SERVICING AGREEMENT

THIS AGREEMENT made effective on the 22 day of March, 2024.

BETWEEN:

THE RURAL MUNICIPALITY OF CORMAN PARK NO. 344
(the "**Municipality**")

AND:

Edgemont East Development Corp.
(the "**Developer**")

WHEREAS:

A. The Developer is the registered owner of the lands (the "**Land**") described in Schedule "A";

B. The Developer proposes to subdivide the Land in accordance with the Plan of Proposed Subdivision (attached hereto as Schedule "B").

C. The Developer has applied to the Province of Saskatchewan for approval of the Plan of Proposed Subdivision; and

D. The Municipality considers it in the public interest that the Land be subdivided in accordance with the Plan of Proposed Subdivision subject to the Developer entering into an agreement with the Municipality under Section 172 of the Act concerning the supply, installation or construction of certain public services, and the levy of certain fees relating to present or future costs arising from the anticipated provision of services to the Land, as subdivided.

NOW THEREFORE in consideration of the approval given to the Developer by the Municipality, and in further consideration of the mutual promises made in this Agreement, the Parties covenant and agree as follows:

ARTICLE 1
INTERPRETATION

1.1 Definitions

Where used in this Agreement and Schedules, the following terms have the following meanings:

(a) "**Act**" means *The Planning and Development Act, 2007* S.S. P.-13.2, 2007, as amended and any successor legislation thereto;

(b) "**Agreement**" means this servicing agreement, including the attached Schedules,

together with any amendments made from time to time, and the expressions "herein", "hereto", "hereof", "hereby", "hereunder", and similar expressions referred to in this agreement shall refer to this agreement and all Schedules hereto and not to any particular article, section, subsection or other subdivisions hereof;

(c) "**Approved Plans and Specifications**" means the plans and specifications of Work submitted by the Developer to the Municipality and approved by all appropriate federal, provincial, and municipal authorities, including any approved amendments thereto;

(d) "As Built Drawings" means final drawings submitted verifying the field work completed in compliance with the final drainage and grading plan;

(e) "**Construction Completion Certificate**" means the Certificate of Construction Completion issued pursuant to this Agreement;

(f) "**Construction Standards**" means the general development, construction and servicing standards that may be adopted and approved by the Municipality from time to time;

(g) "**Council**" means the Council of the Municipality;

(h) "**Deficiency**" or **"Deficiencies"** means a characteristic or condition of the Work that is not in compliance with a requirement or specification set out in this agreement.

(i) "**Drainage and Grading Plan**" means the drainage plan for the Subdivision appended to this Agreement;

(j) "**Effective Date**" means the date first-stated above and the date of execution of this Agreement;

(k) "**Final Acceptance Certificate**" means the maintenance release issued by the Municipality pursuant to this Agreement;

(l) "**Governmental Authority**" means any governmental department, commission, board, bureau, agency or instrumentality of Canada, or any province, territory, county, municipality, city, or other political jurisdiction, whether now or in the future constituted or existing;

(m) "**Land**" has the meaning ascribed to that term as set out in recital A hereto;

(n) "**Lot**" means a subdivided lot, created in accordance with the Plan of Subdivision;

(o) **"Minimum Building Elevation"** means lowest physical opening of a dwelling structure;

(p) "**Municipal Buffer**" has the meaning ascribed to that term as set out in this Agreement;

(q) "**Municipal Engineer**" means the professional engineer licensed under *The Engineering and GeoScience Professions Act* (Saskatchewan);

(r) "**Municipal Reserve**" has the meaning ascribed to that term as set out in this Agreement;

(s) **"Party"** means any Person who is from time to time a party to this Agreement;

(t) "**Person**" means an individual, partnership, co-tenancy, corporation, trust, unincorporated organization, union, governmental body, the heirs, executors, administrators or other legal representatives of an individual, and any other legal entity capable of entering a contractual relationship;

(u) "**Plan of Subdivision**" means the final Plan of Subdivision, agreed in writing by the Parties, and as registered at the requisite Land Titles Office;

(v) "**Proposed Plan of Subdivision**" means the proposed Plan of Subdivision appended to this Agreement and any substitution made therefor by the written consent of the Parties;

(w) "**Roadways**" has the meaning ascribed to that term as set out in this Agreement;

(x) "**Stop Work Order**" means an Order issued by the Municipal Engineer pursuant to this Agreement;

(y) "**Subdivision**" shall mean, in the aggregate, all of the Lots subdivided from the Land, all Roadways, Municipal Reserve, Municipal Buffer and Walkways dedicated pursuant to the Plan of Subdivision, all Utility Parcels and all other lands, if any, that are included in the Proposed Plan of Survey;

(z) **"Substantial Completion"** means the date on which the Work is performed by the Developer is sufficiently complete in accordance with plans and specifications provided in this agreement, 2) the Subdivision can be used for its intended purpose, and 3) and any known Deficiencies are at a cost of not more than the aggregate of 5% of the estimated total cost of the Work.

(aa) "**Utilities**" and "**Utility**" have the meaning ascribed to those terms set out in this Agreement;

(bb) "**Utility Parcel**" and "**Utility Parcels**" have the has the meaning ascribed to those terms set out in this Agreement;

(cc) "**Utility Service**" and "**Utility Services**" have the meaning ascribed to those terms set out in this Agreement;

(dd) "**Walkways**" has the meaning ascribed to that term as set out in this Agreement;

(ee) "**Warranty Period**" commences upon the issuance of the Construction Completion Certificate. The Construction Completion Certificate shall have the meaning ascribed to those terms set out in the agreement. The Warranty Period continues

for two years from the date of the Construction Completion Certificate at which time the Developer is able to apply for the issuance of the Final Acceptance Certificate. At the end of the two-year Warranty Period, any future maintenance or repair obligations of the Works shall cease. The warranty works deficiency list is a continuing obligation by the Developer until a Final Acceptance Certificate has been issued and the development has been formally taken over by the Municipality;

(ff) "**Work**" has the meaning ascribed to that term set out in Subsection 2.1(a) and where the context requires, the term "Work" or shall also mean the Work described in Subsection 2.1(a) as constructed and installed and the re-construction and installation of the Work, all as detailed in Schedule "C" herein.

1.2 Other Defined Terms

(a) Except as expressly provided in this Agreement, and except where the context clearly requires otherwise, all definitions used in Act shall further apply to this Agreement.

(b) In this Agreement, unless a clear contrary intention appears, the term "including" (and with correlative meaning "include") means including without limiting the generality of any description preceding such term.

1.3 Nature of Agreement

This Agreement is a servicing agreement under Section 172 of Act, and the Municipality is entitled to all powers and remedies granted by that Act, in relation hereto. Without limiting the foregoing, the Municipality may register this Agreement or a summary of this Agreement in order to protect the Municipality's interest with respect to the development and servicing of the Land.

1.4 Proper Law of Contract

This Agreement shall be construed in accordance with and be governed by the laws of the Province of Saskatchewan and the laws of Canada applicable therein.

1.5 Headings

The division of this Agreement into Articles, Sections and any other subdivision, and the insertion of headings are for convenience of reference only and do not affect the construction or interpretation of this Agreement.

1.6 Expanded Meanings

In this Agreement and attached Schedules, unless there is something in the subject matter or context inconsistent with the same:

(a) the singular includes the plural and the plural includes the singular;

(b) a reference to any statute extends to and includes any amendment or re-enactment of such statute;

(c) this Agreement, excluding the Schedules, overrides the Schedules; and

(d) the masculine includes the feminine.

1.7 Schedules

Attached to and forming part of this Agreement are the following Schedules:

Schedule "A":	Land Description
Schedule "B":	Proposed Plan of Subdivision
Schedule "C":	Developer Work
Schedule "D":	Drainage and Grading Plan
Schedule "E":	Road Standards
Schedule "F":	Approach Construction Standards
Schedule "G":	Municipal Reserve Lease
Schedule "H":	Municipal Utility Lease
Schedule "I":	Development Restriction Agreement

1.8 Authority to Make Representations and Bind

(a) No supplement, modification, waiver or termination of this Agreement is binding unless signed in writing.

(b) It is understood that the Municipality may only be bound upon resolution of its Council. Accordingly, the Developer understands that no modification of this Agreement, representation, warranty, collateral warranty, or other agreement between the parties may be validly binding upon the Municipality, until such time as a binding resolution or bylaw has been passed with relation thereto, and has been communicated to the Developer.

1.9 Recitals

The recitals to this Agreement shall form an integral part of this Agreement as though repeated at length herein.

ARTICLE 2
CONSTRUCTION, INSTALLATION AND SERVICING OBLIGATIONS OF DEVELOPER

2.1 Services

(a) The Developer shall be responsible for constructing and installing or causing to be constructed and installed all services for proposed development referred to in this Agreement and shall, without limiting the generality of the foregoing, include any storm sewers, drains, water mains and laterals, site grading, culverts, boulevards, approaches, streets and lanes in connection to existing services, area grading and leveling of the land, the recreational components, street name plates, street lights, connecting and boundary streets, or other works that the Municipality may require to complete the proposed development, which shall also include the supply of all

necessary labour, material, equipment and the supply and construction of all fencing, shelterbelts and buffer strips throughout the Lands and the landscaping and irrigation of said buffer strips and shelterbelts at its own expense and in accordance with the provisions of this Agreement, including Article 3 and Article 4 of this Agreement and the standards, plans and specifications set out in the Schedules hereto.

(b) In addition to the Work, the Developer shall be responsible at its own expense for the registration of the Approved Plan of Subdivision with Information Service Corporation (ISC), and the preparation and registration of the Legal Survey.

(c) The Developer agrees that all Work shall be constructed in a logical and sequential fashion and as promptly as possible.

2.2 Plans and Specifications

(a) At least 45 days before the construction and installation of any of the Work, the Developer shall submit to the Municipality all design work, plans and specifications showing the location and routing of the Work to be done (collectively, the "**Plans and Specifications**"). For further certainty, the Plans and Specifications shall include "issued for construction" drawings all-inclusive of the scope of Work to be constructed inclusive of all infrastructure, utilities, grading and servicing requirements sealed by a Professional Engineer licensed with APEGS and also containing a Certificate of Authorization and a Permission to Consult. The "issued for construction" drawings are to follow the dimensions of the final Legal Survey completed by the Land Surveyor after subdivision approval.

(b) Work shall require:

(i) all necessary approvals for construction and installation are obtained from any Governmental Authority; and

(ii) all Plans and Specifications to be approved by the Municipality in accordance with section 2.3 of this Agreement;

(Hereinafter, the Plans and Specifications as approved by this section 2.2 shall be referred to as "**Approved Plans and Specifications**").

(c) Any amendments to the Plans and Specifications that may be necessary are subject to approval in accordance with subsection 2.2(b) and Work in accordance with any amendments to the Plans and Specifications may only proceed after such approval has been obtained.

2.3 Review, Inspection and Monitoring of Work by Municipal Engineer

The Work shall be reviewed, inspected and monitored, when required, by the Municipal Engineer in accordance with the following provisions:

(a) as a precondition to obtaining the approval of the Municipality mentioned in

Subsection 2.2(c), the Developer must file with the Municipality the Plans and Specifications and design information describing the Work required;

(b) the cost of all additional engineering services beyond 1 Construction Completion Certificate inspection and 1 Final Acceptance Certificate inspection incurred by the Municipality shall be the responsibility of the Developer;

(c) as a further precondition to obtaining the approval of the Municipality mentioned in Subsection 2.2(c), all Plans and Specifications shall be reviewed by the Municipal Engineer, who shall be responsible for making recommendations to the Municipality, with respect to the approval of such plans, pursuant to Section 2.2 above. The Municipality agrees to use its best efforts to review the information submitted within 30 days;

(d) in the event that re-design of the Approved Plans and Specifications is required at any stage of the construction and installation of the Work, plans and drawings with respect to such re-design shall also be reviewed and approved pursuant to Section 2.2 above;

(e) the Municipal Engineer shall be entitled to inspect the performance of the Work at any time or place to ensure that the Work is consistent with the Approved Plans and Specifications;

(f) where the Municipal Engineer requires prior notification of Work, so as to conduct a proper inspection, reasonable advance notice of the Municipal Engineer's requirement shall be given by the Municipal Engineer to the Developer;

(g) where the Municipal Engineer is of the opinion that the Work is not being done in a good and workmanlike manner, work is completed prior to approval of submitted Plans and Specifications, or is otherwise of a standard not reasonably acceptable to the Municipality, the Municipal Engineer may issue a Stop Work Order and:

    (i) all work covered by the Stop Work Order shall cease forthwith, and not proceed until the Stop Work Order is lifted by the Municipal Engineer; and

    (ii) the Developer shall be responsible for complying with all reasonable directions given for remediation and future Work, as may be directed by the Municipal Engineer.

2.4 Supervision of Work by Developer's Engineer

The Developer shall retain a Professional Engineer (the "**Developer's Engineer**") licensed under *The Engineering and GeoScience Professions Act* (Saskatchewan) who shall do all design work, including preparation of the Plans and Specifications and make the necessary contracts for the construction and construction supervision of the Work. All such design work, including the Plans and Specifications, shall be sealed by the Developer's Engineer. In order to ensure conformance to municipal standards, specifications and the approved Issued For Construction Drawings, the scope of the design work and construction will be subject to a Schedule of Quality Control and Assurance including any applicable testing,

surveying or any other criteria required in order to validate the work.

2.5 Time for Commencement and Completion of Work

(a) The Developer shall commence construction and installation of the Work within twelve (12) months of the execution of this Agreement. Construction and installation of the Work shall be undertaken diligently and shall be completed within twenty-four (24) months of the execution of this Agreement.

2.6 Construction Standards

(a) All Work shall be constructed and installed in accordance with the Approved Plans and Specifications and the Road Construction Standards. Where detailed provisions or specifications are not stipulated explicitly within the Approved Plans and Specifications, the Developer acknowledges and agrees that the Work shall be completed in a form of and/or methodology consistent of current-day industry standards and conformant to reasonable and general subject matter criteria and acceptable quality standards relevant to the Work.

(b) All work related to the Work shall be done in a good and workmanlike fashion.

(c) All Work shall be completed in accordance with the Municipality's bylaws, and the required specifications of any other applicable regulatory authority in effect from time to time. Without limiting the generality of the foregoing, the Developer agrees to comply with all such bylaws and/or specifications and to obtain all approvals required by all bodies having jurisdiction over the subject matter of this Agreement. Notwithstanding any approval, inspection, or other review of the Work by the Municipality, the Developer shall not be released of the responsibility to ensure the Work conforms with such bylaws and/or specifications. Nothing herein contained shall be deemed to oblige the Municipality to issue building permits for construction or approve any development except upon compliance with such bylaws and/or specifications, or to sanction or permit any breach of, or deviation from, such bylaws and/or specifications.

(d) The Developer acknowledges and agrees that it shall not perform any clearing of trees or ground disturbances in areas of native grass without complying with the *Migratory Birds Convention Act & Regulations.* Any clearing must occur outside of the nesting season if migratory bird species are determined to be present. The Developer agrees to notify each Lot owner within the Subdivision accordingly and to include this requirement in any Lot purchase agreement entered into with a third party relating to the Lands.

2.7 Surveys and Drawings Showing Installed Work (As-Built Drawings)

(a) Upon completion of the installation of the Work, the Developer shall cause the Developer's Engineer to complete a set of drawings showing the exact location of the Work as actually constructed and installed (As-Built Drawings) and to deposit one set of prints and an electronic copy of any related drawings or plan with the Municipality, in such formats as may be reasonably requested by the Municipality.

(b) Following completion of the legal survey, the Developer agrees to supply a statement by a Saskatchewan Land Surveyor approved by the Municipality that after the completion of the construction and installation of Works, he/she has found or replaced all standard iron bars as shown on the Subdivision Plan and survey monuments at all block corners, the end of all curves, other than corner roundings, and all points of change in direction on streets on the Subdivision Plan. The Developer agrees that it shall be responsible for any costs associated with said location or replacement of all standard iron bars and survey monuments.

2.8 Public Consideration and Safety

(a) The Developer shall take all reasonable precautions to ensure that the neighbouring properties are not disturbed during the construction period.

(b) The Municipality reserves the right to refuse access to any construction traffic should it be deemed that it is dangerous or unsafe for residents, it is causing excessive damage to any municipal roadway.

(c) Construction noise shall be kept to a minimum, and in strict compliance with the Municipality's noise bylaws.

(d) During the construction and installation of the Work, the Developer shall put up such barricades, lights, or other protection for persons and property as will adequately protect the public or any person in the neighbourhood and will upon the request of the Municipality or police authority, improve or change the same.

(e) The Developer will ensure Municipal dust control guidelines are at all times followed when the Work is being constructed and installed with a view to ensuring the Municipality does not receive complaints about dust from adjacent residents. At the reasonable request of the Municipality, the Developer shall provide for dust suppression along municipal roads at its sole expense.

2.9 Utility Easements

The Developer agrees that it shall throughout the Subdivision:

(a) grant, obtain, and provide all utility, construction, and service easements which may be required, at no cost to the Municipality or any Utility and to keep the said easements clear during construction for the purposes of installing the various Utilities and the Water System; and

(b) provide and register a utility easement plan as may be required by the Municipality.

2.10 Ownership of Works

The Developer acknowledges that with the exception of any of the water infrastructure and sewer infrastructure within the boundary of the plan of the proposed subdivision, the Work provided for in this Agreement shall become the property of the Municipality when installed and/or constructed on, in, under or over a public highway, road allowance, street,

avenue, lane, lands owned by the Municipality or lands over which the Municipality or any Utility has been granted an easement in its favour; provided, however, that notwithstanding that ownership may vest in the Municipality, the Developer shall not be relieved of its obligations to properly install, maintain and warrant such Work in accordance with the terms of this Agreement. Notwithstanding any of the foregoing, the Developer may not connect a Utility Service or the Water System in the Subdivision to any utility service line from outside the Subdivision provided by any Utility without the prior written consent of the Municipality.

2.11 Municipality Not Obligated to Construct and Install Work

Unless expressly stated in this Agreement, the Municipality shall have no responsibility:

(a) to construct and install any of the Work; and/or

(b) for any of the cost or expense for any of the Work.

2.12 Subsequent Development Phases

Notwithstanding anything else herein, the parties agree that this Agreement shall entitle the Developer to develop the current phase or stage of development of the Lands contemplated by this Agreement, and that a separate agreement shall be required with respect to any development of any subsequent stage of phase of development of the Lands in such form and content as the Developer and the Municipality may mutually agree. It is acknowledged that the Developer will apply to the Municipality to proceed with Phases II and III at the discretion of the Developer.

2.13 Health and Safety

(a) The Developer, as the prime contractor for the Work to be completed pursuant to this Agreement, acknowledges and agrees that it is responsible for establishing, initiating, maintaining all health and safety precautions and programs in connections with the performance of the Work and shall at all times be responsible to ensure all Work complies with all applicable construction health and safety legislation and regulations.

(b) All excavations on the Lands shall be conducted in accordance with the applicable provisions of *The Occupational Health and Safety Regulations, 1996* (Saskatchewan) and all other regulations thereto, which include regulations for side-slopes for excavations. The side-slope dimensions shall be flattened if excess groundwater is encountered.

2.14 Municipal Reserve and Municipal Utility Lands Lease

The Developer shall enter into a Municipal Reserve Lands Lease attached as Schedules "G" and "H" for the Edgemont East Community Association to maintain the MR1, MR2, MR3, and MU1 spaces and proposed recreation equipment/features within said spaces.

2.15 Municipal Reserve Strips (MR2 and MR3)

The Developer shall develop and install trees and walking/cycling path within the MR2 and MR3 as shown on the plan of proposed subdivision at time of servicing agreement in Phase 3/last phase of the Edgemont East Subdivision. The Developer at its discretion may install the trees and or complete the walking/cycling path prior to Phase 3.

2.16 Restrictive Covenant

The Developer shall enter into the form of Restrictive Covenant Agreement attached as Schedule "I" to this Agreement. The Developer agrees to notify each Lot owner within the Subdivision accordingly and to include this requirement in any Lot purchase agreement entered into with a third party relating to the Subdivision Lands.

ARTICLE 3
WORKS

3.1 Water Works

(a) The Developer shall, at its own expense, either on its own accord or through a third party contractor shall be responsible for the construction and installation of a potable water delivery system (hereinafter the "**Water System**") as required to serve the Lands, the Subdivision and to service each Lot in accordance with the requirements, conditions, or approvals of the Municipality and any applicable regulatory authorities. The Developer acknowledges that the Water System is a private system and the Municipality has no liability or responsibility for installation, operation, maintenance, repair, or replacement thereof.

(b) The Developer agrees that no responsibility shall rest with the Municipality for the removal of any existing wells currently located in the Subdivision. The Developer agrees to notify each Lot owner that any pre-existing or new potable or non-potable water wells shall not be allowed on the Lot. The Developer agrees to notify each Lot owner within the Subdivision accordingly and to include this requirement in any Lot purchase agreement entered into with a third party relating to the Subdivision.

(c) It is acknowledged and agreed that a utility organization, being Lost River Water Utility (the "**Utility**") will be solely responsible for the construction, operation, maintenance and any costs or expenses incurred and as may be related to the Water System and providing potable water to each of the Lots. The Developer acknowledges that no responsibility shall rest with the Municipality and the Developer agrees to notify each Lot owner within the Subdivision accordingly and to include this requirement in any Lot purchase agreement entered into with a third party relating to the Subdivision.

(d) The Developer agrees to indemnify and save the Municipality harmless from and

against any and all actions, claims, and demands of every nature and kind whatsoever in relation to the construction and maintenance and operation of the Water Supply.

3.2 Wastewater / Sewer Works

(a) The Developer shall, at its own expense, either on its own accord or through a third party contractor be responsible for the construction and installation of a wastewater collection system (hereinafter the "**Wastewater System**") as required to serve the Lands, the Subdivision and to service each Lot in accordance with the requirements, conditions, or approvals of the Municipality and any applicable regulatory authorities. The Developer acknowledges that the Wastewater System is a private system and the Municipality has no liability or responsibility for installation, operation, maintenance, repair, or replacement thereof.

(b) It is acknowledged and agreed that a utility organization, being Lost River Water Utility (the "Utility") will be solely responsible for the construction, operation, maintenance and any costs or expenses incurred and as may be related to the Wastewater System and the collection of wastewater from each of the Lots. The Developer acknowledges that no responsibility shall rest with the Municipality and the Developer agrees to notify each Lot owner within the Subdivision accordingly and to include this requirement in any Lot purchase agreement entered into with a third party relating to the Subdivision.

(c) The Developer shall enter into a Wastewater Access Agreement, in such form as may be approved by the Municipality, acting reasonably, which will establish the usage rates as well as the terms and conditions upon which the Developer will construct, maintain and operate the Wastewater System.

(d) The Developer will be required to pay the initial connection fee of $248,000 plus any applicable taxes for the 40 Lots in Phase 1, calculated based on a connection fee of $6,200 per Lot, upon signing of this Agreement.

(e) The Developer acknowledges and agrees that the Utility shall be solely responsible for the operation, maintenance and any costs or expenses incurred pursuant to the Wastewater Access Agreement as may be related to the Wastewater System.

(f) The Developer agrees to indemnify and save the Municipality harmless from and against any and all actions, claims, and demands of every nature and kind whatsoever in relation to the construction and maintenance and operation of the Wastewater System.

(g) Without limiting the generality of any of the provisions contained herein, approval of the construction and installation of the Wastewater System is subject to the following:

i. submission to the Municipality and any applicable regulatory authorities for review and approval of a plan for the type and location of the Wastewater System;

ii. the Wastewater System meeting the requirements developed by the Municipality or any other regulatory authority with jurisdiction over such matters;

iii. the execution of the Wastewater Access Agreement;

iv. submission to the Municipality and any applicable regulatory authorities for review and approval of:

1. the engineered design for the construction and installation of the Wastewater System, which shall be in accordance with the requirements of all regulatory authorities with jurisdiction over installation and operation of the Wastewater System;

2. the proposed contract of purchase and sale of the Lots and particularly the provisions related to the Wastewater System;

3. copies of all required approvals received from government departments, agencies or regulatory authorities in respect of the Wastewater System; and

4. all other permits, consents and authorizations required or desirable, in the sole discretion of the Municipality or any other applicable regulatory authority, for the Wastewater System;

v. any other requirements which are determined by the Municipality or any other applicable regulatory authority, in their sole discretion, to be required or desirable under the circumstances.

