft, wet or disturbed areas revealed under surface compaction must be removed to a minimum depth of 500 mm and replaced with compacted suitable subgrade fill (i.e. OPSS Granular 'B' Type II material) and an approved non-woven geotextile per OPSS 1860 as directed by the Geotechnical Engineer. Transition around sub-excavations where backfill and native material are not of similar nature, shall be sloped at 5 horizontal to 1 vertical, within 1.8 m of finished surface

3.5. If contaminated material is encountered during the work, the Contractor must retain a Qualified Person (QP, as per the definition under O.Reg 153/04), characterize the soil and dispose off-site all materials from the contaminated area in accordance with the requirements of the MECP O.Reg 406/09 and OPSS.MUNI 180. Prior to the start of work the Contractor must provide the name and location of the intended Receiving Site (s) where the contaminated materials will be disposed to the Consultant. The Contractor must obtain from the Receiving Sites QP documents confirming that the site has the right to accept the contaminated material. During the work, the Contractor must provide the Consultant copies of all reports signed by the Receiving Site's QP.

3.6. The Contractor is responsible for providing a confirmation that the imported material used as subgrade fill is free of any contaminants, as per O.Reg 153/04, such as Petroleum Hydrocarbons (C10-C50), Polycyclic Aromatic Hydrocarbons (PAH), and metals like mercury, silver, arsenic, cadmium, cobalt, chromium, copper, tin, manganese, molybdenum, nickel, lead and zinc.

4. EXCAVATION AND BACKFILL

4.1. 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 and any excess soils with O.REG. 406/19.

4.3. Topsoil and deleterious fill, such as those containing organic materials, must be stripped from under any buildings, paved areas, pipe bedding, and other settlement sensitive structures.

4.4. Non-specified existing fill along with on-site excavated soil can be used as general landscaping fill where settlement of the ground surface is of minor concern. These materials should be spread in thin lifts and at least compacted by the tracks of the spreading equipment to minimize voids. If these materials are to be used to build up the subgrade level for areas to be paved, they should be compacted in thin lifts to a minimum density of 98% of their respective SPMDD.

4.5. Structural fill used for grading beneath the footings of buildings, building floor slabs, sidewalks, pavements and slab on gradesigns and light standards must consist of OPSS Granular 'A' or Granular 'B' Type II Material.

4.6. Construction operations could cause vibrations, and possibly, sources of nuisance to the community. Therefore, means to reduce the vibration levels as much as possible must be incorporated in the construction operations to maintain a cooperative environment with the residents.
The following construction equipments could cause vibrations: piling equipment, hoe ram, compactor, dozer, crane, truck traffic, etc. Vibrations, caused by blasting or construction operations could cause detrimental vibrations on the adjoining buildings and structures. Therefore, it is recommended that all vibrations be limited.
Two parameters determine the recommended vibration limit, the maximum peak particle velocity and the frequency. For low frequency vibrations, the maximum allowable peak particle velocity is less than that for high frequency vibrations. As a guideline, the peak particle velocity should be less than 15 mm/s between frequencies of 4 to 12 Hz, and 50 mm/s above a frequency of 40 Hz (interpolate between 12 and 40 Hz). These guidelines are for current construction standards.
Considering there are several sensitive buildings in close proximity to the subject site, consideration to lowering these guidelines is recommended. These guidelines are above perceptible human level and, in some cases, could be very disturbing to some people. A pre-construction survey is therefore required to minimize the risks of claims during or following the construction of the proposed building.

5. PAVEMENT STRUCTURES, CURBS, AND SIDEWALKS

5.1. Construction of granular foundation must conform to OPSS.MUNI 314.

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

5.3. Road cut reinstatement as per City of Ottawa Detail R10 with surface course key.

5.4. Where the proposed pavement structure abuts the existing pavement, the pavement structure should match the existing pavement layers.

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

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

5.5.2. 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 new hot mix asphalt course. Additionally, the temperature of the previous course must be 50 °C or less.

5.5.3. As per OPSS.310.07.06.02, the asphalt base course must not be placed unless the air temperature at the surface of the road is a minimum of 2°C and rising.

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

5.6. 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.

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

5.8. Concrete curbs must conform to OPSS 353.MUNI.

5.9. Concrete Toe-wall to be per OPSD 3120.100 Type I

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

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

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

5.12.1. 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.