3.3 Roadways

(a) The Developer shall be responsible for the construction, installation of all roadways connecting to the Subdivision from where the last existing portions of road are located; and all roadways in the Subdivision, including internal roadways, all as shown in the Plan of Proposed Subdivision.

(b) All roadways shall be constructed and installed in accordance with the Road Construction Standards and shall conform to the grades and details as per the Plans and Specifications required in clause (c) below.

(c) The Plans and Specifications prepared by the Developer's Engineer and submitted by the Developer for approval by the Municipality under Section 2.2 shall detail the roadways and provide specifications for the surface and finish of the roadways.

(d) Construction of the roads for the approved development or phase of the development shall start when the engineering drawings are signed, all securities are deposited, and the Plan of Subdivision is registered.

(e) Road construction shall include the final harrowing and seeding of the ditches within the subdivision and the installation of approaches to each lot and culverts. The Developer is responsible for providing topsoil and seed within all rights-of-way/legal road allowances and constructing approaches as indicated within the Approach Construction Standard attached as Schedule "F". Approach culverts inlet and outlet aprons are expected to be rip-rap'd.

(f) Road construction for roadways is to be completed such that all materials and final grading shall be in place and maintained in accordance with the Road Construction Standards at all times during the development and construction of any constructed buildings in the Subdivision.

(g) All utility road crossings must be installed prior to placement of the road base materials or base asphalt as the case may be.

(h) The Developer shall obtain all required permits for hauling of materials and repair any damages caused to an existing road, road allowance or existing structure or plant located on the road allowance where such damage occurs as a result of the construction and installation of the Work.

3.4 Power, Gas, Telephone and Cable Utilities

Within the Subdivision, the Developer shall, with the approval, as required, of SaskPower, SaskEnergy, and SaskTel, and any other utility agency or provider of any utility service of any nature or kind whatsoever (collectively, the "**Utilities**" and each a "**Utility**"), arrange for the design and construction and installation of underground electrical power, natural gas, telephone and cable lines, and any other Utility that may be reasonably required to service the Subdivision and Lots within the Subdivision (collectively, the "**Utility Services**" and each a "**Utility Service**"). It shall be the responsibility of the Developer to pay for and obtain all such approvals, as required, from any Utility and/or Governmental Authority in respect of the construction and installation of the Utility Services.

3.5 Mailboxes

(a) The Plans and Specifications prepared by the Developer's Engineer and submitted to the Municipality for approval shall specify details for the installation of mailboxes in the Subdivision.

(b) The Developer shall request Canada Post mailboxes and ensure the installation of them as required in the Subdivision and in accordance with the Approved Plans and Specifications and Canada Post Specifications and Guidelines.

3.6 Street Lights

The Developer shall install 1 streetlight per approved plans at the subdivision entrance to Grasswood Road.

3.7 Fire Services

The Developer acknowledges and agrees that the Municipality will only provide fire protection equipment to service the Lands as is currently available through the Municipality. The Municipality is not and shall not at any time be required to provide the Lands with fire protection equipment greater than that available through the Municipality as at the date of this Agreement.

3.8 Street Names

The Developer shall use the street names as per the registered plans. Any changes to the street names must be approved by the Municipality. A fee of $300 will be applied to each approved change request to street names.

3.9 Street Signs

The Developer shall provide, construct and install all street and stop signs as per the approved sign plan. The street names shall be determined by existing Municipality policies.

3.10 Civic Address Signs

The Developer shall provide, construct and install all civic address signs for each lot as per the Rural Addressing Bylaw. Any alterations from the Rural Addressing Bylaw must be approved by the Municipality.

ARTICLE 4
DRAINAGE AND GRADING PLAN

4.1 Drainage and Grading Plan

(a) The Developer shall prepare and deposit with the Municipality the Drainage and Grading Plan, which shall be approved by the Municipal Engineer in both paper and electronic formats as may be directed by the Municipality.

(b) The Drainage and Grading Plan shall show a drainage control network for and all storm drainage areas in the Subdivision, the areas in hectares, and the runoff coefficient for each specific runoff area. The Drainage and Grading Plan shall include a standard storm calculation and shall comply with Municipal standards. Without limiting the generality of the foregoing the Drainage and Grading Plan shall provide:

(i) designed drainage profiles for all roads, walkways and Lots, including all necessary culverts, swales or ditches, offsite connections and other drainage measures as may be required;

(ii) erosion protection works and/or measures where steep slopes or other conditions conducive to soil erosion exist; and

(iii) proposed grades for each Lot, the roadways, and the overall grading requirements for the Subdivision with the finished grade level of each Lot

to meet the 1:100 Flood level plus 0.5 meters freeboard. Safe building elevation to be observed as it pertains to foundations to ensure all opening are constructed above the SBE.

(c) The Developer shall construct and install or cause to be constructed and installed a drainage control network in the Subdivision in accordance with the Drainage and Grading Plan and/or where required by the Municipal Engineer, including the following:

(i) designed drainage profiles for all roads, walkways and Lots, including all storm water management facilities, and any drainage works including site grading, construction of swales, retention ponds, delineation and protection of the identified drainage easements, installation of all necessary culverts to provide adequate drainage for the Subdivision;

(ii) all culvert inlets and outlets require rip rap aprons and/or pre-fabricated end-sections in addition to elements and weather resistant culvert markers as per the Drainage and Grading Plan; and

(iii) erosion protection works and/or measures where steep slopes, or other conditions conducive to soil erosion exist.

(d) Galvanized steel culverts, ditches, swales, storm sewers, outfalls or other drainage works, and vegetation cover, stone riprap, ditch blocks, or other erosion protection works, shall be installed by the Developer at its own expense, but only where required by the Drainage and Grading Plan or where found to be necessary by the Municipal Engineer during construction and during the "**Warranty Period**".

(e) The Developer shall be responsible for all costs associated with the maintenance of drainage within the Subdivision until a Final Acceptance Certificate has been issued.

(f) The Developer shall be responsible for repairs to the drainage within the Subdivision during the "Warranty Period".

(g) Prior to the issuance of a Construction Completion Certificate, the Developer shall deliver As-Built Drawings bearing the signature and seal of either a Registered Saskatchewan Professional Engineer or a Saskatchewan Land Surveyor ensuring that the record of construction for the actual finished elevation and grading of the Subdivision is consistent with the Final Drainage and Grading Plan.

4.2 Site Elevations

No person shall, at any time, add fill to a lot or grade a lot in such a manner that it will cause surface water to flow along the surface from that lot to any adjacent lot, except in accordance with the provisions of this Agreement and in accordance with the Drainage and Grading Plan. The Developer shall notify any person to whom it sells any lot that any buildings constructed on such lots are required to meet the minimum building elevation as identified in the Final Drainage and Grading Plan and that each lot owner will have to

submit a detailed engineered lot grading plan as described per Section 2. ii. in the Development Restriction Agreement (Schedule H).

ARTICLE 5
LANDS FOR MUNICIPAL PURPOSES

5.1 Dedication of Roadways

(a) All roads (the "**Roadways**") designated as such in the Plan of Subdivision shall be dedicated as a public highway pursuant to the Act, *The Subdivision Regulations, 2014, The Dedicated Lands Regulations, 2009 and The Municipalities Act* and:

(i) the Developer agrees to dedicate such additional land as may be reasonably necessary to allow access from the existing municipal roadways;

(ii) the Developer agrees to execute all documents as may be reasonably necessary for the purposes of such dedication; and

(iii) all such documents shall be executed in a timely fashion upon approval of the Developer's subdivision application.

5.2 Municipal Reserve

(a) All municipal reserve (the "**Municipal Reserve**") designated in the Plan of Subdivision as such shall be dedicated as municipal reserve pursuant to the Act, *The Subdivision Regulations, 2014, The Dedicated Lands Regulations, 2009.*

(b) The Municipal Reserve is to be constructed by the developer and maintained for 2 years after Construction Completion Certificate. Once a Final Acceptance Certificate is issued by the Municipal Engineer, the Edgemont East Community Association will maintain the Municipal Reserve. Plans and Specifications shall be provided to the Municipality and include all other structures to be located within the Municipal Reserve such as park benches, garbage receptacles, path details, playgrounds, tennis/pickleball courts, infrastructure/features, etc. All park features are to have a guaranteed minimum 25-year lifespan before replacement.

5.3 Environmental Reserve

(a) All environmental reserve (the "**Environmental Reserve**") designated in the Plan of Subdivision as such shall be dedicated as environmental reserve pursuant to the Act, *The Subdivision Regulations, 2014, The Dedicated Lands Regulations.*

5.4 Municipal Buffer

(a) All buffer strips (the "**Municipal Buffer**") designated in the Plan of Subdivision as such shall be dedicated as buffers strips pursuant to the Act, *The Subdivision Regulations, 2014, The Dedicated Lands Regulations.*

5.5 Walkways

(a) All walkways (the "**Walkways**") designated in the Plan of Subdivision as such shall be dedicated as walkways pursuant to the Act, *The Subdivision Regulations, 2014, The Dedicated Lands Regulations*.

5.6 Utility Parcels

(a) All municipal utility parcels (the "Utility Parcels" and each a "Utility Parcel") designated in the Plan of Subdivision shall be the property of the Municipality and shall either be dedicated as Utility Parcels pursuant to the Act, *The Subdivision Regulations, 2014, The Dedicated Lands Regulations* or the Developer shall cause title to such Utility Parcels to be transferred to the Municipality, as required.

(b) The Developer shall, at its own expense, cause the Utility Parcels to be developed according to section 4.1 and landscaped, grassed and seeded with the seed mixture as per the Country Residential Paved Road Standard.

ARTICLE 6
REPORTING, INSPECTION AND SUBSTANTIAL COMPLETION

6.1 Reporting Requirement

Commencing on the first of every month after execution of this Agreement, and thereafter until the Final Acceptance Certificate is issued, the Developer shall submit a written report, along with supporting documentations from the Developer's engineer, to the Municipality, in which the Developer shall advise the Municipality of progress toward completion of the subdivision process, design of the Work, progress on approvals and permits required by the Developer, progress on construction, progress on curing deficiencies, any sales or anticipated sales of Lots, and any other matter which the Municipality should reasonably require of the Developer from time to time.

6.2 Ongoing Inspection of Work

(a) All Work shall be monitored by the Municipal Engineer, who shall be entitled to inspect the performance of the Work at any time or place to ensure that the Work is consistent with the Approved Plans and Specifications.

(b) The Municipality shall at all times retain the right to directly conduct or to require the Developer to conduct and provide the results of any type of testing, quality control and quality assurance procedures of any type at any time as often as required during the construction operations and prior to the issuance of the Construction Completion Certificate to ensure specification conformity.

6.3 Construction Completion Certificate

Construction Completion Certificate site inspections shall take place between April 15 and October 30th (Inspection Period), weather permitting. The Developer may request a site

inspection in writing and the Municipality shall complete the site inspection within 30 days of having received the Developer's written request. When the Developer notifies the Municipality in writing the Work has been Substantially Completed, such remaining inspections thereof as the Municipal Engineer shall consider appropriate shall be conducted and the Municipal Engineer shall make a recommendation to the Municipality and the Developer within 15 days after site inspection, as to whether the Work is Substantially Complete and:

(a) following such report, provided that the Work of that service is Substantially Complete to the provided engineering specifications, the Municipality shall issue a certificate of construction completion (the "**Construction Completion Certificate**"); and

(b) where the Work is found to not be Substantially Complete to the provided engineering specifications, the Developer shall be bound to rectify such Deficiencies in accordance with the time frames as may be reasonably stipulated by the Municipality.

(c) Once Deficiencies are rectified and the Work is Substantially Complete the Developer may re-apply in writing to the Municipality for an inspection and the issuance of the Construction Completion Certificate as outlined in 6.3, 6.3 (a) and 6.3 (b).

6.4 Compliance as a Pre-Condition

(a) As a pre-condition to the issuance of a Construction Completion Certificate, the Developer shall supply the Municipality with a statutory declaration that all accounts for work and materials and construction and installation services have been paid, except for such holdbacks as may be required pursuant to *The Builders' Lien Act*, and any similar legislation. The statutory declaration shall further warrant that there are no claims for lien or otherwise which have been presented to the Developer, or of which the Developer or any Person with a registered mortgage against the Land is aware or has notice, in connection with such work done, or materials supplied for, or on behalf of the Developer, in connection with the construction and provision of services to the Land. The Developer shall also warrant compliance with *The Workers' Compensation Act*.

(b) As a pre-condition to the issuance of a Construction Completion Certificate, the Developer shall cure all outstanding Deficiencies or defaults, pursuant to the terms of this Agreement and any other agreement between the Developer and the Municipality.

ARTICLE 7
WARRANTY PERIOD

7.1 Maintenance and Warranty Period

The Developer acknowledges and agrees that it shall be responsible for maintenance of the Work up to and including the effective date upon which the Construction Completion Certificate is issued, and shall thereafter be responsible for all repairs to the Work and the replacement of any defective Work during the Warranty Period, together with the maintenance obligations as referenced below and until a Final Acceptance Certificate has been issued.

7.2 Final Acceptance Certificate

(a) Subject to this Section 7.2 and Section 7.5, the Developer may apply in writing to the Municipality for the issuance of a certificate of final completion (the "**Final Acceptance Certificate**").

(b) The Final Acceptance Certificate shall be issued in accordance with this Section 7.2 and Section 7.3.

(c) At the end of the Warranty Period for any of the Works, the Developer may apply for a Final Acceptance Certificate within the Inspection Period.

(d) Within 30 days of receiving the written request for a Final Acceptance Certificate, the Municipal Engineer shall inspect all the Work to determine whether the Developer has discharged its obligation during the Warranty Period.

(e) Within 15 days of completing such inspection, the Municipality shall notify the Developer with respect to any of the Works maintenance, repair and replacement items which have not been properly completed by the Developer (as such items have been identified by the Municipal Engineer) during the Warranty Period, and the Developer shall be responsible for rectifying such items within 45 days of the date of such notice.

(f) Should the report identify Deficiencies a Final Acceptance Certificate will not be issued and it shall remain the Developer's obligation to rectify those Deficiencies identified in the report within a reasonable time.

(g) Upon rectification of all maintenance, repair, and replacement of the Deficiencies identified in the report pursuant to section 7.2, or in the event that no such Deficiencies are identified, the Municipality shall issue the Final Acceptance Certificate dated as of the re-inspection date, and the Developer's obligations under this Article 7 shall thereafter cease. In such event the Final Acceptance Certificate will be provided to the Developer within 15 days.

(h) It shall be a pre-condition to the issuance of the Final Acceptance Certificate that the Developer shall cure any Deficiency or default pursuant to this Agreement.

(i) Prior to issuance of the Final Acceptance Certificate, the Developer shall send a survey to all residents of the Edgemont East subdivision to determine the level of satisfaction with the Developer meeting the requirements of the servicing agreement.

7.3 Road Maintenance

Without limiting the generality of the foregoing:

(a) the Developer shall be responsible for maintaining all roadways within the Subdivision, during the Warranty Period, including, but not being limited to the supply and application of such asphalt patching, gravel or any other remedial action as may be reasonably required by the Municipal Engineer, acting it its sole discretion, to ensure that the roadway remains in good condition, consistent with the conditions of other roadways generally within the Municipality; and

(b) the Developer shall repair any damage caused to any existing road, road allowance or existing structure located on any roadway as a result of the development of the Subdivision and shall pay for any costs involved in the relocation of existing services which may be made necessary by reason of the development of the Subdivision.

7.4 Construction Garbage

(a) During the construction and installation of the Work until the issuance of the Final Acceptance Certificate, the Developer shall be responsible for the removal of all construction garbage and debris from the Subdivision or the surrounding area that may have been affected.

(b) The Developer shall require all dwelling construction contractors and/or owners within this Subdivision, to install and regularly empty a construction disposal bin during the construction of any buildings within the Subdivision.

(c) The Developer shall require, with assistance from the Municipality (as a means of enforcement only), that all construction sites are to be maintained in neat and orderly condition during the period of dwelling construction.

7.5 Repairs and Replacements to Work by Municipality

Without in any way limiting the generality of the foregoing, if:

(a) during the Warranty Period any defects become apparent in any of the Work installed or constructed by the Developer under this Agreement;

(b) the Municipal Engineer shall require repairs or replacements to be done,

the Developer shall:

(c) be notified and within a reasonable period of time after said notice cause such repairs to be done,

If the Developer shall default in causing such repairs or replacements to be made, the Municipality may do the repairs or replacements of the Work, and recover the cost thereof from the Developer.

ARTICLE 8
FEES, COSTS AND TAXES PAYABLE BY THE DEVELOPER

Without limiting the generality of any other provision of this Agreement, the Developer shall be responsible for payment of the fees, costs, expenses, taxes and other amounts as provided for in this Article 8 as follows:

8.1 Legal Fees and Other Professional Costs

The Developer shall bear the cost of all reasonable legal fees and expenses and all professional consulting fees and expenses incurred by the Municipality in connection with this Agreement and its administration. The basis for payment of legal and consulting fees and expenses shall be as follows:

(a) Fees equaling $5,000 are to be remitted to the Municipality at the time of signing of this Agreement, as a nonrefundable payment towards legal and consulting fees and expenses. Any legal and consulting expenses incurred by the Municipality in excess of the initial payment are to be charged as per sections 8.1 (a)-(d).

(b) the lawyer or consultant involved shall initially render his or her account to the Municipality;

(c) the Municipality shall pay the account of the lawyer or consultant and thereafter the Municipality shall invoice the Developer; and

(d) the Developer shall reimburse the Municipality within 60 days of the date set forth on the invoice, provided that the invoice received by the Developer contains a reasonable breakdown of the fees and service charges included on an itemized basis.

8.2 Development and Servicing Fees

(a) The Developer shall pay to the Municipality upon the execution of this Agreement by way of cash, certified cheque or bank draft, a fee (the "**Subdivision Fee**") in the aggregate amount of $262,400, equaling $6,560 per lot (prior fee in effect before June 1st 2023 (Policy PD-002)), on account of the Municipality's cost of providing, altering, expanding, or upgrading public infrastructure located within or outside the proposed subdivision. Payment of the Development Fee shall be made to by the Developer to the Municipality, as follows:

100% ($262,400.00) on signing the agreement;

(b) Payment of the fees and levies contemplated in this Section shall be a pre-condition of the granting of a development or building permit with respect to any construction on any Lot and shall bind the Developer and any other person having an interest in

any Lot. The parties each expressly acknowledge and agree that all Development Fees shall be paid by the Developer prior to commencement of any subsequent phase of development of the Lands and the remaining amount shall be due upon signing of a new service agreement for that phase.

8.3 Tax Arrears

The Developer shall pay all arrears of taxes outstanding against the Land, if any, at the time of execution of this Agreement and shall thereafter keep all taxes current as provided for herein.

8.4 Tax Payments

(a) The Developer and then any subsequent property owner shall be responsible for the payment of municipal and school property taxes levied. The tax shall be levied on the subdivided assessment of the land and/or improvements and the applied yearly mill rate and/or tax tool established by the Municipality and any relevant school division.

ARTICLE 9
AGREEMENT RUNS WITH THE LAND

9.1 Agreement Runs with Land and May Be Registered

It is agreed that:

(a) the obligations of the Developer under this Agreement run with the land, pursuant to common law and equity, and pursuant to the provisions of Act;

(b) the Municipality is entitled to register this Agreement against the Lands and once the Subdivision has been registered pursuant to the Act the Municipality shall release and remove the agreement against the residual remaining land in Parcel B;

(c) the Developer shall pay the costs of registration, and agrees to pay such costs within 30 days of the date of the invoice rendered with respect thereto by the Municipality;

(d) the Developer hereby agrees that any interest in the Subdivision that is in favour of the Municipality based on this Agreement shall have priority over all other interests in favour any other person, excluding any mortgage currently registered by and in favour of the Developer's mortgagee against the title to the Land and all such other interests shall be postponed to the Municipality's interest in the Subdivision based on this Agreement.

9.2 Agreement Binding on all Purchasers

(a) The Developer covenants that it will notify all lot purchasers (each, a "**Property Owner**") of the Municipality's interest in the Subdivision, including the existence

of any interest registered against the Subdivision by the Municipality outlining the obligations under this Agreement.

(b) The rights and obligations contained herein are intended to be binding upon the Developer and the Developer's successors in title to the Subdivision or any portion thereof. This Agreement is an interest in the Subdivision and the rights, restrictions and obligations hereunder are binding upon each and every owner of the Subdivision or any portion thereof, and shall be, and remain, registered against title to the Subdivision and any subdivision thereof. Upon the Developer transferring the Subdivision, or any part thereof, the Developer shall provide the transferee with a copy of this Agreement and obtain an acknowledgement from said transferee whereby the transferee acknowledges that the transferee is bound by this Agreement and accepts all of the rights, restrictions and obligations hereunder.

(c) The Developer acknowledges and agrees to notify each Property Owner that the Municipality must approve all construction on the lots to be subdivided and that all construction shall be in accordance with the Municipality's bylaws in effect from time to time. Nothing herein contained shall be deemed to oblige the Municipality to issue building permits for any construction in the Subdivision except upon compliance with the Municipality's bylaws, or to sanction or permit any breach of, or deviation from, the Municipality's bylaws.

ARTICLE 10
INDEMNITY BY DEVELOPER

10.1 Indemnification Re: Development

The Developer hereby indemnifies and saves harmless the Municipality with respect to any claim, action, judgment, cost or expense incurred by or assessed against the Municipality in respect of damages suffered by any third party arising out of any act or omission of the Developer with respect to the Subdivision and the Work contemplated by this Agreement.

10.2 Indemnification Re: Warranty Period

The Developer shall indemnify and save harmless the Municipality with respect to any claim, action, judgment, cost or expense incurred by or assessed against the Municipality in respect of damages suffered by any third party, and related in any way to any Work to be maintained by the Developer during the Warranty Period, even if such Work is performed by the Municipality.

10.3 Indemnity Extends to Legal Costs

The indemnities granted by the Developer in this Agreement shall extend to all costs incurred by the Municipality in defending any claim, including the retention of consultants and experts, and including legal fees on a solicitor-and-client-basis and disbursements.

10.4 Indemnity Extends to Individuals

The indemnities granted by the Developer in this Agreement shall extend to every official,

elected or otherwise, of the Municipality, and to every employee, servant, agent and consultant of the Municipality. To the extent required by law, the Municipality declares itself to be the agent and representative of such person, and accrues the benefit of indemnification for such persons in that capacity.

ARTICLE 11
LIABILITY INSURANCE

11.1 Obligation to Insure

The Developer, upon execution of this Agreement, shall forthwith deposit with the Municipality a certificate of insurance disclosing that the Developer holds liability insurance with an insurer satisfactory to the Municipality. Thereafter, upon 14 days written demand, the Developer shall deposit proof that the insurance remains in force, in a form satisfactory to the Municipality.

11.2 Requirements of Insurance

(a) The Developer shall obtain and keep in force the following insurance coverage up until the effective date of the Final Acceptance Certificate:

(i) comprehensive commercial general liability insurance with a limit of liability of $5,000,000, combined single limit, for bodily injury and property damage, for each claim or series of claims arising from the same originating cause and such policy shall include:

(I) The Municipality as an Additional Insured;
(II) A Cross Liability clause; and
(III) Contractual liability coverage.

(b) Insurance obtained and provided shall include a provision for the Municipality to be given thirty (30) days written notice prior to cancellation or any material change of the required insurance policies.

(c) The Developer covenants and agrees that the Municipality's insurance requirements mentioned above will not be construed to and shall in no manner limit or restricts the liability of the Developer under this Agreement.

(d) The Developer is solely responsible for full payment of any premium amounts and any deductible amounts which may be due in the event of any and all claims under policies and shall provide the Municipality with proof of the insurance required pursuant to this Agreement annually in a form satisfactory to the Municipality.

(e) The Developer shall provide the Municipality with written notice of any incident that may result in a claim against either the Developer or the Municipality, including, but not limited to such losses as, property damage to Municipality assets, third party property damage, injury or death of any person and any third party bodily injury within 7 days of becoming aware of such incident.

ARTICLE 12
SECURITY FOR PERFORMANCE

12.1 Posting of Security

As security for performance of its obligations under this Agreement, and the payment of all obligations of the Developer pursuant to this Agreement, the Developer shall post security as set forth in this Article 12.

12.2 Time for Posting Security

Security as required by this Agreement shall be posted forthwith upon execution of this Agreement and no steps shall be taken to register the Plan of Subdivision or to commence any Work hereunder until security is posted. The Municipality shall not be obligated to issue any development permit or building permit with respect to the Work until the required financial security and policy of insurance described herein has been provided to the Municipality.

12.3 Form of Security

The Developer may post security in the amount of 120% of the estimated costs of the Work, in this case $4,147,513.07 by way of:

(a) depositing with the Municipality, cash; or

(b) such other security arrangements as the Municipality in its absolute discretion finds acceptable. Any such security arrangements shall be irrevocable during the currency of this Agreement until such a time as the Developer is released in accordance with Section 12.4.

(c) depositing with the Municipality, an irrevocable non-expiring letter of credit issued by a chartered bank in Canada, acceptable to the Municipality.

(d) Any letter of credit or bond provided in accordance with section 12.3(c) herein shall:

i. Include an acknowledgement by the issuing authority that the Municipality shall be entitled to draw on the letter of credit or bond in accordance with the provisions of this Agreement, and an undertaking by the issuing bank or authority to promptly honour and pay draws made by the Municipality;

ii. be irremovable;

iii. include a statement that the letter of credit or bond is issued in favour of the Municipality;

iv. be in a form acceptable to the Municipality, acting reasonably;

v. contain a condition for automatic renewal to the Municipality's satisfaction, acting reasonably; and

vi. permit partial drawings.

(e) Where any letter of credit or bond provided herein is set to expire within 30 days and the Developer has failed to satisfy the obligations secured thereunder, the Developer shall provide the Municipality with a replacement or renewal letter of credit. If such replacement or renewal is not provided by the Developer, the Developer shall be deemed to be in breach of this Agreement and the Municipality may present the letter of credit to which the obligations pertain for payment in whole or in part and shall not be liable to the Developer therefore.

12.4 Reduction of Security

The security held by the Municipality may be reduced in accordance with the provisions of this Section 12.4. Upon written application by the Developer, and upon certification of the estimated cost of completion of the Work by the Municipal Engineer, security will be released by the Municipality as follows:

(a) Forty-five (45) days after the issuance of the Construction Completion Certificate, 75% of the original security shall be released, less the estimated cost of remedying the deficiencies identified by the Municipality at the time the Construction Completion Certificate is issued. Upon curing all deficiencies set forth in the list issued by the Municipality, the Municipality shall release the sum retained as the estimated cost of curing those deficiencies. For the sake of clarity, the Municipality shall retain the entire holdback until all deficiencies have been cured; and

(b) Forty-five (45) days after the issuance of the Final Acceptance Certificate, the Municipality shall release the final 25% of the original security.

12.5 No Reduction on or After Default

In the event that the Developer should be in default under this Agreement, or in the event that the Developer should have previously defaulted pursuant to the terms of this Agreement, the Municipality shall not be obliged to release any security, in whole or in part, held by the Municipality, until the Developer has satisfied the entirety of its obligations pursuant to this Agreement.

ARTICLE 13
DEFAULT AND REALIZATION OF SECURITY

13.1 Events of Default - Construction of the Work

Default shall occur in the event that the Developer:

(a) fails to undertake the Work in accordance with the Approved Plans and Specifications;

(b) having commenced the Work, fails or neglects to proceed on a timely and reasonable basis;

(c) fails to undertake the Work in accordance with the Approved Plans and Specifications in a good and workmanlike manner;

(d) fails to remedy any Deficiency relating to the Approved Plans and Specifications identified by the Municipal Engineer or the Municipality within a reasonable time.

13.2 Other Elements of Default

Default shall occur in the event that the Developer fails to:

(a) make payment of any sum owing by the Developer to the Municipality, pursuant to this Agreement; and

(b) comply with the terms of this Agreement.

13.3 Declaration of Default

Upon the happening of any event of default, the Municipality may claim default by giving written notice to the Developer. In the event that the default is not cured or reasonable steps have not been taken by the Developer to cure such default within thirty (30) days from the date such notification is mailed by the Municipality, the Municipality shall be entitled to avail itself of any and all rights it may have with respect to that default, such as are defined pursuant to the terms of this Agreement, or by common law or equity or under any statute.

13.4 Municipality's Rights to Cure Default

Upon the Municipality being entitled to enforce its rights upon default by the Developer, the Municipality may, in its sole discretion, do one, any or all of the following, in addition to any other rights or remedies that the Municipality may have available to it, whether under this Agreement, by common law or equity, or under any statute;

(a) on its own behalf or by way of its servants, agents or contractors, enter upon the Subdivision and proceed to supply all materials and do all necessary work in connection with the Work, including repair or reconstruction of faulty work, and the replacement of materials which are not in accordance with such specifications and to charge the cost of so doing, together with an engineering fee equal to 10% of the cost of the materials and works to the Developer; and

(b) on its own behalf or by way of its servants, agents or contractors, enter upon the Subdivision and proceed to repair and/or maintain any Work which is the responsibility of the Developer, up to the expiry of the Warranty Period, including repair or reconstruction, and the replacement of any materials which had not been supplied in accordance with the requirements of due and proper maintenance, together with an administrative fee of 10% of the cost of such material and work, and to charge that cost to the Developer.

13.5 Municipality's Other Remedies

In addition to any other right or remedy granted to the Municipality at law, in equity or by statute:

(a) in the event that the Developer should fail to pay any sum owing to the Municipality within sixty (60) days of the date of any invoice rendered by the Municipality, the Municipality may deduct the sums owing from the cash deposit held as security, or shall be entitled to seek payment from any surety company who has posted as security, or shall be entitled to draw upon any letter of credit issued by any chartered bank in favour of the Municipality as security;

(b) in the event that any monies owing by the Developer to the Municipality pursuant to this Agreement, or any other Agreement relating to the development of the Subdivision, should not be paid by the Developer within 60 days of any invoice issued by the Municipality, the Municipality shall be entitled to recover the same from the Developer as a debt due and owing to the Municipality, together with interest thereon at a rate of 18% per annum from the date of the invoice issued by the Municipality, together with solicitor-and-client costs of any legal proceedings brought to collect such debt; and

(c) to the extent permitted by law and equity, the Municipality may bring action in a court of competent jurisdiction against the Developer, seeking specific performance of the terms of this Agreement, and/or a mandatory and/or prohibitory injunction, to enforce compliance with the terms of this Agreement.

13.6 Right to Refuse Permit

In addition to any other remedy it may have, the Municipality may refuse to issue any building or development permit for any building or development within the Subdivision until all Work is complete and a Construction Completion Certificate (CCC) is issued and the lot for a specific building is registered at land titles. It is the Developer's responsibility to repair any Work that may become damaged as a result of building construction traffic or building construction activities.

ARTICLE 14
NON-WAIVER BY MUNICIPALITY

14.1 Entry as Agent

It is understood and agreed between the parties that any entry upon the Subdivision by the Municipality, pursuant to a default by the Developer, shall be as an agent for the Developer and shall not be deemed for any purpose whatsoever, as an acceptance or assumption of any service by the Municipality. The Developer further agrees that the indemnities given with respect to construction and installation of the Work in the Subdivision extend to any action undertaken by the Municipality as a result of the Developer's default.

14.2 Non-Waiver - Maintenance

The Developer hereby acknowledges that the Municipality, by providing any access, removing any snow or ice, or performing any other act with respect to the provision or maintenance of any Work, during the Warranty Period, does not assume responsibility for such Work, and no such action undertaken by the Municipality shall be deemed, in any way, to be an acceptance by the Municipality of any obligation to provide any such Work, except as provided herein. Such actions may be taken by the Municipality without prejudicing the Municipality's right to enforce the maintenance provisions contained in this Agreement.

ARTICLE 15
MISCELLANEOUS PROVISIONS

15.1 Subdivision Approval

Any recommendations by the Municipality for approval of the Proposed Plan of Subdivision shall be subject to the Developer's and the Municipalities' due compliance with the applicable provisions of the Act, *The Subdivision Regulation, 2014, The Dedicated Lands Regulations, 2009*, *The Municipalities Act* and the requirements of any relevant federal, provincial and municipal government authorities and agencies.

15.2 Municipal Bylaw Compliance

Nothing herein contained shall be deemed to oblige the Municipality to sanction or permit any breach of or deviation from the Municipality's bylaws, nor to issue any permit for any construction within the Subdivision, except upon due compliance with the Municipality's bylaws and all other regulations pertaining to development.

ARTICLE 16
ARBITRATION

16.1 Arbitration Provisions

(a) In the case of a dispute between the Parties hereto concerning any aspect of this agreement, either Party shall be entitled to give the other notice of such dispute and demand arbitration thereof. Within fourteen (14) days after such notice and demand have been given, each Party shall appoint an arbitrator who shall jointly select a third. The Parties agree that the decision of any two of the arbitrators shall be final and binding upon the parties. *The Arbitration Act, 1992* shall apply to any arbitration hereunder, and the costs of arbitration shall be apportioned equally between the parties.

(b) If the two arbitrators appointed by the Parties do not agree upon a third, or a Party who has been notified of a dispute fails to appoint an arbitrator, then the third arbitrator, or an arbitrator to represent the Party who fails to appoint an arbitrator, may be appointed by a Justice of the Court of Queen's Bench upon application by either Party.

ARTICLE 17
CONDITIONS PRECEDENT

17.1 Conditions Precedent to the Obligations of Both Parties

(a) Notwithstanding anything herein contained, the obligations of each of the Municipality and the Developer to complete the transaction contemplated under this Agreement shall be subject to the fulfillment of the following conditions precedent on or before the signing of this agreement, or such later date as to which the Parties may mutually agree in writing, and each of the Parties covenants to use is best efforts to ensure that such conditions are fulfilled:

(i) approval by the appropriate approving authority of the Plan of Subdivision and registration of the transform approval certificate with respect to the Plan of Subdivision under the Saskatchewan Land Titles System with Information Services Corporation of Saskatchewan.

(b) The foregoing are conditions precedent for the mutual benefit of both Parties and may be waived in whole or in part only if both Parties waive them in whole or in part and where the conditions precedent are waived in part, they shall have been waived in part to the same extent by both Parties.

ARTICLE 18
GENERAL PROVISIONS

18.1 Cancellation of Agreement

In the event that the Plan of Subdivision is not registered within one (1) year from the date hereof, the Municipality may, at its option on one month's notice to the Developer, declare this Agreement to be null and void, provided that any such declaration shall not relieve the Developer from the payment of any costs incurred by the Municipality which, pursuant to the terms of this Agreement, are to be paid by the Developer.

18.2 Assignment of Agreement

Neither this Agreement nor any rights or obligations under this Agreement are not assignable by the Developer without the prior written consent of the Municipality, but this consent shall not be unreasonably withheld. In determining whether consent is reasonable, the Developer acknowledges that in determining whether to enter this Agreement, the Municipality has had specific regard to the attributes of the Developer, including its financial capacity, expertise and reputation.

18.3 Further Acts

The parties shall from time to time and at all times do such further acts and things and execute all such further documents and instruments as may be reasonably required in order to carry out and implement the true intent and meaning of this Agreement.

18.4 Severability

Each of the covenants, provisions, articles, sections and other subdivisions hereof are severable from every other covenant, provision, article, section and subdivision; and the invalidity or unenforceability of any one or more covenants, provisions, articles, sections or subdivisions of this Agreement shall not affect the validity or enforceability of the remainder of the Agreement.

18.5 Enurement of Benefit

This Agreement shall enure to the benefit of and be binding upon the respective heirs, executors, administrators, successors and permitted assigns of the Parties.

18.6 No Partnership

The rights, duties, obligations and liabilities of the Parties hereto shall be separate and not joint and collective. Each Party shall be responsible only for its obligations as set out in this Agreement. It is not the intention of the Parties to create a commercial or other partnership or agency relationship between the Parties, save for as expressly provided herein, and this Agreement shall not be construed so as to render the Parties liable as partners or as creating a commercial or other partnership. No Parties shall be, except as expressly permitted herein, deemed to be or shall hold itself out to be the agent of the other party.

18.7 Waiver

No consent or waiver expressed or implied by either Party in respect of any breach or default by the other in the performance by such other of its obligations under this Agreement shall be deemed or construed to be a consent to or waiver of any other breach or default.

18.8 Notice

Any notice required to be given hereunder may be given by way of registered mail addressed to the Developer at:

Edgemont East Development Corp.
217 Sturgeon Place
Saskatoon, SK
S7K 4C5

Any notice required to be given hereunder may be given by way of registered mail addressed to the Municipality at its offices at:

Rural Municipality of Corman Park No. 344
111 Pinehouse Drive
Saskatoon, SK
S7K 5W1

18.9 Time of the Essence

Time shall be the essence of this Agreement.

18.10 Counterparts

This Agreement may be executed by the parties in separate counterparts, each of which when so executed and delivered will be deemed to be an original, and all such counterparts together will constitute one and the same instrument and, notwithstanding the date of execution, will be deemed to be dated as of the date written at the beginning of this Agreement.

IN WITNESS WHEREOF the Parties hereto have executed this Agreement as at the 22 day of MARCH, 2024.

THE RURAL MUNICIPALITY OF CORMAN PARK NO. 344

Per: _____
Judy Harwood, Reeve

(Seal)

Per: _____
Kerry Hilts, Chief Administrative Officer

Edgemont East Development Corp.

Per: _____
Darren Hagen, Developer

SCHEDULE "A"
DESCRIPTION OF THE LANDS

RE: Servicing Agreement

BETWEEN: **Edgemont East Development Corp.**

AND

The Rural Municipality of Corman Park No. 344

Description and illustration of the lands being developed:

Land Description LSD 11-34-35-5-3 Ext 186
Surface Parcel No. 145707486

Land Description LSD 14-34-35-5-W3 Ext 185
Surface Parcel No. 145948663

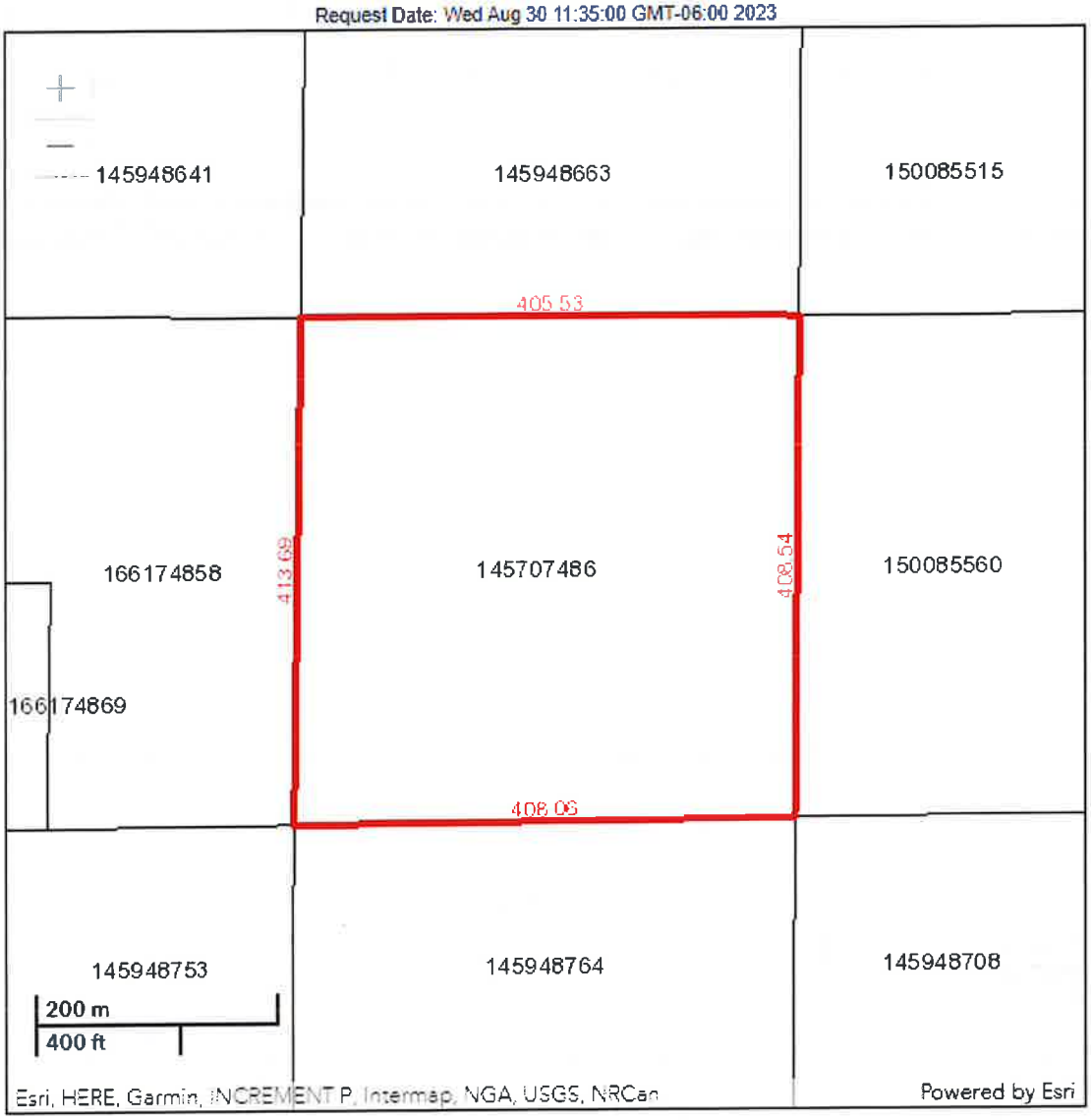
Land Description LSD 15-34-35-5-W3 Ext 26
Surface Parcel No. 150085515

Land Description LSD 16-34-35-5-W3 Ext 29
Surface Parcel No. 150085526

See next pages for illustrations of the lands (attach ISC parcel pictures of subject land(s)).

Surface Parcel Number: 145707486

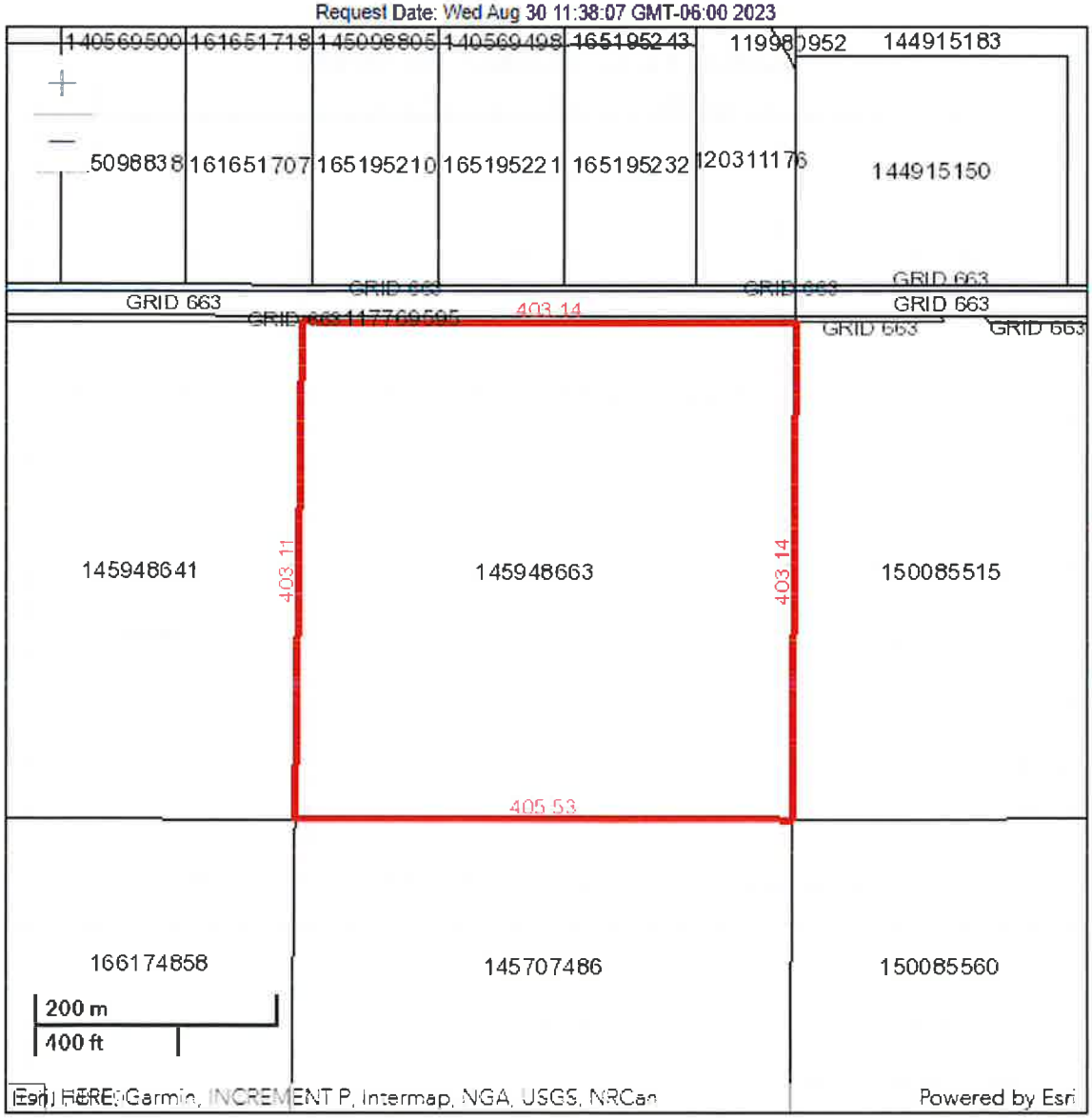
Request Date: Wed Aug 30 11:35:00 GMT-06:00 2023



Scale: 1:9028
Owner Name(s): EDGEMONT EAST DEVELOPMENT CORP.
Municipality: RM OF CORMAN PARK NO. 344
Title Number(s): 155410332
Parcel Class: Parcel (Generic)
Land Description: LSD 11- 34-35-05-3 Ext 186
Source Quarter Section: NW-34-35-05-3
Commodity/Unit: Not Applicable
Area: 16.721 hectares (41.32 acres)
Converted Title Number: 94S45471
Ownership Share: 1:1