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

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

5.13. Construction of Roller-Compacted Concrete Pavement as follows:
- Subgrade to be prepared as specified, and contoured for efficient drainageConstruction of Roller-Compacted Concrete Pavement as follows:
- Subgrade to be prepared as specified, and contoured for efficient drainage
- Concrete should be transported in dump trucks and placed using asphalt pavers.
- If placed in more than one lift, subsequent lift should be placed within 60 minutes of placing the bottom lift.
- Roller compacted concrete must be compacted using 10 ton dual drum vibratory roller within 15 to 45 minutes of placement with 4 to 6 passes, until lift deflects uniformly under roller, and no pumping, shiny or pasty surface is observed.
- The desired density is 98% of the mix design density.
- Transverse saw joints must be placed at 5 m on centres.
- Longitudinal saw joints must be placed at 0.2 m from the edges, and every 8m subsequently.

6. BUILDING PAD PREPARATION

6.1. The Building Pad shall be prepared prior to Dynamic Compaction (DC) to a level that will allow the finished grade to be 450mm below the Finish Floor Elevation (FFE). The Contractor shall assume that the total settlement after DC will be 300mm. Therefore, the Building Pad finished grade Prior DC shall be 91.850m.

6.2. The Building Pad footprint shall extend 2m past the perimeter of the proposed building footprint.

6.3. The final layer of the building pad (Working Pad) shall consist of compacted 600 mm of Granular B type II.

6.4. The Building Pad shall be excavated to 91.850m minus (-) 600mm = 91.250m in Cut areas and or raised to 91.250m plus (+) 600mm = 91.850m in Fill areas.

6.5. In addition to the 600mm Granular pad specified above, in fill areas, the Building Pad shall be raised using excavated surplus materials from the site as per the Excavated Materials Management specifications.

6.6. Fill must be place in lifts no greater than 200mm thick and compacted to the specified density using suitable compaction equipments.

6.7. The building pad preparation must include a 20 m wide temporary access road (up to the property line) around the building and, between the building and the access street. The contractor must be responsible for maintaining the temporary access roads in good and tidy condition at all times to the satisfaction of the Owner and / or Consultant.
All temporary access roads constructed within future pavement areas must consist of compacted granular materials as per pavement infrastructure details.
All temporary access roads constructed within future landscaped areas must consist of compacted OPSS Select Subgrade Material to allow heavy equipment traffic.

6.8. If the building is constructed during the winter period, the Contractor must be responsible for the snow removal and spreading of abrasive throughout the construction work by the building contractor and his sub-contractors.

7. MANAGEMENT OF EXCAVATED MATERIAL BS EXCESS SOIL

7.1. During site preparation excavation work, the Contractor shall ensure that the excavated existing fill material remains on-site as much as possible and is incorporated within its work. All surplus excavation of existing Fill material shall be managed as per the following priorities

7.1.1. Surplus excavated materials may come from excavation required to construct the proposed ponds and parking areas at specified finished elevations.

7.1.2. First, surplus excavated materials shall be incorporated within the Building Pad Preparation to raise the Pad to the required elevation and allowing for the Working Pad layer mentioned at 6.3

7.1.3. Second, surplus materials shall be used to backfill the Vegetated Retaining wall.

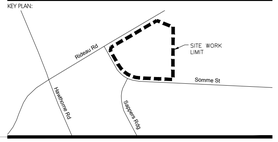
7.1.4. As it relates to the Contract, excess soils generated must be managed in accordance with the Ontario Regulation (O.Reg.) 406/19 (On-Site and Excess Soil Management) made under the Environmental Protection Act, R.S.O. 1990, c.E19 (EPA) and the adopted by reference "Rules for Soil Management and Excess Soil Quality Standards" (the "Soil Rules") as well as other regulatory amendments related to the management of excess soil. Excess soil is defined by O.Reg. 406/19 as non-hazardous soil, or soil mixed with rock, that has been excavated as part of a project and removed from the project area for the project.
Where excess soils are anticipated to be generated, a notice is to be filed to the Excess Soils Registry prior to the removal of excess soil from the project area unless exempt in accordance with the Regulation. The Contractor is to provide confirmation of registration to the Project Leader.
If a notice to the Registry is determined to be required, the Contractor is responsible for retaining a Qualified Person ($QP_{ESA}$, as per the definition under O.Reg. 153/04) to evaluate and provide all the necessary services required in accordance with O.Reg. 406/19. The services may include but not be limited to an Assessment of Past Uses, Sampling and Analysis Plan, Soil Characterization Report, and Excess Soil Destination Assessment Report as described as the Planning Documents within the Soil Rules. The Contractor may rely on existing Planning Documents and/or site characterization reports were provided within the Contract Documents. The contractor is responsible to finalize any preliminary Planning Document reports required, identify proposed soil destination site(s) for Project Leader approval, and satisfy all associated requirements specified by the selected destination site.
The contractor is responsible to notify the Project Leader in the event that actual construction activities and/or site conditions encountered are not consistent, or appear not to be consistent, with the information presented within the Planning Documents.
The contractor is responsible to develop and implement a tracking system in accordance with O.Reg. 406/19, to track each load of excess soil during its transportation and deposit at the approved destination site (i.e. reuse site, Class 1 soil management site, local waste transfer facility, landfilling site or dump, and any transportation to and from a Class 2 soil management site).