Surface Parcel Number: 145948663

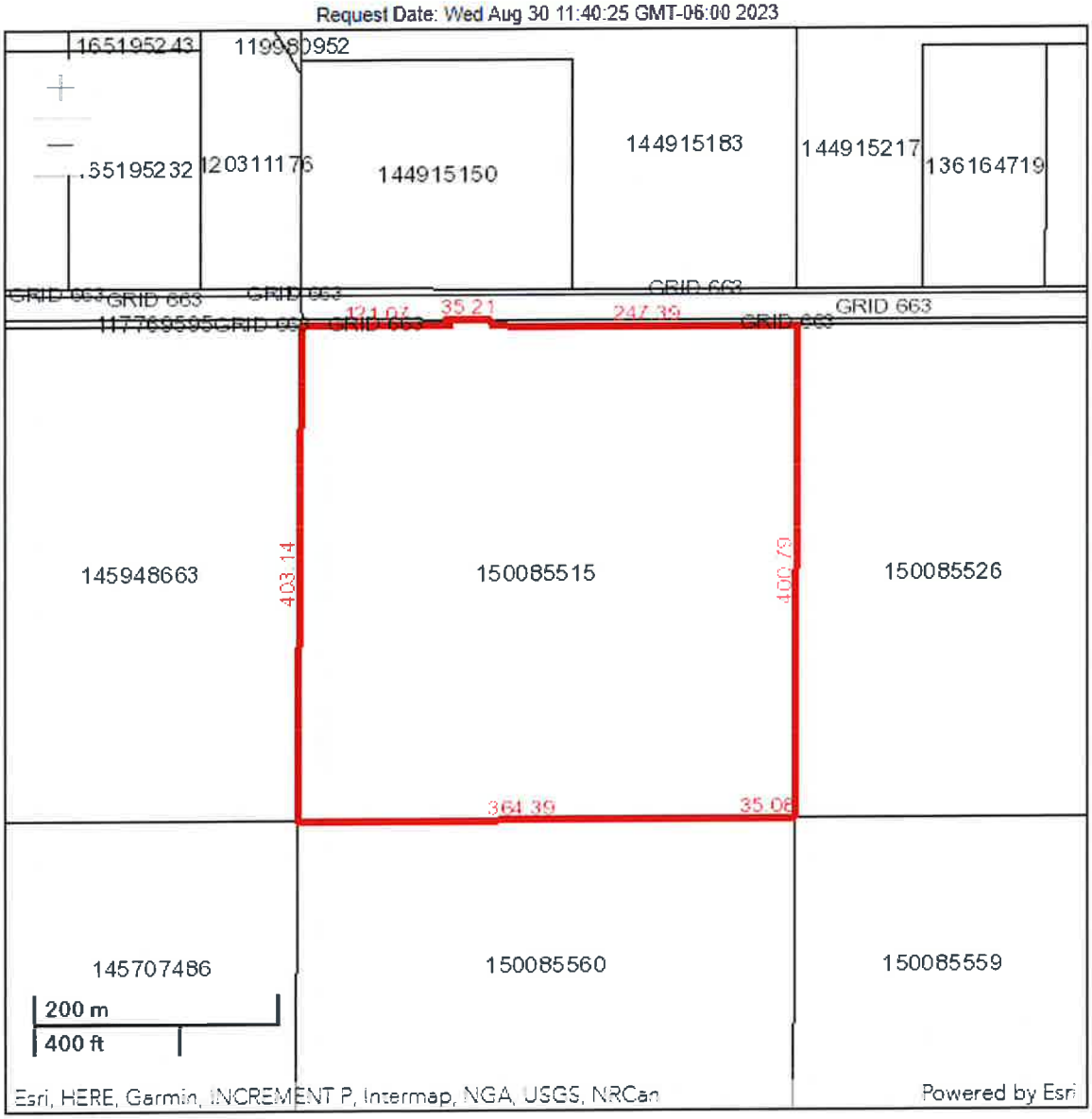
Request Date: Wed Aug 30 11:38:07 GMT-06:00 2023



Scale: 1:9028
Owner Name(s): EDGEMONT EAST DEVELOPMENT CORP.
Municipality: RM OF CORMAN PARK NO. 344
Area: 16.299 hectares (40.27 acres)
Title Number(s): 155410321
Converted Title Number: 94S45471A
Parcel Class: Parcel (Generic)
Ownership Share: 1:1
Land Description: LSD 14 34-35-05-3 Ext 185
Source Quarter Section: NW-34-35-05-3
Commodity/Unit: Not Applicable

Surface Parcel Number: 150085515

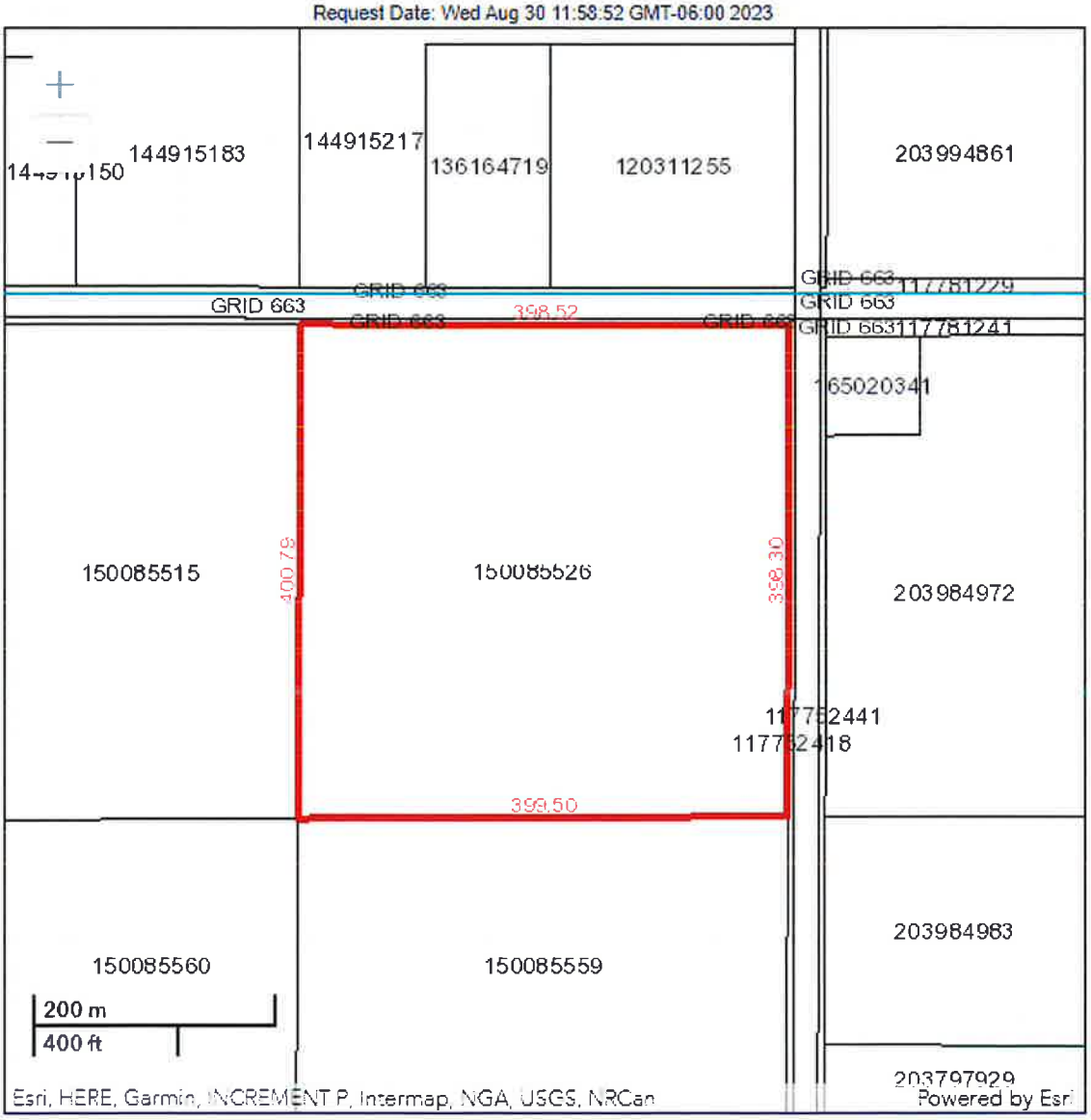
Request Date: Wed Aug 30 11:40:25 GMT-06:00 2023



Scale: 1:9028
Owner Name(s): EDGEMONT EAST DEVELOPMENT CORP.
Municipality: RM OF CORMAN PARK NO. 344
Title Number(s): 155410343
Parcel Class: Parcel (Generic)
Land Description: LSD 15- 34-35-05-3 Ext 26
Source Quarter Section: NE-34-35-05-3
Commodity/Unit: Not Applicable
Area: 16.263 hectares (40.19 acres)
Converted Title Number: 82S36197
Ownership Share: 1:1

Surface Parcel Number: 150085526

Request Date: Wed Aug 30 11:58:52 GMT-06:00 2023



Scale: 1:9028
Owner Name(s): EDGEMONT EAST DEVELOPMENT CORP.
Municipality: RM OF CORMAN PARK NO. 344
Area: 15.942 hectares (39.39 acres)
Title Number(s): 155410354
Converted Title Number: 82S36197
Parcel Class: Parcel (Generic)
Ownership Share: 1:1
Land Description: LSD 16- 34-35-05-3 Ext 29
Source Quarter Section: NE-34-35-05-3
Commodity/Unit: Not Applicable

SCHEDULE "B"
PROPOSED PLAN OF SUBDIVISION

RE: Servicing Agreement

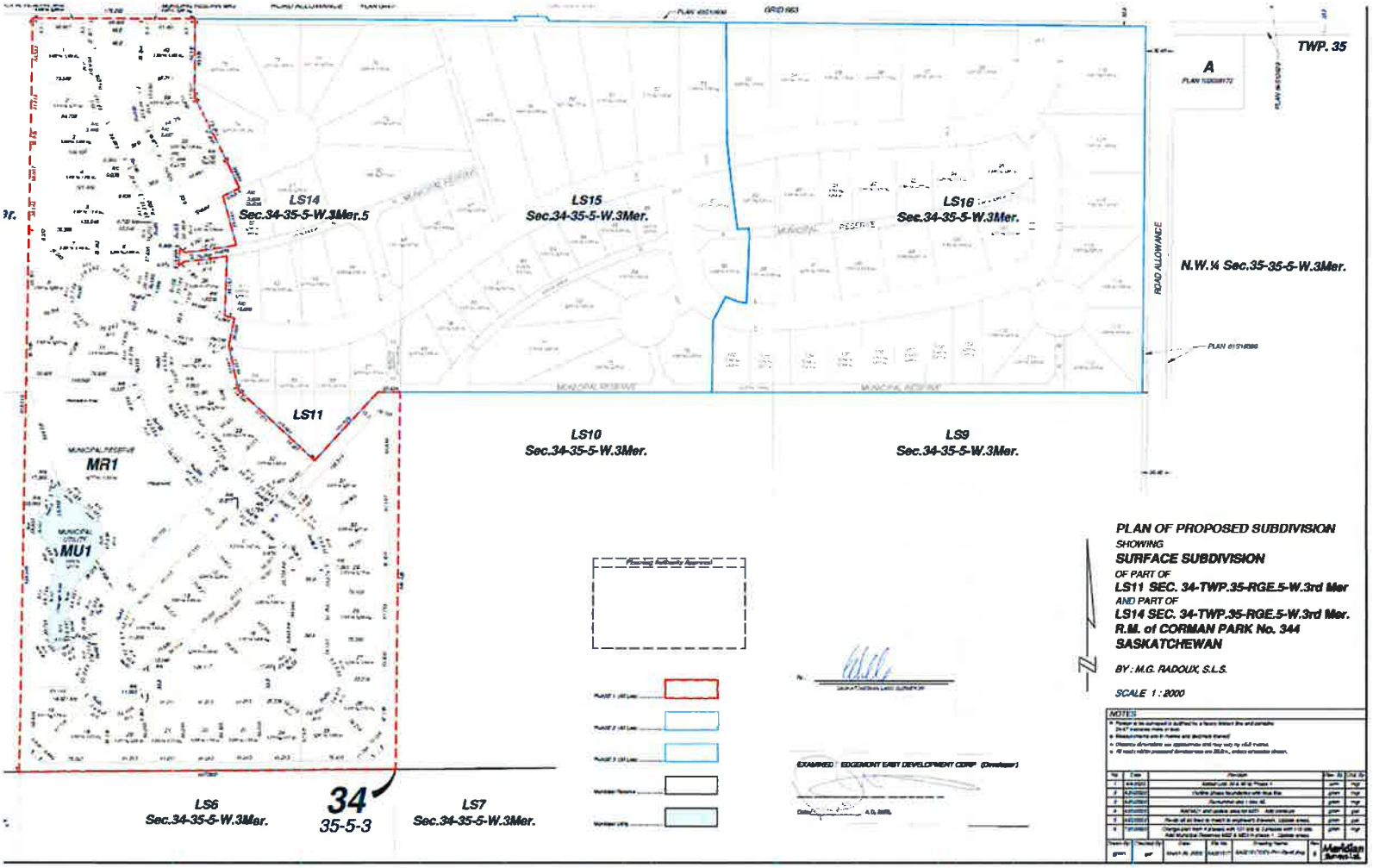
BETWEEN: **Edgemont East Development Corp.**

AND

THE RURAL MUNICIPALITY OF CORMAN PARK NO. 344

Plan of Subdivision of Lands Being Subdivided:

See next page for Plan of Proposed Subdivision


TWP. 35
A
LS14
Sec.34-35-5-W.3Mer.5
LS15
Sec.34-35-5-W.3Mer.
LS16
Sec.34-35-5-W.3Mer.
ROAD ALLOWANCE
N.W.¼ Sec.35-35-5-W.3Mer.
LS11
LS10
Sec.34-35-5-W.3Mer.
LS9
Sec.34-35-5-W.3Mer.
MUNICIPAL RESERVE
MR1
MUNICIPAL UTILITY
MU1
LS6
Sec.34-35-5-W.3Mer.
34
35-5-3
LS7
Sec.34-35-5-W.3Mer.
PLAN OF PROPOSED SUBDIVISION
SHOWING
SURFACE SUBDIVISION
OF PART OF
LS11 SEC. 34-TWP.35-RGE.5-W.3rd Mer
AND PART OF
LS14 SEC. 34-TWP.35-RGE.5-W.3rd Mer.
R.M. of CORMAN PARK No. 344
SASKATCHEWAN
BY: M.G. RADOUX, S.L.S.
SCALE 1 : 2000
NOTES
EXAMINED : EDGEMONT EAST DEVELOPMENT CORP. (Developer)

SCHEDULE "C"
DEVELOPER WORK

(SEE NEXT PAGE)

Summary of Property Servicing

RM OF
CORMAN PARK
#344

Development Name: EDGEMONT EAST ESTATES

Developer Name: EDGEMONT EAST DEVELOPMENT CORPORATION

Legal Land Location: LS11 SEC. 34-TWP.35-RGE.5-W.3rd Mer &
LS14 SEC. 34-TWP.35-RGE.5-W.3rd Mer.
R.M. of Corman Park No. 344 Saskatchewan

The purpose of these worksheets is twofold. Firstly, the worksheets are intended to provide the Municipality with a summary of the various services which are being constructed included any technical specifications. The second reason for these worksheets is to aid the developer in itemizing the various costs of servicing the development for the purpose of calculating the amount of financial security to be provided to the Municipality.

Summary of Property Servicing
Worksheet 1: Roadways

To be submitted by an applicant for the purposes of summarizing the design standards for a development and calculation of financial security. ***Complete a separate worksheet for each type of roadway being constructed or upgraded for the development.***

1. **Type of roadway:**

   - [X] Residential internal subdivision road
   - [ ] Municipal road – main farm access
   - [ ] Primary haul road
   - [ ] Industrial/Commercial internal subdivision road

2. **Specifications:**

   a. length of road to be constructed or upgraded: 1500 metres
   b. right of way width 30 metres
   c. road sub-grade width: 10 metres
   d. road top width: 7.4 metres
   e. back slope : 4.1
   f. side slope: 3.2
   g. ditch width: 4.0 metres
   h. method of erosion control: _____
   i. anticipated design speed 40 km/hr
   j. estimated road lifespan: 15 years
   k. culvert locations (attach site plan) and sizes:

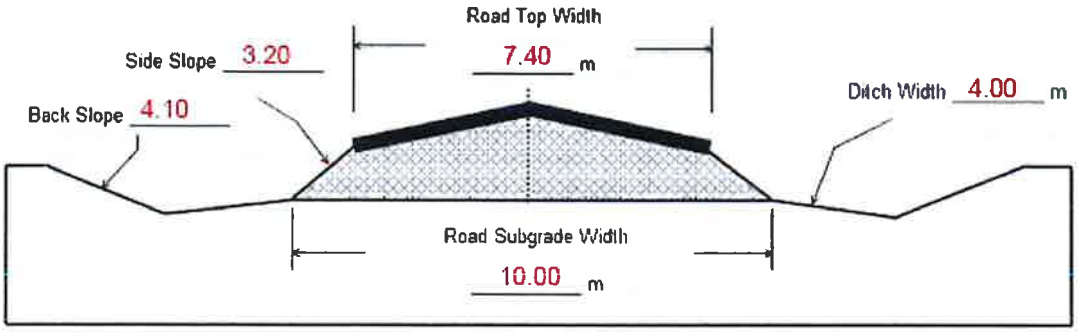
   number: 40 type: CSP size: 400 mm
   number: 5 type: CSP size: 600 mm
   number: _____ type: _____ size: _____ mm
   number: _____ type: _____ size: _____ mm
   number: _____ type: _____ size: _____ mm

   Comments: _____

   l. road surfacing:

   - [ ] Gravel
   - [ ] Chip seal
   - [X] Asphalt
   - [ ] Other

   surface thickness: .592 m^3/km



3. **Cost estimates:** Provide cost estimate for each component of construction attaching quotes and contracts where necessary to verify estimates.

a.	land acquisition	$3,200,000.00 (paid)
b.	Design and engineering	101,381.89 (paid)
c.	preliminary earthwork & sub grade construction	683,950.00 (paid)
d.	road construction	691,500.00
e.	surfacing	357,000.00
f.	culverts	91,875.00
g.	signage	5,959.00
h.	line painting, curbing etc...	5,400.00
i.	re-vegetation and erosion controls	5,400.00
	TOTAL ESTIMATED COST	$ 5,142,465.89

For Office Use Only:

Date of receipt of preliminary construction plans: ____/____/____ (d/m/y)

Date of approval of preliminary construction plans: ____/____/____ (d/m/y)

Date of receipt of as-built drawings: ____/____/____ (d/m/y)

Date of final inspection: ____/____/____ (d/m/y)

Summary of Property Servicing
Worksheet 2: Water Supply Lines

To be submitted by an applicant for the purposes of summarizing the design standards for a development and calculation of financial security. ***Complete a separate worksheet for each type of waterline being constructed or upgraded for the development.***

4. Type of waterline:

☒ Potable ☐ Non potable ☐ Fire suppression

5. Specifications:

	Sewer	Water	
a. length of water supply line constructed:	1430	1430	metres
b. water supply line diameter:	200/250	100/150	mm
c. depth of line:	Varies - 3.0 min.	3.0	metres
d. water supply line material :	PVC	HDPE	
e. # fire hydrants:	na	2.0	
f. # curb stops:	40.0	41.0	metres
g. minimum water supply line depth:	3.0 min	2.8	metres

6. **Cost estimates:** Provide cost estimate for each component of construction attaching quotes and contracts where necessary to verify estimates.

	Sewer	Water	
a. land acquisition and /or easements	paid incld in	$ WS no. 1	
b. Design and engineering	included in c.	27,545.00	(paid)
c. materials & labour	867,500.00	245,930.00	(paid 50% - 122,965)
d. trenching and or drilling	1,038,650.00	55,500.00	
e. installation	included in c.	12,500.00	
f. backfill and re-vegetation	included in c.	26,250.00	
g. hydrants and pump stations	included in c.	16,000.00	
TOTAL ESTIMATED COST	1,906,150.00	$ 383,725.00	Total - 2,289,875.00

For Office Use Only:

Date of receipt of preliminary construction plans: ____/____/____ (d/m/y)

Date of approval of preliminary construction plans: ____/____/____ (d/m/y)

Date of receipt of as-built drawings: ____/____/____ (d/m/y)

Date of final inspection: ____/____/____ (d/m/y)

Summary of Property Servicing
Worksheet 3: Shallow Utilities & Public Amenities

To be submitted by an applicant for the purposes of summarizing the design standards for a development and calculation of financial security.

7. **Shallow Utilities:** Provide cost estimate for each utility attaching quotes and contracts where necessary to verify estimates.

		Estimate Supplied
a. Natural Gas	$ 115,600.00	☒
i. Service Capacity		
b. Electricity	224,400.00	☐
i. Service Capacity		
c. Telephone	included	☐
d. Other: internet	included	☐
TOTAL ESTIMATED COST UTILITIES	$ 340,000.00	

8. **Public Amenities:** List and provide a cost estimate for each public facility as well as the costs of developing public lands within the development.

a. Engineering and design	$ 12,535.00 (paid)
b. Site Grading and Landscaping , seeding, trees, etc.	257,082.00
c. Lighting	
d. Recreational Facilities	318,625.00
e. Fencing	
f. Other:	
Pathways	42,000.00
TOTAL ESTIMATED COST PUBLIC AMENITIES	$ 630,242.00

9. **Other:** Include relevant statement and contracts to verify estimates

a. Legal	$ 15,000.00
b. Survey	47,000.00
c. Storm water retention system	
d.	
e.	
TOTAL ESTIMATED COST OTHER	$ 62,000.00

Summary of Property Servicing
Worksheet 4: Drainage Works

To be submitted by an applicant for the purposes of summarizing the design standards for a development and calculation of financial security.

10. Drainage Works: Provide a cost estimate for the construction of drainage works for the development attaching quotes and contracts where necessary to verify estimates.

a.	Design and Engineering	$ 96,911.00 (paid)
b.	Site grading and excavation	124,227.00 (paid)
c.	Culverts and drainage channels/swales	574,165.00 (paid)
d.	Re-vegetation	26,250.00 (paid 50% - 13,125.00)
e.	Pump	
f.	Other control structures	
	i.	
	ii.	
	iii.	

TOTAL ESTIMATED COST DRAINAGE WORKS $ 821,553.00 (paid - 808,428.00)

11. Storm Pond Design Specifications:

a.	Pond Type:	☒ Wet pond	☐ Dry Pond
b.	Pond depth:	3.30 m	
c.	Water holding capacity	13,900.00 m^3	

Summary of Estimated Costs

Roadways:	$	5,142,465.89 (paid - 3,985,331.90)
Waterlines:		383,725.00 (paid - 150,510.00)
Shallow Utilities:		340,000.00
Drainage Works/Lot Preparation:		821,553.00 (paid - 808,428.00)
Other:		2,598,392.00 (paid - 12,535.00)
Legal/Survey	62,000.00	
Public Amenities	630,242.00 (paid 12,535.00)	
incl. Sewer	1,906,150.00	
Total Estimated Costs:		9,286,135.89 (paid 4,956,804.90)

DELTA CONSTRUCTION GROUP INC.

Estimate

*** REVISED ***

Email: info@deltaconstruction.ca Web: www.deltaconstruction.ca Phone: 1 (306) 955-3212

Company:	Prairie Lane Estates Ltd.
Client:	Darren Hagen
Address:	217 Sturgeon Place Sk, S7K 4C5
Email:	durban@sasktel.net

Date	December 22, 2023
Job#	22-074r2

Project Name:	Edgemont East Estate Phase 1
Project Address:	RM of Corman Park No. 344, SK

General Scope	Unit	Qty	Unit Price	Total
A Roadways				
Earthworks & Subgrade Preparation	m2	45,000	15.20	683,950.00
Topsoil Stripping				
Common Excavation				
Unstable Subgrade				
Road Construction	m2	15,000	46.10	691,500.00
Subgrade Preparation				
Approach Construction				
150 mm Subbase				
150 mm Base Course				
Road Surfacing	m2	11,100	32.16	357,000.00
80mm Asphalt Surface Course				
Prime coat				
Culverts	nr	45	2,041.67	91,875.00
600mm CSP Culvert (38m)				
600mm CSP Culvert (18m)				
600mm CSP Culvert (16m)				
400mm CSP Culvert (8m)				
Signage	lot	1	5,959.00	5,959.00
Line Paining	lot	1	5,400.00	5,400.00
Seeding and Erosion Control	lot	1	5,400.00	5,400.00
Subtotal				**1,841,084.00**
B Water Mains				
Materials and Labor	m	1,430	171.98	245,930.00
Trenching	m	1,430	38.81	55,500.00
Connection to Existing	m	1,430	8.74	12,500.00
Topsoil Backfill and Seeding		1	26,250.00	26,250.00
Hydrants	lot	1	16,000.00	16,000.00
Subtotal				**356,180.00**

Tender Drawings / References Used:	Total (A,B,C,D,E,F) Estimated Price	(see next page)

DELTA CONSTRUCTION GROUP INC.

Estimate

*** REVISED ***

Email: info@deltaconstruction.ca Web: www.deltaconstruction.ca Phone: 1 (306) 955-3212

Company:	Prairie Lane Estates Ltd.
Client:	Darren Hagen
Address:	217 Sturgeon Place Sk, S7K 4C5
Email:	durban@sasktel.net

Date	December 22, 2023
Job#	22-074r2

Project Name:	Edgemont East Estate Phase 1
Project Address:	RM of Corman Park No. 344, SK

...cont

C Sewer Mains				
200 mm PVC Gravity Sewer	m	1,280	300.00	384,000.00
250 mm PVC Gravity Sewer	m	150	300.00	45,000.00
1050 mm Standard Manhole	m	85	2,850.00	242,250.00
Machine Excavation	m	880	150.00	132,000.00
100 mm PVC Sewer Service	m	900	35.61	32,050.00
100 mm PVC Service Saddle	nr	40	250.00	10,000.00
100 mm PVC Bend	nr	40	30.00	1,200.00
100 mm PVC Cap	nr	40	25.00	1,000.00
Clean-out Assembly	nr	40	500.00	20,000.00
Subtotal				**867,500.00**
D Sewage Pumping Station				
Sewage Pumping Station	Lump Sum	1	345,000.00	345,000.00
100 mm Sewage Force Main (in dev - common trench)*	Lin.M.	500	80.00	40,000.00
100 mm Gate Valves	Each	2	2,000.00	4,000.00
100 mm HDPE Cap	Each	1	400.00	400.00
Connection to Existing	Lump Sum	0	-	-
Rail Crossing	Lump Sum	0	-	-
1800 dia. Concrete Attenuation Tanks c/w Bulkheads	Lin.M.	60	4,250.00	255,000.00
Diversion Manholes and Piping	Vert.M	13	2,250.00	29,250.00
250 mm PVC Gravity Sewer Main	Lin.M.	40	300.00	12,000.00
Excavation and Special Backfill	Lin.M.	40	3,050.00	122,000.00
Dewatering - Setup and Takedown	Lump Sum	1	90,000.00	90,000.00
Dewatering - Maintenance and Attendance	Days	45	2,500.00	112,500.00
Chain Link Fence	Lin.M.	60	225.00	13,500.00
Approach Construction and Landscaping	Sq.M.	300	50.00	15,000.00
Subtotal				**1,038,650.00**

Tender Drawings / References Used.	Total (A,B,C,D,E,F) Estimated Price	(see next page)

DELTA
CONSTRUCTION GROUP INC.

Estimate

*** REVISED ***

Email: info@deltaconstruction.ca Web: www.deltaconstruction.ca Phone: 1 (306) 955-3212

Company:	Prairie Lane Estates Ltd.
Client:	Darren Hagen
Address:	217 Sturgeon Place Sk, S7K 4C5
Email:	durban@sasktel.net

Date	December 22, 2023
Job#	22-074r2

Project Name:	Edgemont East Estate Phase 1
Project Address:	RM of Corman Park No. 344, SK

...cont

E Public Amenities				
Site Grading & Landscaping	lot	1	257,082.00	257,082.00
Excavation and Special Backfill				
Dewatering Works incl. set-up and maintenance				
Approach and landscaping				
Recreational Facilities	lot	1	318,625.00	318,625.00
Pathwalks	lot	1	42,000.00	42,000.00
Subtotal				**617,707.00**
F Drainage Works				
Site Grading and Excavation	lot	1	124,227.00	124,227.00
Topsoil stripping				
Common Excavation				
Disposal				
Culverts,Channels and Swales	lot	1	574,165.00	574,165.00
Erosion Control	lot	1	26,250.00	26,250.00
Topsoil Replacement				
Seeding				
Subtotal				**724,642.00**

Notes:
1. Engineering and Design not included
2. Legal and Survey Works Not included

Tender Drawings / References Used:	Total (A,B,C,D,E,F) Estimated Price	$5,445,763.00

Physical Address: 38043 Range Rd 3054 N RM of Corman Park
Mailing Address: Site 410, Comp 3, RR4 STN Main Saskatoon SK S7K 3J7

DELTA CONSTRUCTION GROUP INC.

Estimate

Email: info@deltaconstruction.ca Web: www.deltaconstruction.ca Phone: 1 (306) 955-3212

Scope of Works (Unless Noted Otherwise)

	Included:	Excluded:
Asphalt | Gravel	„Provision and installation of asphalt concrete in accordance with specified requirements or as deemed necessary. „Provision and application of a prime coat as per specifications or as deemed necessary. „Provision and application of a tack coat as per specifications or as deemed necessary. „Provision and installation of granular base course in accordance with specified requirements or as deemed necessary. „Provision and installation of granular sub-base course in accordance with specified requirements or as deemed necessary. „Ensuring the subgrade is meticulously prepared to align precisely with the specified design levels. „Preliminary excavation and responsible disposal of excavated materials preceding the installation of surface structures, where applicable. „(!) Mobilization pertaining to the asphalt or gravel scope of work is included within the project's initial scope. Any further mobilization requirements beyond this scope will incur additional charges.	„Provision and application of a fog coat as per specifications or as deemed necessary. „Provision and installation of geo-cloth or fabric in accordance with specified requirements or as deemed necessary. „Provision and application of slurry as per specifications or as deemed necessary.
Earthworks	„Excavating soil within the designated property boundaries or specified project area. „Filling the required levels of material, either from existing stockpiles or through approved imports, in accordance with the agreed-upon terms or specifications outlined in the project plans. „Managing the removal of surplus excavated materials or inappropriate fill materials excavated from the project site. „Performing grading and earthmoving operations to achieve the specified design elevations and level the ground according to project requirements. „Addressing wet soil conditions by implementing dewatering or water removal techniques at the project site. „(!) Mobilization pertaining to earthworks scope of work is included within the project's initial scope. Any further mobilization requirements beyond this scope will incur additional charges.	
Site Services	„Provision and placement of relevant waterline pipes, valves, as needed, and in accordance with specified plans, along with all earthwork tasks associated with waterline installation as outlined in the plans. „Provide and set up all relevant sanitary sewer pipes, manholes, frames, and covers in accordance with the plans and any specified requirements, along with all earthwork tasks associated with the Sanitary Sewer lines as outlined. „Provide and install all necessary stormwater pipes, catch basins, manholes, frames, and covers as indicated on the plans and in accordance with specified requirements. Additionally, complete all earthwork tasks related to stormwater lines as outlined. „(!) Mobilization pertaining to site services scope of work is included within the project's initial scope. Any further mobilization requirements beyond this scope will incur additional charges.	
Concrete Works	„Provision and installation of concrete sidewalks in accordance with specified requirements or as deemed necessary. „Provision and installation of concrete pads in accordance with specified requirements or as deemed necessary. „Provision and installation of concrete curbs/barriers/gutters in accordance with specified requirements or as deemed necessary. „Provision and installation of granular base course below concrete sections in accordance with specified requirements or as deemed necessary. „Ensuring the subgrade below granular base underneath concrete sections is meticulously prepared to align precisely with the specified design levels. „(!) Mobilization pertaining to concrete scope of work is included within the project's initial scope. Any further mobilization requirements beyond this scope will incur additional charges.	„Provision and installation of concrete garbage/recycling pad in accordance with specified requirements or as deemed necessary.

DELTA
CONSTRUCTION GROUP INC.

Estimate Acceptance

Email: info@deltaconstruction.ca Web: www.deltaconstruction.ca Phone: 1 (306) 955-3212

Terms and Conditions:

•This estimate excludes contract bonding unless otherwise specified. •This estimate remains valid for a duration of fourteen (14) days. Delta Construction Group Inc. retains the option to modify or retract this estimate following the conclusion of the acceptance period. Written acceptance must be received by Delta Construction Group Inc. before the expiration of the acceptance period. •The client's representatives are responsible for providing all survey, layout, and materials testing, including compaction testing. •Delta Construction Group Inc. disclaims any responsibility for the relocation of utilities that could potentially obstruct the progress of the proposed project. •Delta Construction Group Inc. shall not assume liability for the repair of private utilities, structures, or any other elements concealed within the designated construction zone, unless they have been properly identified, located, and exposed by either the General Contractor or Owner. •This estimate excludes hydro-vac services unless explicitly specified otherwise. •In the event of encountering unfavorable soil conditions, any necessary actions such as excavation, replacement, or remediation of unsuitable material or soft spots will be treated as an extra cost. •This estimate covers a single mobilization to the project site. Any extra mobilizations necessary due to project phases or circumstances beyond our control will incur additional charges. •The provided quantity/area estimate is preliminary and subject to verification. The final measurement of the area will be conducted upon contract completion, and the ultimate contract price will be determined based on the field quantities and the corresponding unit rates specified in this estimate. •This estimate excludes lot markings, landscaping, site fencing, electrical work, or any other tasks unless explicitly mentioned otherwise. •Delta Construction Group Inc. reserves the right to perform load testing procedures as required and may propose potential solutions that could result in extra costs for either the General Contractor or the Owner, contingent upon the test results. •The excavation and filling zones should align with the design line, grade, elevations, and configuration specified in the drawings and specifications before our crew commences work at the site. •The General Contractor or Owner is responsible for ensuring that sufficient field staking is provided to verify lines, grades, and elevations during construction for all work scopes. •The warranty period extends for one year starting from the asphalt paving's completion date, however, warranty is void if asphalt paving is done in temperatures below 3°C (37.4°F). •This estimate is provided with the expectation that the construction work, including paving, concreting, or any other construction activities, will take place during the 2023 construction season. Any work that cannot commence or be finalized within the 2023 season may incur additional costs. •This estimate does not encompass any traffic-related provisions unless stated otherwise. •Material excavated as waste must meet the criteria for 'clean fill' classification; otherwise, there may be additional charges.

Payment Terms:

•Payment is due within 30 days of the date of invoice. •No holdbacks. •No liquidated damages. •Total estimated price does not include applicable taxes, which will be shown as separate additional amounts on all invoices. A PST vendor number must be provided for exemption.

ACCEPTANCE:

The above prices, specifications and conditions are satisfactory and hereby accepted.

ESTIMATE# 22-074r2 Printed Name: _____

Date Accepted: _____ Signature: _____

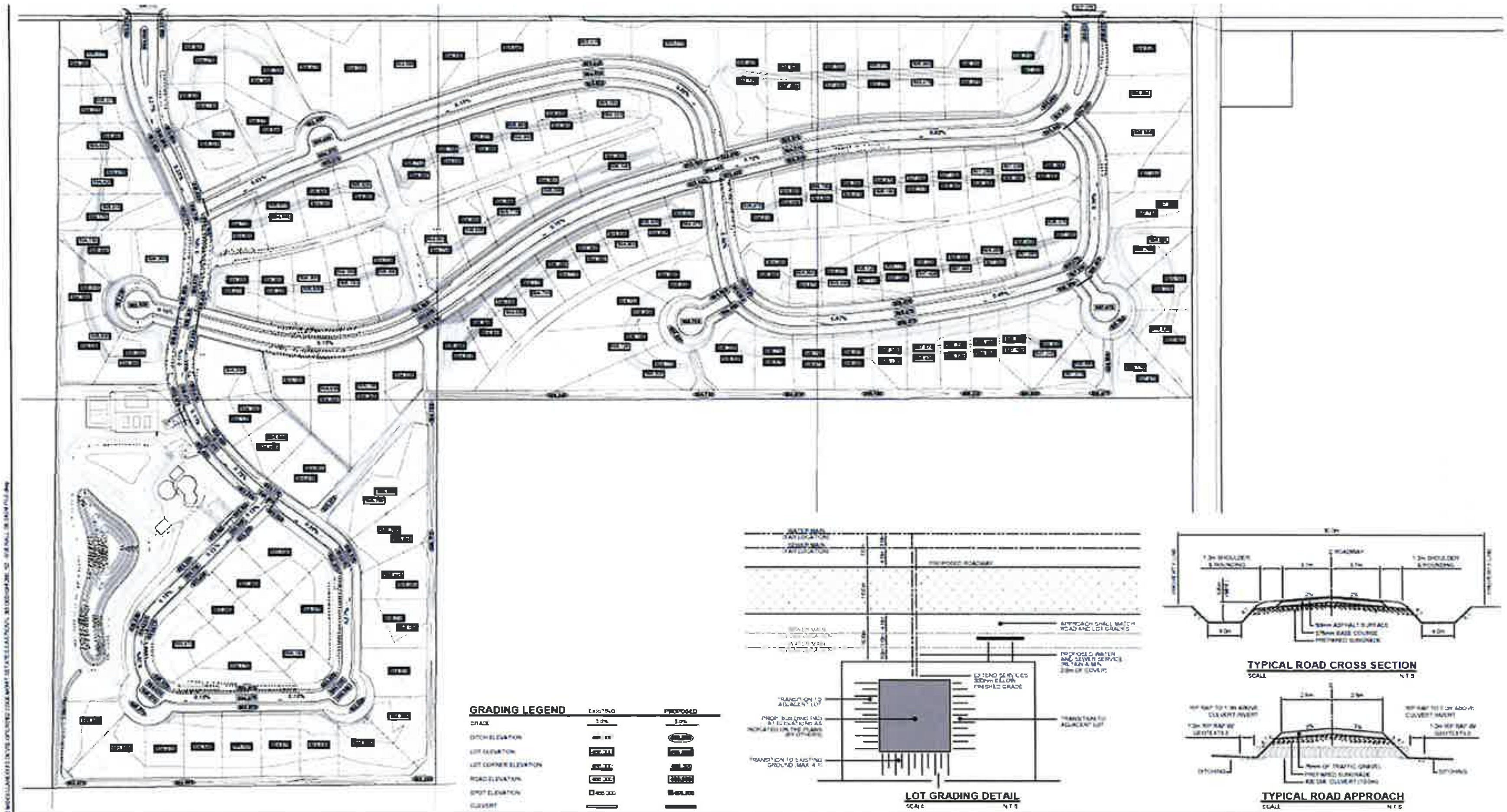
Confidentiality:

This estimate and its attachments are intended solely for specific recipients, may include privileged or confidential data, and must not be shared, copied, or distributed if you're not the intended recipient. If received in error, please contact the sender and promptly delete both the estimate and its attachments.

Physical Address: 38043 Range Rd 3054 N RM of Corman Park
Mailing Address: Site 410, Comp 3, RR4 STN Main Saskatoon SK S7K 3J7

SCHEDULE "D"
DRAINAGE AND GRADING PLAN

(SEE NEXT PAGE)



ASSOCIATION OF PROFESSIONAL ENGINEERS & GEOSCIENTISTS OF SASKATCHEWAN
CERTIFICATE OF AUTHORIZATION
BCL ENGINEERING LTD.
NUMBER C3312

SCALE SHOWN REFER TO ANSI D PAPER SIZE
SCALE TO BE DOUBLED FOR ANSI B PAPER SIZE

No.	REVISION	DATE	BY
0	ISSUED FOR PERMIT		

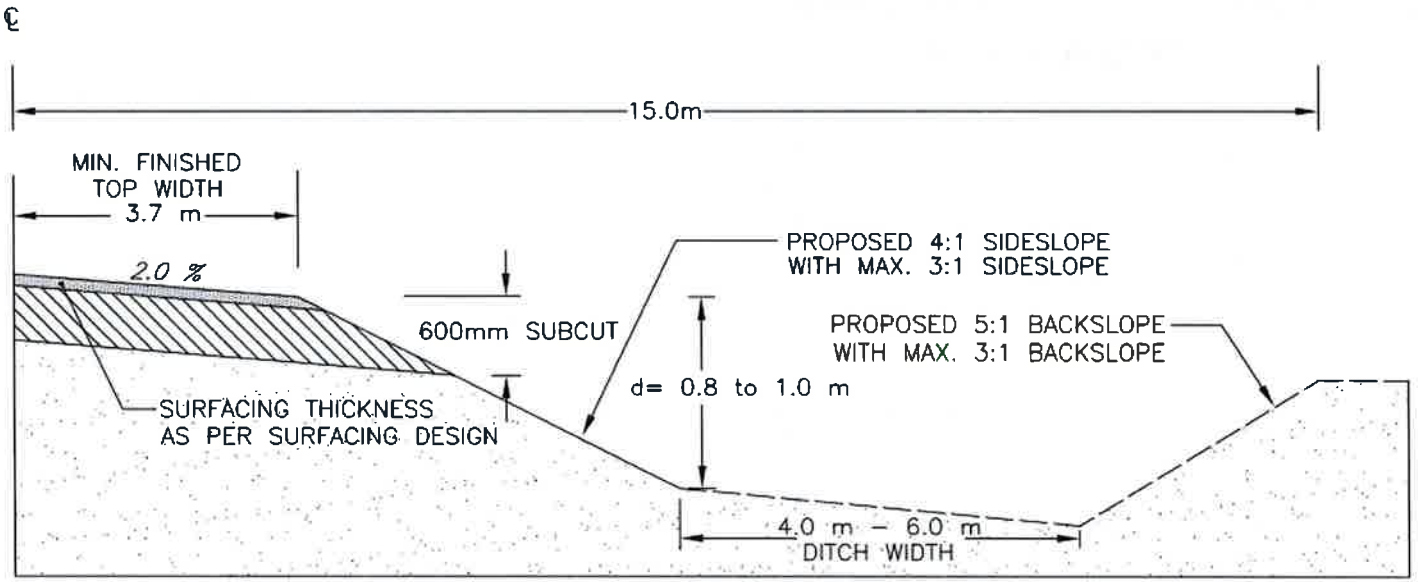
BCL ENGINEERING LTD.

EDGEMONT EAST

SUBDIVISION DEVELOPMENT
PROPOSED GRADING PLAN

REV. No. 0
SHEET 05 of 35

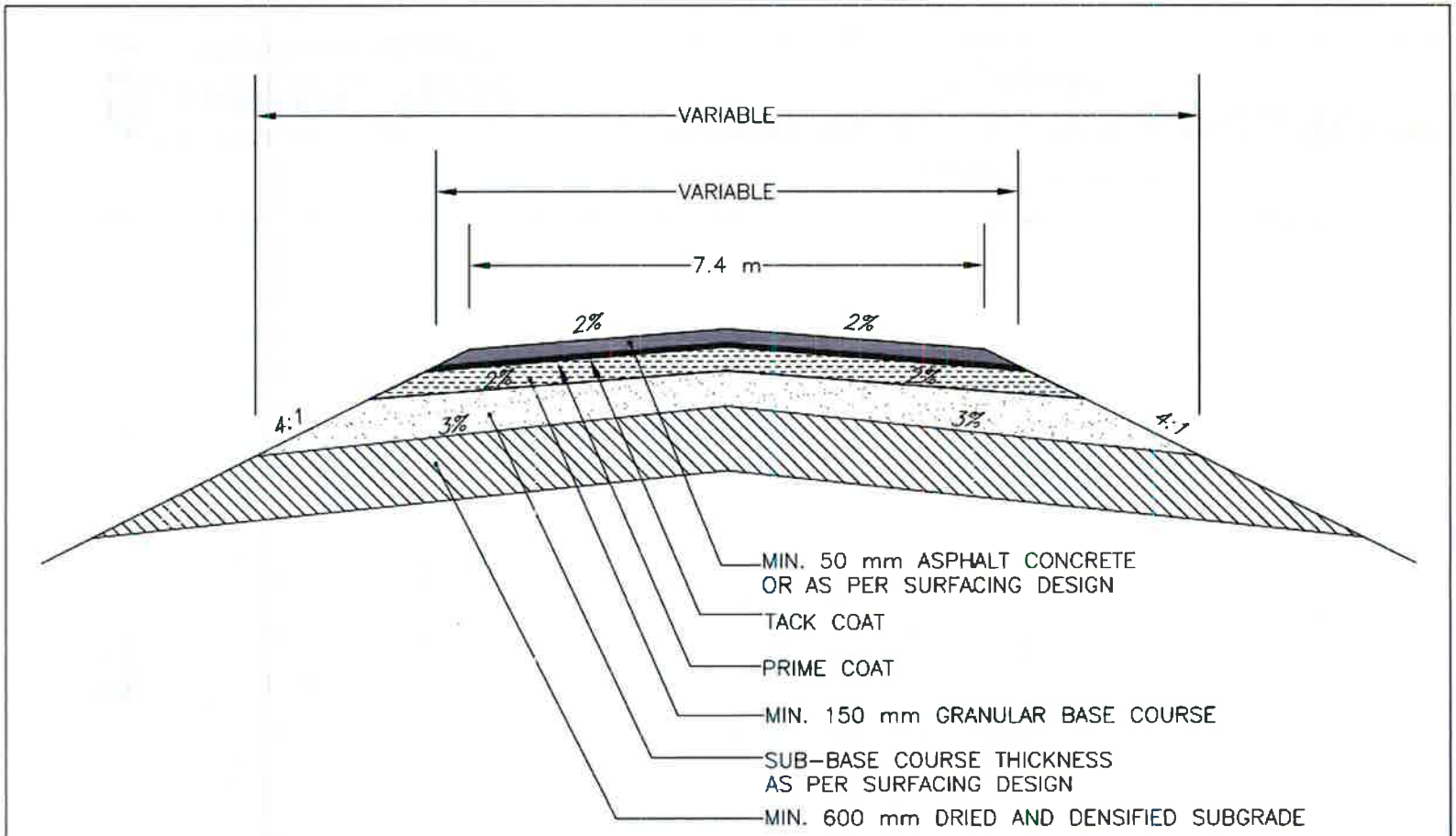
SCHEDULE "E"
ROAD STANDARDS



Rural Municipality of Corman Park

PUBLIC WORKS
COUNTRY RESIDENTIAL - TYPICAL CROSS SECTION SUBGRADE

DATE: 2017	SCALE: NTS	DRAWN BY: WOOD E&I



Rural Municipality of Corman Park

PUBLIC WORKS
COUNTRY RESIDENTIAL - TYP. SURFACING
ASPHALT CONCRETE

DATE: 2017	SCALE: NTS	DRAWN BY: WOOD E&I

1. Description

- Road design and construction standards for paved (asphalt concrete) subdivisions and special roads as designed within the Rural Municipality of Corman Park, No. 344 (Municipality).

2. Miscellaneous

- For the purposes of this document, the term "proponent" shall be used to address duties that shall be undertaken by the owner, developer, contractor and engineer interchangeable.
- During construction, the proponent shall be responsible for all traffic accommodation measures. This shall include but not limited to:
  - Proper signing of all access roads whereby traffic (construction or local) may access existing Municipality roads.
  - Traffic gravel shall be applied, if or as necessary for local traffic.
  - Proper measures shall be taken to ensure that local traffic can safely interact with construction equipment.
- The proponent shall ensure that all necessary Haul Road Agreements are in place including any provisions for dust control prior to the hauling of materials.
- Dust control to be applied on any approved detour routes.

3. Required Right-Of-Way Standards

- Minimum allowable Right-of-Way (ROW) purchased shall be 30.0 meters (m).
- The proponent shall be responsible for the purchase of all ROW.
- The minimum allowable ROW for cul-de-sacs and turnabouts purchased shall be 60.0 m with a minimum of 15.0 m radius for the driving surface.
- The road shall be designed and constructed in the center of the Right-Of-Way unless with special permission of the Municipality.

4. Road Widths and Geometric Standards

4.1. Finished Road Width and Height

- The finished asphalt driving surface (paved width before the start of the asphalt slope) shall be as follows:
  - For fill heights of 3.0 m or less (where the road surface is from 0.0 m to 3.0 m in height), a 7.4 m finished road top width (asphalt) shall be required.
  - For fill heights greater than 3.0 m (where the road surface is from 3.1 metres in height or more), a 8.0 m finished road top width (asphalt) shall be required.
- The road cross-fall (slope) shall be constructed to 2.0% with any curves must be constructed with the proper super-elevation.

- The average shoulder elevation of the road surface should be approximately 0.8 m to 1.0 m above the adjacent ground except in cut areas.
- The subgrade surface shall not be less than 1.5 m above high water level on the ground water table. (ie: level to which free water would rise in a hole sunk in the ground).