CLIENT LOGO:

FASTFRATE

CBRE

KEY PLAN:




TRUE NORTH: PROJECT NORTH:

RECORD OF REVISIONS:

| | | |
|---|---|---|
| 6 | | |
| 5 | | |
| 4 | ISSUED FOR SITE PLAN CONTROL REV. 3 | SEPTEMBER 29, 2022 |
| 3 | ISSUED FOR 66% REVIEW | JULY 15, 2022 |
| 2 | ISSUED FOR SITE PLAN CONTROL REV. 2 | JUNE 7, 2022 |
| 1 | ISSUED FOR SITE PLAN APPROVAL | DECEMBER 16, 2021 |

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CONSULTANT LOGO:

CIMA+

PROJECT TITLE:

FASTFRATE OTTAWA WAREHOUSE AND DISTRIBUTION FACILITY

**SCALE: NONE**

SOMME ST,
OTTAWA, ON

DRAWING TITLE:

# NOTES PLAN

| | | | |
|---|---|---|---|
| DRAWN BY: | D.CANN | DRAWING NUMBER: | |
| DATE: | | | C005A |
| REVIEWED BY: | J.SAUVE | | |
| APPROVED BY: | | REVISION NUMBER: | |
| PRINT DATE: | | | |
| ISSUED DATE: | NOVEMBER 26, 2021 | PROJECT #: | |
| CLIENT PROJECT #: | | | A001083 |

# SERVICES NOTES

8. GENERAL

8.1. 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.

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

8.3. 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.

8.4. 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 their own expense.

8.5. The Contractor is responsible for obtaining all permits required to complete all works and bear the cost.

8.6. The Contractor is responsible for the coordination of their activities with others on-site.

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

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

| MATERIALS | COMPACTION |
|---|---|
| Pipe bedding | 95% Standard Proctor Maximum Dry Density |
| Trench backfill and pipe cover | 95% Standard Proctor Maximum Dry Density |

8.9. 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.

8.10. The Contractor must determine the exact invert (geodetic elevation), diameter and construction material of the existing conduits at the proposed connections. The contractor must also carry out, if necessary, exploratory excavations in order to determine the exact location and inverts of existing duct banks. This information must immediately be provided to the Engineer prior to start undertaking any municipal services work and a 48 hour period must be allocated to the Engineer for design review.

8.11. 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.

8.12. It is recommended that a trench box be used at all times to protect personnel working in trenches with steep or vertical sides. Services are expected to be installed by "cut and cover" methods and excavations should not remain open for extended periods of time.

8.13. The pipe bedding for sewer and water pipes must consist of at least 150 mm of OPSS Granular A material The material must be placed in maximum 300 mm thick lifts and compacted to a minimum of 95% of its SPMDD. The bedding material should extend at least to the spring line of the pipe.
If the bedding foundation is unsuitable, it must be removed to a minimum depth of 150mm and replaced with appropriate material. The top 300mm below subgrade must be compacted to 98% Standard Proctor Density.

8.14. The cover material, which must consist of OPSS Granular A, will extend from the spring line of the pipe to at least 300 mm above the obvert of the pipe. The material must be placed in maximum 300 mm thick loose lifts and compacted to a minimum of 95% of its SPMDD.

8.15. Where hard surface areas are considered above the trench backfill, the trench backfill material within the frost zone (about 1.8 m below finished grade) must match the soils exposed at the trench walls to minimize differential frost heaving. The trench backfill must be placed in maximum 300 mm thick loose lifts and compacted to a minimum of 95% of the material's SPMDD..

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

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

9. WATERMAIN

9.1 Watermain, water service connections and associated appurtenances must be constructed in accordance with the Ontario Provincial Standard Specifications. Specifically watermains must conform to OPSS.MUNI 441.

9.2 Watermain must be constructed as per OPSS.MUNI 441 and specifically OPSD 802.010 for earth excavations and 802.013 for rock excavation. Bedding and cover material to be OPSS Granular 'A' compacted to 95% Standard Proctor Maximum Dry Density.

9.3 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.

9.4 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 W22 and W23.

9.5 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.

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

9.7. Restraints must be as per City of Ottawa Details W25.5 and W25.6.

9.8. Valves to be installed as per OPSS 441 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.

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

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

9.11. When a watermain pipe crosses a sewer pipe, installation must be as per City of Ottawa Detail W25.2.

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

9.13. 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.

9.14. Hydrostatic testing to be completed as per OPSS 441.07.24. Testing must be completed under the supervision of the Contract Administrator. The test section will be either a section between valves or the completed watermain. Test pressure to be 1035 kPa.

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

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

10. STORM SEWER

10.1. Storm sewers, laterals and storm service connections must be constructed in accordance with the Ontario Provincial Standard Specifications. Specifically storm sewers must conform to OPSS.MUNI 410.

10.2. PVC storm sewer material to conform to OPSS.MUNI 1841. PVC storm sewers to be installed as per OPSD 802.010 for earth excavation and 802.013 for rock excavation. Bedding and cover material to be OPSS Granular 'A'.

10.3. 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

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

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

10.6. Culverts, when double barreled, must be spaced laterally by 300mm between each barrel.

10.7. 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.

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

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

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

10.11. Storm manhole, manhole/catchbasin and catchbasin excavations to be backfilled with OPSS Granular 'B' compacted to 99% Standard Proctor Maximum Dry Density (SPMDD). Joints between sections must be wrapped in a non-woven geotextile.

10.12. 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.

10.13. Storm manhole frame and cover to be as per OPSD 401.010 Type "A" closed cover.

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

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

11. SANITARY SEWER

11.1. Sanitary sewers, laterals and service connections must be constructed in accordance with the Ontario Provincial Standard Specifications. Specifically sanitary sewers must conform to OPSS.MUNI 410.

11.2. 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 for earth excavation and 802.013 for rock excavation. Bedding and cover material to be OPSS Granular 'A'.

11.3. 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

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

11.5. 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.

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

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

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

11.9. Sanitary manholes to be backfilled with OPSS Granular 'B' compacted to 99% Standard Proctor Maximum Dry Density (SPMDD). Joints between sections must be wrapped in a non-woven geotextile.

11.10. 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.

11.11. Sanitary manhole frame and cover to be as per OPSD 401.010 Type "A" closed cover.

11.12. 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.

11.13. 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.

11.14. When a minimum cover of 1.8 meters is not reached, frost protection is required.

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

# SEDIMENT AND EROSION CONTROL

12. GENERAL NOTES

12.1. 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.

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

12.3. Specifically, sediment and erosion control measures to be constructed as per OPSS.MUNI 805.

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

12.5
- Prevent soil erosion which can result from stormwater runoff or wind erosion during construction;
- Prevent sediment deposits in the storm sewer and/or collecting streams and;
- Prevent air pollution from dust and particulate matter.

12.6. 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.

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

12.8. 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.

12.9. 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.

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

12.11. 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.

12.12. 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.

12.13. 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.

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

12.15. 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.

13. INSPECTIONS & MAINTENANCE

13.1 Using Schedule E1 - ESC Inspection and Photograph Checklist for reference, inspect all erosion and sedimentation control measures at least once each week and following any significant storm event (0.5 inches of precipitation or greater).

13.1.1. Using the checklist for reference, conduct an inspection of all erosion and sedimentation control measures implemented onsite each week and following any significant storm event (0.5 inches of precipitation or greater).

13.1.2. Inspections shall commence when the site is "disturbed" (i.e. when site work begins) and carry through until final landscaping is complete.