4.2. Surfacing and Hydraulic Design

- A grading, surfacing and hydraulic design shall be completed, signed and stamped by a Professional Engineer registered with the Association Of Professional Engineers and Geoscientists of Saskatchewan (APEGS) and licensed to practice (Permission to Consult in this field of expertise) within the Province of Saskatchewan.
- The surfacing structure shall be based upon the Saskatchewan Ministry of Highways and Infrastructure's Shell Curve method and shall be based on a 15 year design life (N_{15}).
- Soils testing shall be in accordance with the Saskatchewan Ministry of Highways and Infrastructure's Standard Test Procedures manual.
- Hydraulic structures (culverts) with significant flows shall be designed (sized) in accordance with the Saskatchewan Ministry of Highways and Infrastructures Hydraulic Manual and shall be based on a Q^{25} flow (1 in 25 year (1:25)) frequency.
  - The Municipality may request that the design be based on a Q^{50} flow (1 in 50 year (1:50)) frequency based on the location (proximity) of any residences upstream of the crossing.
  - The proponent shall apply for, and shall meet all of the listed requirements, an Aquatic Habitat Protection Permit (AHPP) from SaskWatershed Authority for hydraulic passages requiring such.

4.3. Sideslopes

- Sideslopes shall range from 3:1 to 4:1 depending upon situation and with approval from the Municipality.
  - The standard required sideslope shall be 4:1.
    - For road fills ranging from 0.0 to 3.0 m in height, the sideslope shall be 4:1.
    - For road fills ranging in height from 3.0 m to 4.0 m, the toe of slope shall be 12.0 m from shoulder of the road.
    - For road fills greater than 4 m the sideslope shall be 3:1.
  - If upon review by the Municipality, a sideslope of 3:1 may be allowed only with special permission from the Municipality.

4.4. Ditch Bottom Widths

- Ditch bottom widths shall be range from 4.0 to 6.0 m depending upon grade height and backslope requirements.
  - The desirable is 6.0 m for snow storage.

4.5. Backslopes

- Sideslopes shall range from 5:1 to 3:1 depending upon the situation and with approval from the Municipality.
  - The standard required back slope shall be 5:1.
    - A backslope of ranging from a minimum of 3:1 to the standard backslope of 5:1 will be allowed in conjunction with maximizing the ditch bottom width.

4.6. Maximum Road Gradient

- The maximum road gradient allowed shall be 5.0%.
- With special approval by the Municipality, a 6.0% gradient may be allowed.

4.7. Stopping Sight and Intersection Distances

- The stopping sight distance for intersections with any road shall be a minimum of 140 m. This is based upon the SARM guidelines for an 80 km/h road design.
  - For urban (low speed internal roads), reduced stopping sight distances will be utilized and approved based on design and operating speeds.
- The minimum length of road (constructed past an approach) shall be 100 m.
  - This is done in order to meet Stopping Sight Distances, snow and ice removal and road maintenance.
- For intersecting roads, the sight triangles shall be clear of any obstructions.
  - The sight triangle shall be a minimum of 85.0 m from the point of intersection on municipal roads and grid intersections and to a maximum of 140.0 m on primary grid roads using 80 km/h design speed.
    - For urban (low speed internal roads), the sight triangles will be utilized and approved based on design, operating speeds and applicable signing.

4.8. Existing Roads

- Consideration may be given within existing multi-parcel subdivisions for reduced finished road widths to a maximum of 7.4 m.

5. Snow Clearance Standards

- When shoulder grade elevation is 0.3 m or less above natural surface at 15.0 m to 20.0 m from center line then the backslope must be flattened using a variable slope of 5:1 to a maximum of 3:1.

6. Road Construction

6.1. Clearing and Grubbing

- Timber, brush, duff (vegetation), roots, logs and stumps shall be completely cleared from the surface of the Right-of-Way.
- Debris from clearing and grubbing operations shall not be used in the construction of embankments (any portion of the road structure).

- Debris from clearing and grubbing operations shall not be buried within the Right-Of-Way.

6.2. Removal and Replacement of Topsoil

- All topsoil within the Construction Footprint shall be removed and stockpiled.
  - The Construction Footprint is defined as the area within the cut or fill stakes.
- The Contractor shall install appropriate sediment control to ensure no sedimentation from topsoil stockpiles enters into adjacent water bodies.
- Upon completion of the construction, topsoil shall be replaced to a uniform depth over the Construction Footprint excluding the road surface.
  - The maximum compacted depth of topsoil replaced will be 100 mm.
- Stones (rocks) 75 mm or more in diameter shall be removed and disposed of from the topsoil replaced.

6.3. Drainage (culvert) Installations

- If the foundation is unsuitable, the bottom of the bed shall be sub-cut to a minimum of 0.3 m below the granular backfill layer.
- A geotextile fabric shall be installed to separate the ground surface from the granular materials.
  - A minimum 8 ounce (Geotex 801 or equivalent) nonwoven geotextile shall be used.
- The bedding line shall be shaped to fit the culvert.
- Corrugated metal pipe culverts (CSP) shall be placed with the inside circumferential laps pointing downgrade and with the longitudinal laps at the sides or quarter points. The sections of the culvert shall be firmly joined with coupling bands. Joints shall be as tight as possible.
- Culverts shall be to the following minimum sizes unless larger sizes are required to meet flow requirements:
  - Approach culverts shall be a minimum of 400 mm in diameter.
  - Through grade culverts shall be a minimum of 600 mm in diameter.
- CSP culverts shall have a minimum thickness of 2.0 mm (12 gauge).
- Granular material shall be composed of sand or gravel free from undesirable quantities of soft or flaky particles, loam, and organic or other deleterious material. Granular material shall comply with the following requirements:

Sieve Designation	Percent by Weight Passing Canadian Metric Sieve Series		
	TYPE		
	115	116	10
50 mm	100	-	100
9.0 mm	-	100	-
900 µm	-	30 - 100	-
400 µm	-	15 - 75	-
160 µm	-	0 - 10	-
71 µm	0 - 15	-	0 - 20
Plasticity Index	0 - 6	0 - 6	0 - 6

- For backfilling all types of culverts and bridge abutments, Type 115 shall be used.
- For backfilling subsurface drain pipes, Type 116 shall be used as a filter Material.
- For backfilling curbs, curbs and gutters, sidewalks, driveways, storm sewers, and manholes, catch basins, and other ancillary structures, Type 10 shall be used.
- Earth backfill under the haunches of culverts, except those in approaches not to be paved shall be compacted with mechanical impact tampers.
- After the earth backfill and granular backfill has been placed and compacted around the culvert, the remainder of the embankment shall be constructed by drying the earth material to at least the optimum moisture content and compacted to an average of not less than one-hundred (100) percent of the maximum density as determined by a Saskatchewan Ministry of Highways and Infrastructure Standard Proctor test.
- The earth material above the bedding line shall be placed, simultaneously and uniformly, in lifts on each side of the culvert. In subcut sections, the lift shall extend to the limits of the sub-cut; otherwise the lifts shall extend not less than 15 m from each side of the culvert.
- No objectionable material shall be used within that portion of the embankment above or below the bedding line on culverts through the roadbed.
- The embankment, within three diameters or three span; of the culvert barrel, shall be free from rocks having a dimension of 80 mm or greater when measured in any direction.
- Random riprap shall be installed at all culvert locations where the culvert diameter is greater than 800 mm.
    - A nonwoven geotextile shall be placed prior to the placement of the riprap material.

6.4. Subgrade Embankments

- Earth embankments shall consist of acceptable earth material and rock material free from objectionable quantities of organic matter, frozen soil, stumps, trees, moss, and other unsuitable materials.
- The embankment shall be constructed by placing the material in successive layers.
- The depth of each layer shall not be more than fifteen (15) centimetres (cm) uncompacted. The full width of each segment of each layer shall be bladed with a motor grader at least twice prior to being compacted.
- The slopes and surface of the embankment shall be shaped and trimmed to a uniform smooth surface conforming to the cross-sections shown on the plans, or as staked.
- Stones having a dimension of eight (8) cm or more when measured in any direction shall be removed from the top fifteen (15) cm of the subgrade.
- The following requirements will apply for all embankments:
    - When unsuitable material is encountered below the natural ground surface in embankment areas, the material shall be excavated and removed.
    - The embankment layer (other than at culverts including the sub-cut backfill layer) from 750 mm to 600 mm below the top of the subgrade shall be dried to within 3% of the optimum moisture content.

- Each layer of the top 600 mm of the subgrade shall be dried to at least the optimum moisture content and compacted to an average of not less than one-hundred (100) percent of the maximum density as determined by the Saskatchewan Ministry of Highways and Infrastructure Standard Proctor test. The moisture and densities will be considered satisfactory when:
  - All individual moisture test results are equal to or less than the optimum moisture content.
  - Density test results average not less than one hundred (100) percent of the maximum density.
  - All individual density tests are greater than ninety-eight (98) percent of the maximum density.
- If the moisture existing in the soil is insufficient for compacting to the specified density and for finishing, the proponent may elect to add water.
- The foregoing requirements will also apply to backfill of subcuts and the embankment required to prepare the beds and backfill drainage structures.

- Approaches to be constructed as per Municipalities Approach Construction policy.

6.5. Traffic Gravel

- Traffic gravel shall comply with Type 106.

Sieve Designation	Percent by Weight Passing Canadian Metric Sieve Series
	TYPE
	106
40.0 mm	-
31.5 mm	-
22.4 mm	100
18.0 mm	63 – 92
5.0 mm	0 – 50
2.0 mm	0 – 35
400 µm	
Fractured Faces	40% Minimum

- A tolerance of 3% in the percent by weight passing the maximum size sieve shall be permitted.

6.6. Traffic Gravel Behind Construction

- Type 106 Traffic Gravel shall be placed and spread on a newly constructed subgrade surface.
- Traffic gravel Type 106 shall not be deposited until the subgrade surface has been compacted (to the required density) and trimmed.
- Traffic gravel shall be dumped and spread uniformly on the subgrade surface as required.
- Traffic gravel shall be applied to the finished surface of all approaches.

6.7. Sub-Base Course

- Sub-base aggregate shall be composed of sound, hard, and durable particles of sand, gravel and rock free from injurious quantities of soft or flaky particles, shale, loam, clay balls and organic or other deleterious material.
- Sub-base course shall comply with the requirements listed in following table:

Sieve Designation	Percent by Weight Passing Canadian Metric Sieve Series
50 mm	100
2.0 mm	0 – 80.0
400 µm	0 – 45.0
160 µm	0 – 20.0
71 µm	0 – 8.0
Plasticity Index	0 – 6

A tolerance of 3% in the percent by weight passing the maximum size sieve shall be permitted providing 100% of the oversize passes the 63.0 mm sieve.

- The thickness of any one compacted lift of sub-base course shall not exceed 120 mm.
- Sub-base courses shall be compacted until no further settlement is apparent and the particles are well keyed into place.
- The finished surface of the sub-base course shall be true to grade and cross section and free of any surface defects, rutting or deformations the placement of the next course.

6.8. Granular Base Course

- Base aggregate shall be composed of sound, hard and durable particles of sand, gravel and rock free from injurious quantities of elongated, soft or flaky particles, shale, loam, clay balls and organic or other deleterious material.
- Base Course Mix (Type 33) shall comply with the requirements listed in following table:

Sieve Designation	Percent by Weight Passing Canadian Metric Sieve Series
18.0 mm	100
12.5 mm	75.0 – 100.0
5.0 mm	50.0 – 75.0
2.0 mm	32.0 – 52.0
900 µm	20.0 – 35.0
400 µm	15.0 – 25.0
160 µm	8.0 – 15.0
71 µm	6.0 – 11.0
Plasticity Index	0 – 6
Fractured Faces (%)	50.0% Minimum
Lightweight Pieces	5.0% Maximum

- A tolerance of 3% in the percent by weight passing the maximum size sieve shall be permitted providing 100% of the oversize passes the 22.4 mm sieve.
- Granular Base Mix shall be spread on dry and unfrozen surfaces and shall not be compacted if the atmospheric temperature is less than 2° Celsius.
- The finished surface of the Granular Base Course shall be true to grade and cross section and free of any surface defects.
- The Granular Base Course shall be considered satisfactory when:
  - It contains no surface defects.
  - The average density meets or exceeds 100% of maximum density.
  - All individual test results are greater than 98% of maximum density.
  - The moisture content is less than or equal to the optimum moisture content.
- A prime coat shall be placed on the finished final lift of Granular Base Course
  - Prime coat shall be placed within 24 hours, weather permitting.

6.9. Asphalt Prime and Tack Coat

- The proponent may elect to use MC-30, an emulsified asphalt primer, road-mixed SS-1, road-mixed SS-1H for the prime coat.
  - If using SS-1 or SS-1H, the SS-1 must be incorporated into the top 25 mm to 50 mm of the Granular Base Course.
- SS-1 or SS-1H emulsified asphalt shall be used as a tack coat.
- The tack coat shall be applied in accordance with the application rates outlined in the following table:

Surface Type	Application Rate (L/m^2)		
	Residual	Undiluted	Diluted (one part water to one part emulsified asphalt)
New Asphalt Concrete	0.14 – 0.18	0.23 – 0.32	0.45 – 0.60

- Potable water shall be used to dilute the emulsified asphalt.
- The tack coat shall be applied in a single application and uniformly across the prepared surface.
- Asphalt for prime coat and tack coat shall not be applied to a prepared surface when:
  - The surface temperature is less than 2° C.
  - The weather is misty, rainy, or if rain is impending.
- Traffic will not be permitted to travel on prime coat until 6 hours after application. After 6 hours, excess asphalt remaining on the surface shall be blotted by sand before traffic is permitted to travel on the surface.

6.10. Asphalt Concrete

- Virgin aggregate used for Asphalt Concrete shall be composed of sound, hard and durable particles of sand, gravel and rock, free from injurious quantities of elongated, soft or flaky particles, shale, clay, loam, ironstone, coal and organic or other deleterious materials.

- Type 150 – 200A asphalt shall be used as bituminous binder.
  - This material shall meet the requirements of Saskatchewan Ministry of Highways and Infrastructure's Specifications for Manufactured Materials (SMM) For Asphalt Cements.
- Hydrated-lime or liquid anti-strip shall be used as an anti-stripping agent.
  - The stripping potential shall not exceed 5% as determined by SMHI Standard Test Procedure (STP 204-15).
  - Liquid anti-stripping agent shall be added at a rate of approximately 1.0% of the weight of liquid asphalt added.
  - The amount of hydrated lime added shall be approximately 1% of the total dry aggregate by weight.
  - The Contractor shall ensure the procedures and equipment used for the addition of hydrated lime anti-stripping agent are adequate to ensure that the hydrated lime is added at a uniform consistent rate.
- Only the following Mix Design Type will be permitted:

Sieve Designation	Percent By Weight Passing Canadian Metric Sieve Series
12.5 mm	100
9.0 mm	76-89
5.0 mm	50-60
2.0 mm	30-48
900 um	19-38
400 um	10-26
160 um	3-10
71 um	2-5
Fracture Minimum %	70 (1 face)
Sand Equivalent Minimum %	45
Los Angeles Abrasion (% loss)	35 (max)
Organic Content (% passing 5 mm)	1.0
Marshal Blows	50
Marshal Stability (kN) at 60°C min	8
Retained Stability (min %)	75
Marshal Flow Index (mm)	2-4
Air Voids in Mixture	3-5
Voids Filled With Asphalt %	70-80
Min Film Thickness	8.0

- A tack coat shall be applied and allowed to fully cure prior to the placement of the asphalt mix (paving operations).
- Asphalt concrete shall be spread on dry, clean, and unfrozen surfaces.
- Asphalt concrete shall be placed in accordance with the following temperature limitations:

- Paving may begin, for other than the final lift, when the temperature is 0° C provided the temperature is forecast, by Environment Canada, for the closest location to the project, to reach at least 5° C that day.
- The final lift of asphalt concrete shall not be placed if:
  - The atmospheric temperature is less than 5° C;
  - The surface temperature is less than 7° C.

- The asphalt concrete mat shall be constructed to a field density range of 97% to 98% of the Marshall Density based on readings from a correlated Nuclear Densometer gauge.
  - The proponent will develop a correlation between the results of the nuclear gauge and the results of the asphalt concrete cores obtained from the compacted lift of asphalt concrete. The density results obtained from the cores will be used to correct the Field Density results obtained from the nuclear gauge.
- The asphalt mat shall be constructed so that:
  - There are no pavement depressions.
  - Longitudinal construction joints from one lift to the next shall be separated by at least 100 mm.
- The minimum and maximum thickness of a compacted lift of asphalt concrete shall meet the following requirements:
  - Minimum asphalt mat thickness shall be 30 mm.
  - Maximum asphalt mat thickness shall be 50 mm.
- The asphalt mix temperature in the paver shall not be less than 110° C.
- Contact faces of curbs, gutters, manholes, and sidewalks shall be coated with asphalt using a hand applicator before placing the asphalt mix.
- When paving is discontinued on the roadway, the asphalt concrete shall be temporarily feathered to a slope of 10 horizontal to 1 vertical. When paving is resumed, the transverse joint shall be straight and have a vertical face when the taper is removed.
- Asphalt mix shall not be placed or allowed to fall on previously laid top lift asphalt concrete or the existing asphalt concrete.
- Transverse construction joints from one lift to the next shall be separated by at least 2.0 m.
- The proponent shall construct the asphalt mat so that there are no areas of:
  - Segregation.
  - Surface defects which may consist of:
    - Roller marks.
    - Open texture.
    - Improper matching of longitudinal and/or transverse joints.
    - Cracking or tearing.
    - Contamination by diesel, hydraulic fluids, detergent or other harmful products.
    - Foreign objects or materials that are detrimental to the asphalt concrete.
    - Clay balls or oversized materials.
  - Any repairs required shall be to the satisfaction and approval by the Municipality.

6.11. Seeding

- Prior to seeding, the area to be seeded shall be true to grade and cross section and free from irregularities.
- The proponent shall harrow the seeded areas immediately after the seeding is completed.
- The seed material shall contain the following blend of seeds:

Seed Mix Common Name	% of Mix
Sheep's Fescue	15
Canada Blue Grass	15
Blue Fescue	15
Hard Fescue	15
Chewings Fescue	15
Creeping Red Fescue	15
Perennial Rye Grass	10

- The seed application rate shall be 14 kg per hectare (31 lbs per acre).
- The Municipality may approve other grass seed mixtures having similar grass seeds or slight changes in mixture percentages.

7. Design and Construction Certification

- The Municipality reserves the right to request any and/or all test result(s) or other associated documentation at any stage of the project.
- Upon completion of the project and prior to the start of the warranty period, the proponent's Engineer and/or engineering firm shall complete and submit a signed and sealed Statutory Declaration stating that all design and construction criteria/specifications in accordance with the parameters aforementioned have been met.
  - The Engineer of Record shall be a Professional Engineer registered with the Association Of Professional Engineers and Geoscientists of Saskatchewan (APEGS) and licensed to practice (Permission to Consult) within the Province of Saskatchewan.
  - The Engineer(s) of Record shall have reviewed and/or been involved with the design and/or construction of the project and shall have firsthand knowledge of the work completed.

SCHEDULE "F"
Approach Construction Standards

CONSTRUCTION STANDARDS FOR ROAD APPROACH

1. Minimum of 400mm = 16 inch diameter culvert or as directed by the Director of Public Works or their designate. All culverts installed must be corrugated metal pipe with whistled ends (beveled). All culverts are to be sized to the drainage requirements of the ditch.

2. In the instance that there is no ditch depth, then approval from the Rural Municipality will be required for approach installation without a culvert.

3. All topsoil must be removed from ditch prior to culvert installation for ease of water flow.

4. Approach surface must be crowned with a minimum of 300 mm = 1 foot of compacted clay cover at the shoulders of the approach with finish grade at a minimum of 50 mm (2 inches) of 20 mm (¾ inch) crushed gravel, compacted

5. Road Approach shall be a minimum roadway width for:
   - residential approaches 8 meters (26.25 feet)
   - agriculture/industrial approaches 10 meters (32.81 feet).

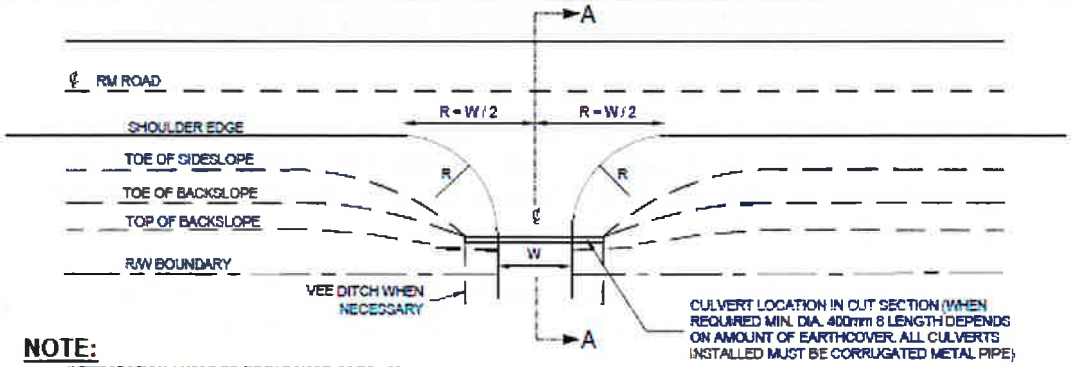
6. Culvert inlet and outlet aprons to be constructed with rip-rap and/or end sections at the discretion of the Director of Public Works or their designate.

7. Culvert markers must be installed at the top of both ends of the culvert. (Type CM-SD/01 or Steel Cor specification) Which is acceptable to the Director of Public Works or their designate.

8. Road approaches should have a minimum distance separation of 30 meters (100 feet) and align with existing approach(s) across from both sides of the municipal road when possible.

9. Road approaches should be a minimum of 100 meters (328 feet) from the intersection of any municipal roads and highways.

10. Road approaches should be aligned perpendicular with the road centerline unless otherwise instructed by the Director of Public Works or their designate.

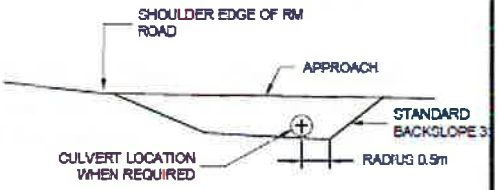


NOTE:

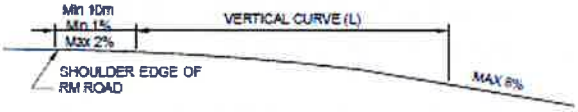
INTERSECTION ANGLE TO BE IN RANGE 80 TO 100

SECTION A

PRIVATE APPROACH IN CUT

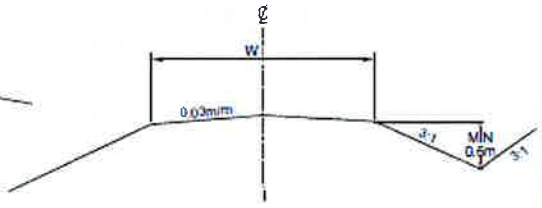


DETAIL OF DITCH AND CULVERT LOCATION



SECTION A

PRIVATE APPROACH IN FILL



PRIVATE APPROACH CROSS-SECTION

MINIMUM LENGTH OF VERTICAL CURVE		
ALGEBRAIC DIFF IN GRADIENT (%)	LENGTH (m)	
	CREST	SAG
1	6	8
2	12	15
3	16	23
4	24	30
5	30	38
6	37	45
7	/	45
8	/	45
9	/	45

TABLE FOR DETERMINATION OF APPROACH WIDTH		RADIUS OF INTERSECTION EDGE OF SHOULDER (R)
USE	APPROACH WIDTH, W (m)	
	BASE	
RESIDENTIAL	9	10-15
AGRICULTURE	10	15-20
INDUSTRIAL	10	15-20

Rural Municipality of Corman Park

MINIMUM 400mm CULVERT REQUIRED
unless otherwise specified

Scale: N.T.S.

Date: MAY, 2021

Drawn By: KK

DESIGN SPECIFICATIONS FOR ROAD APPROACHES

SCHEDULE "G"
Municipal Reserve Lease

RE: Servicing Agreement

BETWEEN: **Edgemont East Development Corp.**

AND

The RURAL MUNICIPALITY OF CORMAN PARK NO. 344

Municipal Reserve Lease Agreement:

See next page for municipal reserve lease agreement

MUNICIPAL RESERVE LEASE

THIS AGREEMENT MADE EFFECTIVE the 22 day of March, 2024.