13.1.3. Provide a minimum of three (3) digital photographs of each ESC measure implemented on-site. Record the date each photograph was taken in the checklist. Photographs are required at the following occasions:

- Immediately following installation,
- In-situ and,
- At the end of construction or prior to removal, whichever comes first
- Coordinate photo requirements with the Engineer.
- Submit the completed checklist and accompanying photos to the Consultant after construction and prior to Contractor demobilization.

13.2. All erosion and sedimentation control measures must be maintained in good working order. If maintenance or repairs are identified they must be completed within 24 hours.

13.3. Schedule E2 - ESC Inspection Log must be completed for each inspection

13.3.1. Complete the log on a weekly basis. The log shall commence when the site is "disturbed" (i.e. when site work begins) and carry through until final landscaping is complete.

13.3.2. The inspection log shall be completed for each inspection and must document:

13.3.3. Deficiencies related to the measures listed in Schedule E1 - ESC Inspection and Photograph Checklist and,

13.3.3. Corrective actions taken to remedy the deficiencies

13.4. Inspection procedures specified below shall be followed in conjunction with details, drawings, and Contract requirements.

13.4.1. Stabilized Construction Entrance: Apply additional gravel as required, remove sediments and other materials from all areas to minimize clogging. Keep adjacent public roadway(s) free of sediment.

13.4.2. Material Stockpile: Inspect for effective prevention of runoff and erosion.

13.4.3. Temporary Seeding: If plants do not grow quickly or thick enough to prevent erosion, reseed the area as soon as possible. Keep seeded areas adequately moist. If irrigation is required, over-watering shall be avoided. Phosphorus-containing fertilizers are not to be used.

13.4.4. Permanent Seeding: Inspect for sufficient growth and water conditions. Replant areas if cover does not provide erosion control.

13.4.5. Silt Fence: Silt fence to be inspected for depth of sediment, tears, loose fabric attachment at the fence posts, channel erosion beneath fence, sagging or collapse and to ensure the fence posts are firmly in the ground. Built up sediment is to be removed from silt fence when it has reached one-third the height of the fence. Repair such that fence is in original installation condition.

13.4.6. Outlet Protection: Inspect outlet for erosion and pooling of water. Necessary repairs to be made as required to reduce exit velocity of runoff. If a riprap apron is used, inspect for riprap displacement and damage to filter fabric.

13.4.7. Inlet Protection: Inspect that measures are in original installed condition. Ensure measures are effectively trapping sediment. Remove accumulated sediment and debris when it reaches ½ the design depth of the trap. Repair protection measures as required.

13.4.8. Surface Roughening: Inspect for small eroded watercourses, as little as a few inches deep, or washout of roughened grading. Fill, regrade, and reseed immediately.

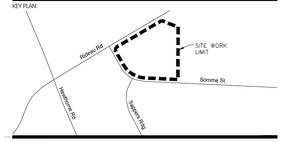
13.5. Erosion and sedimentation control measures shall be maintained and inspected until final landscaping is complete.

CLIENT LOGO:

FASTFRATE

CBRE

KEY PLAN:




TRUE NORTH: PROJECT NORTH:

| RECORD OF REVISIONS: | | |
|---|---|---|
| 6 | | |
| 5 | | |
| 4 | ISSUED FOR SITE PLAN CONTROL REV. 3 | SEPTEMBER 29, 2022 |
| 3 | ISSUED FOR 66% REVIEW | JULY 15, 2022 |
| 2 | ISSUED FOR SITE PLAN CONTROL REV. 2 | JUNE 7, 2022 |
| 1 | ISSUED FOR SITE PLAN APPROVAL | DECEMBER 16, 2021 |
| NUMBER: | REVISION: | DATE: (MM/DD/YYYY) |

ISSUE:

PROFESSIONAL STAMP:


PROFESSIONAL STAMP:

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CONSULTANT LOGO:

CIMA+

PROJECT TITLE:

FASTFRATE OTTAWA WAREHOUSE AND DISTRIBUTION FACILITY

**SCALE: NONE**

SOMME ST,
OTTAWA, ON

DRAWING TITLE:

# NOTES PLAN

| | | |
|---|---|---|
| DRAWN BY: | D.CANN | DRAWING NUMBER: |
| DATE: | | C005B |
| REVIEWED BY: | J.SAUVE | |
| APPROVED BY: | | |
| PRINT DATE: | | REVISION NUMBER: |
| ISSUED DATE: | NOVEMBER 26, 2021 | |
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