BETWEEN:

The Rural Municipality of Corman Park No. 344
(the "Municipality")

AND

Edgemont East Development Corp.
(the "Lessee")

WHEREAS:

A. The Lessee, pursuant to the obligations contained in *The Planning and Development Act, 2007* (Saskatchewan), has transferred and assigned a portion of the lands described in Appendix "A" attached hereto (the "Municipal Reserve Lands" and "Municipal Utility Lands" identified as MR1, MR2, MR3) to the Municipality for the purpose of creating a municipal reserve;

B. The Municipality holds title to the Municipal Reserve Lands;

C. Pursuant to the provisions of *The Planning and Development Act, 2007* (Saskatchewan) the Municipality has agreed to lease the Municipal Reserve to the Lessee upon the terms and conditions hereinafter stated.

NOW THEREFORE THE PARTIES HERETO AGREE AS FOLLOWS:

1. **Leased Premises and Term.** The Municipality does hereby demise and lease to the Lessee the Municipal Reserve Lands (the "Leased Premises") for a **term of forty (40)** years commencing March 22/24 and expiring March 22/2364 (the "Term").

   Prior to and upon the expiration of this Lease the parties agree to negotiate to renew the term of this Lease for a like term. To facilitate such negotiations, provided that no party has delivered notification in writing to the other party of an intent to terminate this Lease which notification shall be provided no less than 120 days prior to the expiration hereof, this Lease shall be renewed until it is terminated in accordance with the terms of this Agreement or otherwise by agreement among the parties.

2. **Maintenance and Repair of Improvements.** The Lessee shall, during the entire term, keep in good order and condition any improvements, appurtenances and equipment that may be constructed or installed upon the Leased Premises (the "Improvements"). The Lessee shall make any and all necessary repairs, replacements, substitutions, and additions, structural or otherwise. Such repairs shall be completed in a good and workmanlike

manner and in all respects consist in quality and workmanship appropriate for similar improvements and shall meet the requirements of municipal or governmental regulations.

3. **Condition of Leased Premises.** The Lessee hereby accepts the Leased Premises in the condition existing as of the date of this agreement and will not call upon the Municipality to do or pay for any work or supply any equipment to make the Leased Premises more suitable for the proposed use of the Leased Premises as a municipal reserve and utility parcel.

4. **Rent.** The Lessee shall pay the Municipality One Dollar ($1.00) plus applicable taxes, payable annually in advance each year during the Term, without any deduction, defalcation, abatement or set-off whatsoever.

5. **Covenants of the Lessee.** The Lessee covenants with the Municipality as follows:

   (a) to pay the said yearly rental;

   (b) to be solely responsible for all costs and expenses of the developing the Leased Premises;

   (c) the Lessee acknowledges that the Leased Premises are situated on lands utilized, or intended to be utilized, by the Lessee for the development of a recreational park, associated facilities, and drainage pond. The Lessee acknowledges that the Municipality cannot grant an exclusive right to quiet enjoyment of the Leased Premises;

   (d) the Lessee further acknowledges and agrees that the Municipality shall have full access to the Leased Premises for the Municipality's purposes, not inconsistent with the terms of this Lease;

   (e) to use the Leased Premises only for the purposes of a recreational park and associated facilities and not to erect any buildings or structures on the Lease Premises without written permission from the Municipality;

   (f) to maintain the appearance of the Leased Premises and the equipment thereon in a neat, clean and well-kept manner;

   (g) to ensure that no refuse, litter, garbage or loose or objectionable material accumulates in or about the Leased Premises;

   (h) to ensure that no trees are removed and no grade changes are carried out without written permission from the Municipality;

   (i) not to permit any other person to do anything prohibited hereunder, without the prior written consent of the Municipality;

(j) to not assign, sublet, or part with possession of any part of the Leased Premises without the prior written consent of the Municipality, which consent may be withheld by the Municipality in its sole discretion. The Lessee acknowledges that the Municipality will withhold such consent if the Municipality does not receive an acknowledgement of this Lease, in the form acceptable to the Municipality, from the party to which the Lessee desires to assign, sublet or grant possession of any part of the Leased Premises. Notwithstanding anything else herein, upon 75% of Phase I lots being sold and titles transferred, Prairie Lane Estates Ltd. may assign its interest in this agreement to Edgemont East Community Association. In order to effect such assignment:

i. Edgemont East Development Corp. shall provide notice in writing to the Municipality;

ii. Edgemont East Community Association shall provide an acknowledgment in writing, in a form acceptable to the Municipality, that it shall be bound by the terms of this Agreement; and

iii. Thereafter, Edgemont East Community Association shall be responsible for all duties of the Lessee hereunder.

(k) to provide and maintain comprehensive general liability insurance with respect to the Leased Premises having a minimum amount of Five Million ($5,000,000) Dollars naming the Municipality as an additional insured, and to provide a certificate evidencing the same prior to execution of this Agreement. Without limiting the generality of the foregoing, such liability insurance shall be without rights of cross-claim or subrogation against the Municipality and no cancellation or alterations to the liability insurance shall be made without the consent of the Municipality;

(l) to protect, indemnify and hold the Municipality harmless from and against any and all claims, actions, damages, liabilities, expenses (including legal fees on a solicitor and a client basis) in connection with any loss of life, personal injury, damage of property, or any other loss or injury whatsoever arising from or out of this Lease to the extent that such claim results from the Lessee's willful action, omission, negligence, or breach of this Lease;

(m) to comply with all federal, provincial and municipal laws, rules, regulations and by-laws and to hold the Municipality harmless from the consequences of the Lessee's failure to do so; and

(n) to fully indemnify and save harmless the Municipality from and against all construction liens and related costs and other claims in connection with all work performed by or for the Lessee on the Leased Premises, and shall promptly remove all registered claims from title.

6. **Liability.** The Parties hereto agree the Municipality shall not be liable, directly or indirectly, for any loss of life or personal injuries that may be suffered or sustained by any

person who may be on the Leased Premises or for any loss of or damage or injury to property belonging to the Lessee or any other person unless such injury, loss or damage is due to the Municipality's negligence or default, or the negligence or default of those for whom the Municipality is in law responsible.

7. **Termination of Lease.** Notwithstanding anything else herein, this Lease may be terminated by the Municipality on thirty (30) days written notice to the Leasee.

8. **Municipality's Remedies on Default.** The Municipality may from time to time resort to any or all of the rights and remedies available to it in the event of any default hereunder by the Lessee, either by any provision of this Lease or by law, all of which rights and remedies are intended to be cumulative and not alternative, and the express provisions hereunder as to certain rights and remedies are not to be interpreted as excluding any other or additional rights and remedies available to the Municipality by statute or general law.

9. **Waiver of Default.** No condoning, excusing, or overlooking by the Municipality of any default, breach or non-observance by the Lessee at any time or times in respect of any covenants herein contained shall operate as a waiver of the Municipality's rights hereunder in respect of any continuing or subsequent default, and no waiver shall be inferred from or implied by anything done or admitted by the Municipality, unless such waiver is in writing.

10. **Notice.** Any notice, demand, or request which may be or is required to be given under the terms of this Lease shall be in writing and shall be delivered in person or sent by pre-paid registered mail at the following address:

In the case of notice to the Municipality:

R.M. of Corman Park No.344
111 Pinehouse Drive
Saskatoon SK S7K 5W1

In the case of the Lessee:

Edgemont East Development Corp.
217 Sturgeon Place
Saskatoon SK S7K 4C5

11. **Representative.** The Lessee hereby acknowledges the Lessee is not an officer, servant or agent of the Municipality and the Lessee shall not hold out to any third party as such.

12. **Governing Law.** This Lease shall be construed in the accordance with the laws of the Province of Saskatchewan and each of the parties hereto attorn to and agrees to be bound by the jurisdiction of the courts of competent jurisdiction for the Province of Saskatchewan.

13. **Entire Agreement.** The Lessee acknowledges that there are no covenants, representations, warranties or agreements expressed, implied or otherwise forming part of or in any way affecting or relating to this Lease except as contained herein and that this Lease constitutes the entire agreement between the parties and may not be modified except by subsequent agreement in writing executed by the parties.

14. **Enurement.** This Lease shall be binding upon and enure to the benefit of the parties hereto, and their respective heirs, executors, administrators, successors and assigns.

15. **Severability.** Should any provision or provisions of this Lease be illegal or not enforceable, it or they shall be considered separate and severable from the Lease and its remaining provisions shall remain in force and be binding upon the parties hereto as though the said provision or provisions had never been included.

IN WITNESS WHEREOF the parties hereto have hereunto executed this Agreement this 22 day of MARCH, 2024.

(seal)

R.M. OF CORMAN PARK No. 344

Per: _____
Reeve

Per: _____
Kerry Hilts, Chief Administrative Officer

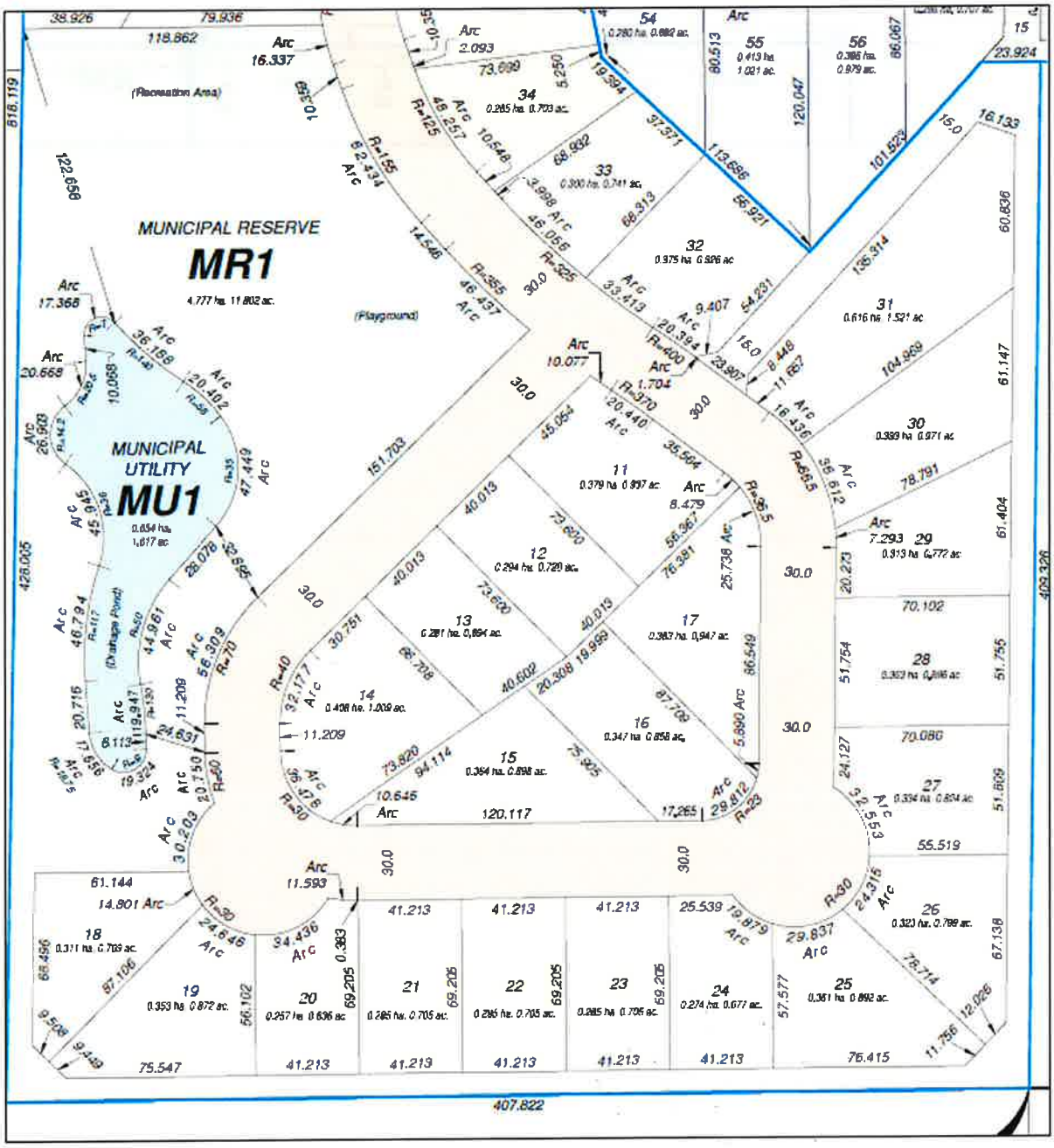
Edgemont East Development Corp.

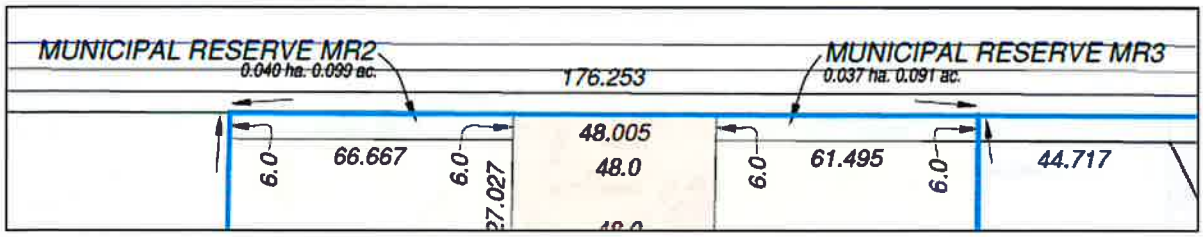
WITNESS

EDGEMONT EAST DEVELOPMENT CORP. Corporate Seal

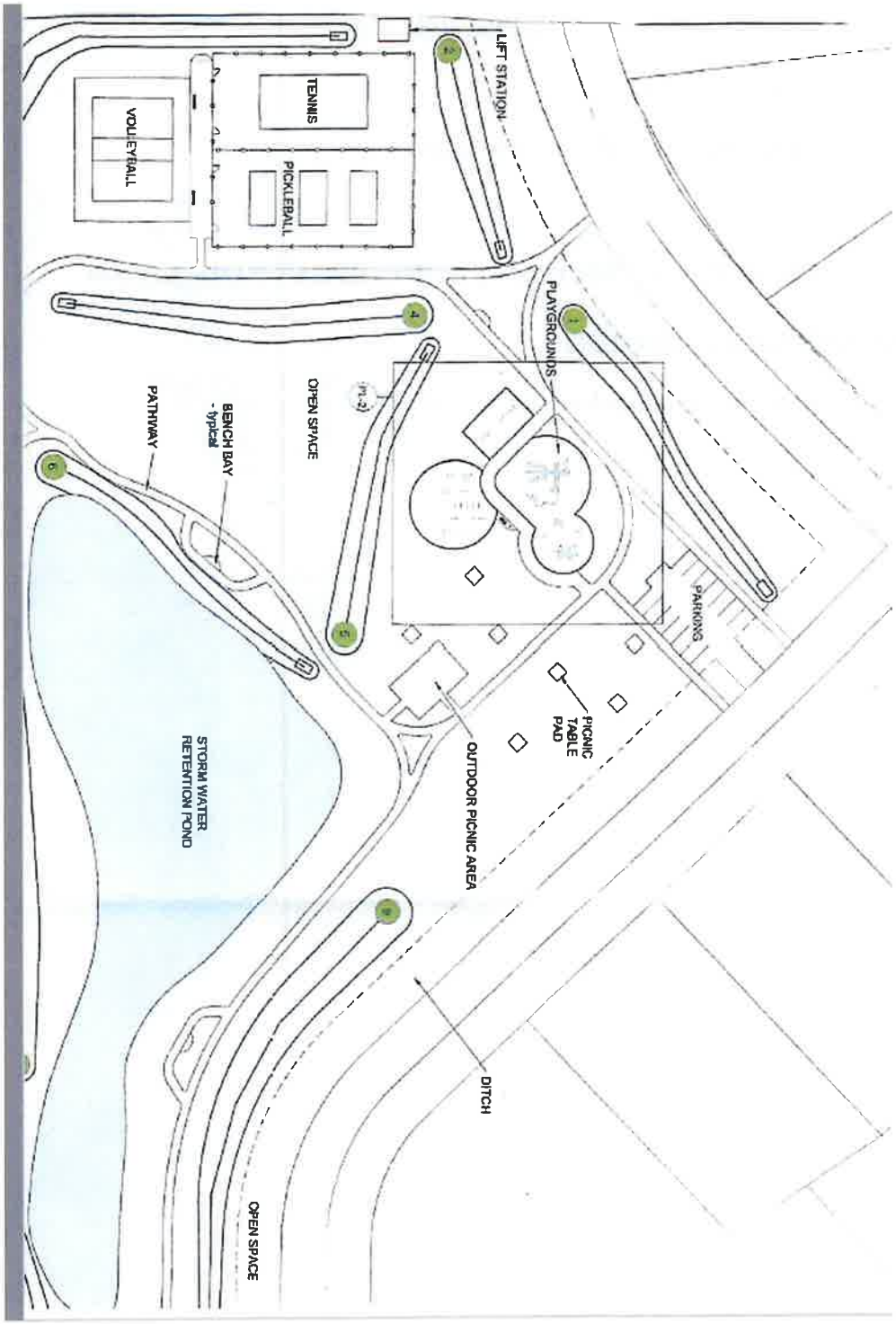
_____
Authorized Signatory

APPENDIX "A"


MUNICIPAL RESERVE
MR1
4.777 ha. 11.802 ac.
(Recreation Area)
(Playground)
MUNICIPAL UTILITY
MU1
0.654 ha.
1.617 ac.
(Drainage Pond)
11
0.379 ha. 0.937 ac.
12
0.294 ha. 0.729 ac.
13
0.281 ha. 0.694 ac.
14
0.408 ha. 1.009 ac.
15
0.364 ha. 0.898 ac.
16
0.347 ha. 0.858 ac.
17
0.383 ha. 0.947 ac.
18
0.311 ha. 0.769 ac.
19
0.353 ha. 0.872 ac.
20
0.257 ha. 0.636 ac.
21
0.285 ha. 0.705 ac.
22
0.285 ha. 0.705 ac.
23
0.285 ha. 0.705 ac.
24
0.274 ha. 0.677 ac.
25
0.361 ha. 0.892 ac.
26
0.323 ha. 0.798 ac.
27
0.334 ha. 0.824 ac.
28
0.353 ha. 0.872 ac.
29
0.313 ha. 0.772 ac.
30
0.399 ha. 0.971 ac.
31
0.616 ha. 1.521 ac.
32
0.975 ha. 0.926 ac.
33
0.300 ha. 0.741 ac.
34
0.285 ha. 0.703 ac.
54
0.280 ha. 0.692 ac.
55
0.419 ha.
1.021 ac.
56
0.395 ha.
0.979 ac.
407.822


MUNICIPAL RESERVE MR2
0.040 ha. 0.099 ac.
176.253
MUNICIPAL RESERVE MR3
0.037 ha. 0.091 ac.
48.005
48.0
6.0
66.667
6.0
27.027
6.0
61.495
6.0
44.717

CONCEPTUAL BUILT FEATURES



SCHEDULE "H"
Municipal Utility Lease

RE: Servicing Agreement

BETWEEN: **Edgemont East Development Corp.**

AND

The RURAL MUNICIPALITY OF CORMAN PARK NO. 344

Municipal Utility Lease Agreement:

See next page for municipal utility lease agreement

MUNICIPAL UTILITY PARCEL LEASE

THIS AGREEMENT MADE EFFECTIVE the 22 day of March, 2024.

BETWEEN:

The Rural Municipality of Corman Park No. 344
(the "Municipality")

AND

Edgemont East Development Corp.
(the "Lessee")

WHEREAS:

A. The Lessee, pursuant to the obligations contained in *The Planning and Development Act, 2007* (Saskatchewan), has transferred and assigned a portion of the lands described in Appendix "A" attached hereto (the "Municipal Utility Lands" identified as MU1) to the Municipality for the purpose of creating a stormwater management facility;

B. The Municipality holds title to the Municipal Reserve Lands;

C. Pursuant to the provisions of *The Planning and Development Act, 2007* (Saskatchewan) the Municipality has agreed to lease the Municipal Reserve to the Lessee upon the terms and conditions hereinafter stated.

NOW THERFORE THE PARTIES HERETO AGREE AS FOLLOWS:

1. **Leased Premises and Term.** The Municipality does hereby demise and lease to the Lessee the Municipal Utility Lands (the "Leased Premises") for a **term of forty (40)** years commencing March 22/2024 and expiring March 22/2064 (the "Term").

   Prior to and upon the expiration of this Lease the parties agree to negotiate to renew the term of this Lease for a like term. To facilitate such negotiations, provided that no party has delivered notification in writing to the other party of an intent to terminate this Lease which notification shall be provided no less than 120 days prior to the expiration hereof, this Lease shall be renewed until it is terminated in accordance with the terms of this Agreement or otherwise by agreement among the parties.

2. **Maintenance and Repair of Improvements.** The Lessee shall, during the entire term, keep in good order and condition any improvements, appurtenances and equipment that may be constructed or installed upon the Leased Premises (the "Improvements"). The Lessee shall make any and all necessary repairs, replacements, substitutions, and additions, structural or otherwise. Such repairs shall be completed in a good and workmanlike manner and in all respects consist in quality and workmanship appropriate for similar improvements and shall meet the requirements of municipal or governmental regulations.

3. **Condition of Leased Premises.** The Lessee hereby accepts the Leased Premises in the condition existing as of the date of this agreement and will not call upon the Municipality to do or pay for any work or supply any equipment to make the Leased Premises more suitable for the proposed use of the Leased Premises as a municipal utility parcel.

4. **Rent.** The Lessee shall pay the Municipality One Dollar ($1.00) plus applicable taxes, payable annually in advance each year during the Term, without any deduction, defalcation, abatement or set-off whatsoever.

5. **Covenants of the Lessee.** The Lessee covenants with the Municipality as follows:

(a) to pay the said yearly rental;

(b) to be solely responsible for all costs and expenses of the developing the Leased Premises;

(c) the Lessee acknowledges that the Leased Premises are integral to the Municipality for the management of its storm water drainage system, and the Municipality shall have full access to the Leased Premises for the Municipality's purposes, not inconsistent with the terms of this Lease;

(d) the Lessee further acknowledges and agrees that the Municipality shall have full access to the Leased Premises for the Municipality's purposes, not inconsistent with the terms of this Lease;

(e) to maintain the appearance of the Leased Premises and the equipment thereon in a neat, clean and well-kept manner;

(f) to ensure that no refuse, litter, garbage or loose or objectionable material accumulates in or about the Leased Premises;

(g) to ensure that no trees are removed and no grade changes are carried out without written permission from the Municipality;

(h) to implement, monitor, and enforce a policy ("Policy") with respect to the usage of the Leased Premises and to provide the Municipality with a copy of the policy upon its request. Without limiting the generality of the foregoing, the Policy shall:

i. identify acceptable and non-acceptable use of the storm water retention pond;

ii. establish a system for erecting and monitoring warning signs to be carried out by the Lesee;

iii. establish a system by which the Lessee shall communicate with the public as to the use of the storm water retention pond, and the associated risks of doing so;

iv. identify and establish an ice thickness and safety evaluation/management program to be implemented by the Leseee;

v.establish a program for maintenance of the storm water retention pond; and

vi. confirm that the Municipality shall have no liability or responsibility whatsoever with respect to any matters addressed in the Policy, nor with respect to any use whatsoever of the storm water retention pond or the Leased Premises.

(i) not to permit any other person to do anything prohibited hereunder, without the prior written consent of the Municipality;

(j) to not assign, sublet, or part with possession of any part of the Leased Premises without the prior written consent of the Municipality, which consent may be withheld by the Municipality in its sole discretion. The Lessee acknowledges that the Municipality will withhold such consent if the Municipality does not receive an acknowledgement of this Lease, in the form acceptable to the Municipality, from the party to which the Lessee desires to assign, sublet or grant possession of any part of the Leased Premises. Notwithstanding anything else herein, upon 75% of Phase I lots being sold and titles transferred, Prairie Lane Estates Ltd. may assign its interest in this agreement to Edgemont East Community Association. In order to effect such assignment:

i. Edgemont East Development Corp. shall provide notice in writing to the Municipality;

ii. Edgemont East Community Association shall provide an acknowledgment in writing, in a form acceptable to the Municipality, that it shall be bound by the terms of this Agreement; and

iii. Thereafter, Edgemont East Community Association shall be responsible for all duties of the Lessee hereunder.

(k) to provide and maintain comprehensive general liability insurance with respect to the Leased Premises having a minimum amount of Five Million ($5,000,000) Dollars naming the Municipality as an additional insured, and to provide a certificate evidencing the same prior to execution of this Agreement. Without limiting the generality of the foregoing, such liability insurance shall be without rights of cross-claim or subrogation against the Municipality and no cancellation or alterations to the liability insurance shall be made without the consent of the Municipality;

(l) to protect, indemnify and hold the Municipality harmless from and against any and all claims, actions, damages, liabilities, expenses (including legal fees on a solicitor and a client basis) in connection with any loss of life, personal injury, damage of property, or any other loss or injury whatsoever arising from or out of this Lease to the extent that such claim results from the Lessee's willful action, omission, negligence, or breach of this Lease;

(m) to comply with all federal, provincial and municipal laws, rules, regulations and by-laws and to hold the Municipality harmless from the consequences of the Lessee's failure to do so; and

(n) to fully indemnify and save harmless the Municipality from and against all construction liens and related costs and other claims in connection with all work performed by or for the Lessee on the Leased Premises, and shall promptly remove all registered claims from title.

6. **Liability.** The Parties hereto agree the Municipality shall not be liable, directly or indirectly, for any loss of life or personal injuries that may be suffered or sustained by any person who may be on the Leased Premises or for any loss of or damage or injury to property belonging to the Lessee or any other person unless such injury, loss or damage is due to the Municipality's negligence or default, or the negligence or default of those for whom the Municipality is in law responsible.

7. **Termination of Lease.** Notwithstanding anything else herein, this Lease may be terminated by the Municipality on thirty (30) days written notice to the Leasee.

8. **Municipality's Remedies on Default.** The Municipality may from time to time resort to any or all of the rights and remedies available to it in the event of any default hereunder by the Lessee, either by any provision of this Lease or by law, all of which rights and remedies are intended to be cumulative and not alternative, and the express provisions hereunder as to certain rights and remedies are not to be interpreted as excluding any other or additional rights and remedies available to the Municipality by statute or general law.

9. **Waiver of Default.** No condoning, excusing, or overlooking by the Municipality of any default, breach or non-observance by the Lessee at any time or times in respect of any covenants herein contained shall operate as a waiver of the Municipality's rights hereunder in respect of any continuing or subsequent default, and no waiver shall be inferred from or implied by anything done or admitted by the Municipality, unless such waiver is in writing.

10. **Notice.** Any notice, demand, or request which may be or is required to be given under the terms of this Lease shall be in writing and shall be delivered in person or sent by pre-paid registered mail at the following address:

In the case of notice to the Municipality:

R.M. of Corman Park No.344
111 Pinehouse Drive
Saskatoon SK S7K 5W1

In the case of the Lessee:

Edgemont East Development Corp.
217 Sturgeon Place
Saskatoon SK S7K 4C5

11. **Representative.** The Lessee hereby acknowledges the Lessee is not an officer, servant or agent of the Municipality and the Lessee shall not hold out to any third party as such.

12. **Governing Law.** This Lease shall be construed in the accordance with the laws of the Province of Saskatchewan and each of the parties hereto attorn to and agrees to be bound by the jurisdiction of the courts of competent jurisdiction for the Province of Saskatchewan.

13. **Entire Agreement.** The Lessee acknowledges that there are no covenants, representations, warranties or agreements expressed, implied or otherwise forming part of or in any way affecting or relating to this Lease except as contained herein and that this Lease constitutes the entire agreement between the parties and may not be modified except by subsequent agreement in writing executed by the parties.

14. **Enurement.** This Lease shall be binding upon and enure to the benefit of the parties hereto, and their respective heirs, executors, administrators, successors and assigns.

15. **Severability.** Should any provision or provisions of this Lease be illegal or not enforceable, it or they shall be considered separate and severable from the Lease and its remaining provisions shall remain in force and be binding upon the parties hereto as though the said provision or provisions had never been included.

IN WITNESS WHEREOF the parties hereto have hereunto executed this Agreement this 22 day of MARCH, 2024.

(seal)

R.M. OF CORMAN PARK No. 344

Per: _____
Reeve

Per: _____
CAO

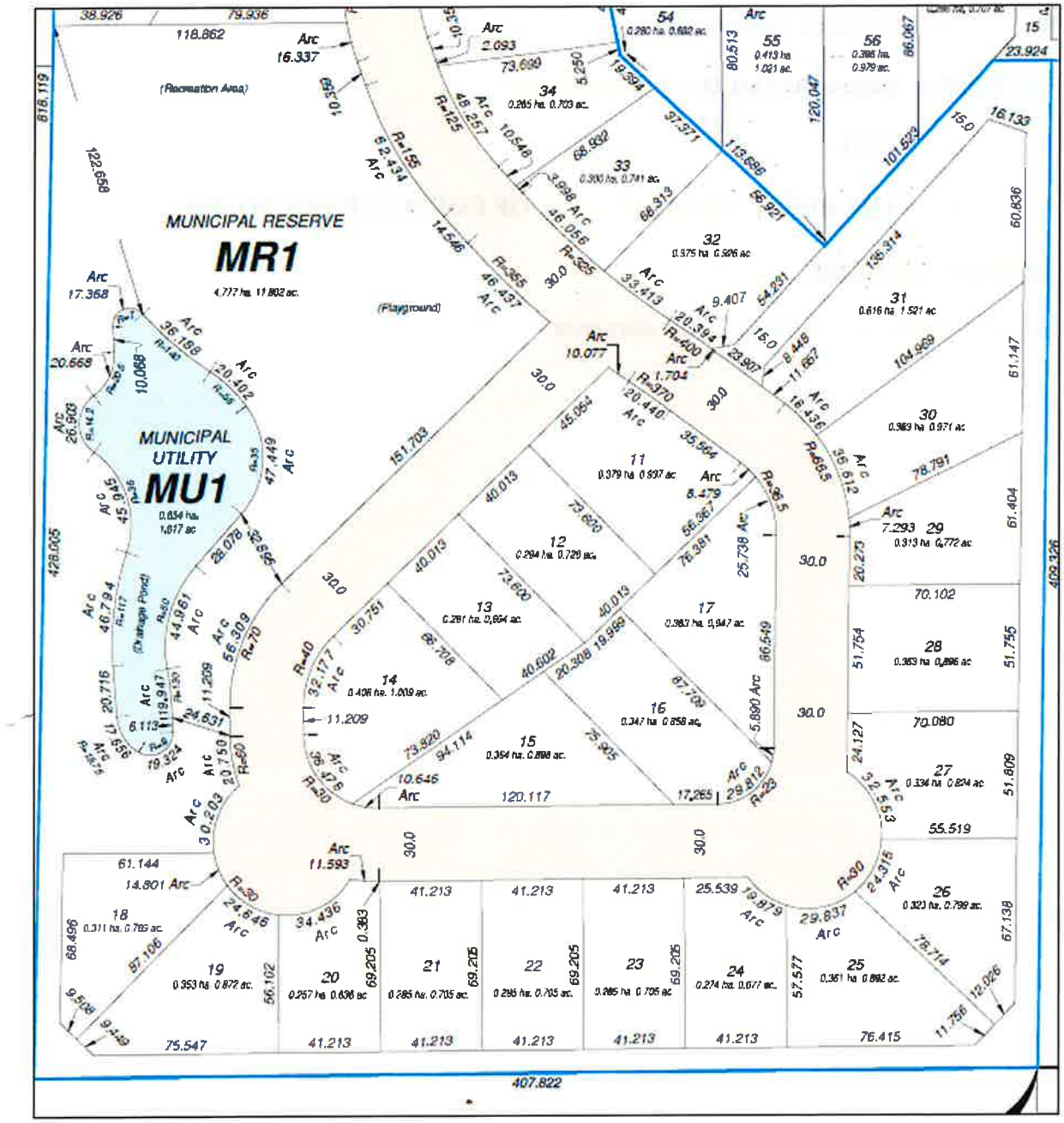
Kerry Hilts, Chief Administrative Officer

Edgemont East Development Corp.

WITNESS

Authorized Signatory

APPENDIX "A"


MUNICIPAL RESERVE
MR1
4.777 ha. 11.802 ac.
(Recreation Area)
(Playground)
MUNICIPAL UTILITY
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0.334 ha. 0.824 ac.
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0.353 ha. 0.896 ac.
29
0.313 ha. 0.772 ac.
30
0.369 ha. 0.911 ac.
31
0.616 ha. 1.521 ac.
32
0.375 ha. 0.926 ac.
33
0.300 ha. 0.741 ac.
34
0.285 ha. 0.703 ac.
54
55
0.413 ha.
1.021 ac.
56
0.396 ha.
0.979 ac.
407.822
409.326
428.005

SCHEDULE "I"
Development Restriction Agreement

RE: Servicing Agreement

BETWEEN: **Edgemont East Development Corp.**

AND

THE RURAL MUNICIPALITY OF CORMAN PARK NO. 344

Restrictive Covenant:

See next page for restrictive covenant document

DEVELOPMENT RESTRICTION AGREEMENT

THIS AGREEMENT MADE EFFECTIVE the 22 day of March, 2024.

BETWEEN:

Edgemont East Development Corp.

(herein called the "Developer")

AND

THE RURAL MUNICIPALITY OF CORMAN PARK NO. 344
(herein called the "Municipality")

WHEREAS:

A. The Developer is the registered owner of the lands described as follows:

Land Description LSD 11-34-35-5-3 Ext 186
Surface Parcel No. 145707486

Land Description LSD 14-34-35-5-W3 Ext 185
Surface Parcel No. 145948663

Land Description LSD 15-34-35-5-W3 Ext 26
Surface Parcel No. 150085515

Land Description LSD 16-34-35-5-W3 Ext 29
Surface Parcel No. 150085526

(collectively, the "**Lands**")

B. The Developer proposes to subdivide and develop the Lands, in the Proposed Plan of Survey, (the "**Development**") pursuant to a servicing agreement between the Developer and the Municipality as of even date with this Agreement (the "**Servicing Agreement**");

C. The Municipality is, or may be, the holder of a registered interest against title to the Development based on the Servicing Agreement which interest is to remain registered on title against the Development until such time as it is removed with the consent of the Municipality or replaced by a subsequent interest in favour of the Municipality or its successors and assigns;

D. The undersigned acknowledges that it must fulfill certain conditions in order to obtain the requisite development and building permits from the Municipality including, but not limited to, execution of this document and registration of the restrictive covenants contained herein against title to the Development; and

E. The Municipality deems it in the public interest that the undersigned execute this document containing such restrictive covenants and development conditions to comply with the Municipality's standards and fulfill certain requirements prior to the issuance of the requisite development and building permits in relation to the Development.

NOW THEREFORE THE UNDERSIGNED COVENANTS AND AGREES AS FOLLOWS:

1. The Developer enters into this agreement on its own behalf and on behalf of its successors and assigns (including any subsequent property owner of the Development (a "**Property Owner**")). The terms of this Agreement shall enure to the benefit of and be binding upon the successor and assigns of each party and subsequent owners and occupants of the Development. The Municipality acknowledges and agrees that the obligations under this Agreement shall transfer to each Property Owner when such Property Owner(s) become owners of the Development.

2. The Developer acknowledges and agrees, and shall notify each Property Owner that no development or building permit will be issued to a Property Owner until:

    i. the lot for such building permit has been registered at land titles.
    ii. the applicant has made appropriate development and building permit application to the municipality which includes a lot grade plan or statement of compliance with the Edgemont East Final Drainage and Grading plan completed by an Engineer licensed to practice in Saskatchewan;
    iii. A Construction Completion Certificate has been issued by the Municipal Engineer.

    It is the Developers responsibility to repair any work damaged by building construction traffic or building construction activities.

3. Occupancy of a residence shall not occur until such time as the Municipality has been provided with satisfactory evidence that:
    i. The minimum building elevation as shown on the lot grading plan has been confirmed by a Saskatchewan Land Surveyor; and
    ii. The building/dwelling have been connected to all services (water, sewer, power, electrical, etc.)

4. Each lot within the Development is required to be developed in accordance with the terms of the Geotechnical Investigation which is attached as Appendix "A" (the "**Geotechnical Investigation**").

5. Site specific geotechnical requirements for building permits shall be removed upon receipt and review by the Municipality of an acceptable engineered foundation drawing. The requirements of an engineered foundation drawing and structural fill, compaction and other such requirements must be consistent with the findings of the Geotechnical Investigation.

6. Slope grading in the vicinity of each building within the Development shall be done to ensure that surface water drainage is directed away from the immediate vicinity of the proposed building, in a direction away from the area that a potential slope failure could occur.

7. All excavations shall be conducted in accordance with the applicable provisions of *The Occupational Health and Safety Regulations, 1996* (Saskatchewan) and all other regulations thereto, which include regulations for side-slopes for excavations. The side-slope dimensions shall be flattened if excess groundwater is encountered.

8. Any buildings within the Development are required to be constructed at or above the minimum building elevation indicated in the Drainage & Grading Plan attached as Appendix "B" (the "**Drainage & Grading Plan**"). Minimum building elevation for the purposes of this agreement is defined as lowest physical opening of a dwelling structure. The lot owner acknowledges that the "Drainage & Grading Plan" in this agreement is not final and will need to follow the "Final Drainage & Grading Plan" approved by the Municipal Engineer.

9. No person shall, at any time, add fill to a lot or grade the Development in such a manner that it will cause surface water to flow along the surface from that lot to any adjacent lot, except in accordance with the Drainage and Grading Plan.

10. The Developer and then any subsequent Property Owner agrees that no responsibility shall rest with the Municipality for the removal of any existing wells or septic systems currently located in the Development.

11. It is acknowledged and agreed that a utility organization, being the Lost River Water Utility (the "**Utility**") will be solely responsible for the construction, operation, maintenance and any costs or expenses incurred and as may be related to the Wastewater System and providing Wastewater service to each of the Lots. The Developer acknowledges that no responsibility shall rest with the Municipality and the Developer agrees to notify each Lot owner within the Subdivision accordingly and to include this requirement in any Lot purchase agreement entered into with a third party relating to the Subdivision.

12. The Developer agrees that no responsibility shall rest with the Municipality for the removal of any existing wells currently located in the Subdivision. The Developer agrees to notify each Lot owner that any pre-existing or new potable or non-potable water wells shall not be allowed on the Lot. The Developer agrees to notify each Lot owner within the Subdivision accordingly and to include this requirement in any Lot purchase agreement entered into with a third party relating to the Subdivision.

13. It is acknowledged and agreed that a utility organization, being the Lost River Water Utility (the "**Utility**") will be solely responsible for the construction, operation, maintenance and any costs or expenses incurred and as may be related to the Water System and providing potable water to each of the Lots. The Developer acknowledges that no responsibility shall rest with the Municipality and the Developer agrees to notify each Lot owner within the

Subdivision accordingly and to include this requirement in any Lot purchase agreement entered into with a third party relating to the Subdivision.

14. The Developer and any subsequent Property Owner shall immediately discontinue operation of any potable water system or waste water, sewage and sanitation system in the event any inspection of such system reveals Deficiencies or malfunctions, and operation of such system shall not continue until such Deficiencies or malfunctions are corrected. The Municipality, at any time, has no obligation to complete the surface structure on behalf of the Developer or any subsequent Property Owner.

15. The Developer and then any subsequent Property Owner acknowledges and agrees that no clearing of trees or ground disturbances in areas of native grass may occur without complying with the *Migratory Birds Convention Act & Regulations*. Any clearing must occur outside of the nesting season if migratory bird species are determined to be present.

16. The Developer and then any subsequent Property Owner acknowledges that all proposed buildings will need to be designed in accordance to the architectural controls as shown in attached Appendix "C" and that it is acknowledged that Municode will enforce the controls.

17. At all times the Developer and then any subsequent Property Owner shall fully comply with all regulatory or statutory authorities with jurisdiction over construction of the Development.

18. These restrictive covenants and this Agreement shall be registered against title to the Development and shall run with the Development and shall be binding upon the Developer, subsequent Property Owners and all successors in title in the Development, or any portion thereof.

19. This Agreement shall be, and remain, registered against title to the Development, and any subdivision thereof. Upon the undersigned's transferring the Development or Lots, or any part thereof, the undersigned shall provide the transferee with a copy of this Agreement and obtain an acknowledgement from said transferee whereby the transferee acknowledges that the transferee is bound by this Agreement and accepts all of the rights, restrictions and obligations hereunder.

IN WITNESS WHEREOF the parties hereto have hereunto executed this Agreement this 22 day of MARCH, 2024.

(seal)

R.M. OF CORMAN PARK No. 344

Per: _____
Judy Harwood, Reeve

Per: _____
Kerry Hilts, Chief Administrative Officer

EDGEMONT EAST DEVELOPMENT CORP. Corporate Seal

Edgemont East Development Corp.

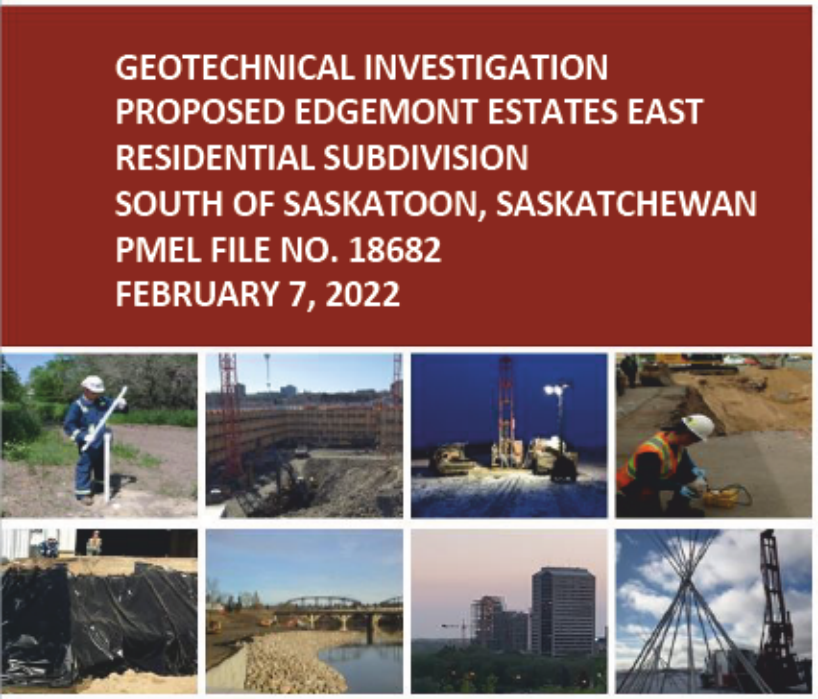
Per: _____
Darren Hagen

APPENDIX "A"
Geotechnical Investigation

See next page for Geotechnical Investigation document

GEOTECHNICAL INVESTIGATION

GEOTECHNICAL INVESTIGATION
PROPOSED EDGEMONT ESTATES EAST
RESIDENTIAL SUBDIVISION
SOUTH OF SASKATOON, SASKATCHEWAN
PMEL FILE NO. 18682
FEBRUARY 7, 2022



PREPARED FOR:
102015575 Saskatchewan Ltd. C/O BCL Engineering Ltd.

ATTENTION: Mr. Darren Hagen / Matt Scott, P. Eng.

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PROJECT: Geotechnical Investigation
Proposed Edgemont Estates East Residential Subdivision
South of Saskatoon, Saskatchewan
PMEL File No. 18682
February 7, 2022

PREPARED FOR: 102015575 Saskatchewan Ltd.
C/O BCL Engineering Ltd.
200 – 302 Wellman Lane
Saskatoon, Saskatchewan
S7T 0J1

ATTENTION: Darren Hagen (102015575 Saskatchewan Ltd.)
Matt Scott, P. Eng. (BCL Engineering Ltd.)

DISTRIBUTION: 102015575 Saskatchewan Ltd. C/O BCL Engineering Ltd. – Digital Copy
P. Machibroda Engineering Ltd. – One Copy

806-48th Street East, Saskatoon, SK S7K 3Y4
P: 306.665.8444 | **F:** 306.652.2092 | **E:** pmel.sk@machibroda.com
www.machibroda.com

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1 INTRODUCTION

1.1 GENERAL

The following report has been prepared on the subsurface soil conditions existing at the site of the proposed Edgemont Estates East residential subdivision to be constructed south of Saskatoon, Saskatchewan.

The terms of reference for this investigation were presented in P. Machibroda Engineering Ltd. (PMEL) Proposal No. 18682 dated October 22, 2021. Written authorization to proceed with this investigation was provided in the signed Consulting Agreement between 102015575 Saskatchewan Ltd. (Darren Hagen) and PMEL, dated October 29, 2021.

1.2 SITE LOCATION

The subject site is located just south of Saskatoon, Saskatchewan. The site is bound by Grasswood Road/low density residential development to the north, Range Road 3052/agricultural land to the east, low density residential development to the west and agricultural land to the south.

The study area is relatively flat-lying with a gradual slope to the west; the elevations at our test locations ranged from about 502 to 508 m. A Site Plan showing the location of the study area and test locations has been shown on Drawing No. 18682-1.

2 FIELD INVESTIGATION

The field test drilling, soil sampling, piezocone penetration testing (CPTu) and monitoring well installation was conducted between November 26 and 30, 2021. Groundwater monitoring was conducted on December 16, 2021 and January 10, 2022.

The coordinates and ground surface elevation at each test location were provided by BCL Engineering Ltd.

2.1 FIELD DRILLING PROGRAM

Twenty boreholes, located as shown on the Site Plan, Drawing No. 178682-1, were dry drilled using our truck-mounted, continuous flight auger drilling rig. The boreholes were 150 mm in diameter and extended to depths of 3 to 6 m below the existing ground surface.

Borehole logs, as shown on Drawing Nos. 18682-2 to 21, inclusive, were compiled during test drilling to record the soil stratification, the groundwater conditions, the position of unstable sloughing soils and the depths at which cobblestones and/or boulders were encountered.

Disturbed samples of auger cuttings, collected during test drilling, were sealed in plastic bags to minimize moisture loss. The soil samples were taken to our laboratory for analysis.

2.2 Piezocone Penetration Testing

Four CPTu's, located as shown on the Site Plan, Drawing No. 18682-1, were conducted during the field investigation. The CPTu soundings were extended to depths of 18.4 to 18.6 m below existing ground surface.

The piezocone penetration tests consisted of pushing a cone, on the end of a series of rods, into the ground at a constant rate while near continuous measurements were recorded at the cone tip (i.e., q_t). Local side friction resistance measurements (i.e., f_s) were recorded on a friction sleeve located directly behind the cone tip. Pore-water pressure response (u) generated from the advancement of the cone into the soil was measured via a pore pressure filter located between the cone tip and friction sleeve. The piezocone tip had an apex angle of 60° and a 15 cm² base area. The friction sleeve had a perimeter area of 225 cm².

The equipment and procedures for conducting the cone penetration testing were undertaken in accordance with ASTM D-5778, "Standard Test Method for Performing Electronic Friction Cone and Piezocone Testing of Soils".

The test plots recorded during the cone soundings have been presented in Appendix B.

3 Soil and Groundwater Conditions

3.1 Soil Profile

The general soil profile consisted of organic topsoil (100 to 300 mm) overlying predominantly sand (in sixteen of the twenty boreholes; silt was encountered surficially in the remaining four boreholes), followed by variable deposits of silt, sand and clay to a depth of at least 18.7 m, the maximum depth investigated. The sand was loose to compact, poorly graded, fine grained and moist initially, becoming wet below the groundwater table. The silt was firm to stiff, low to medium plastic and moist to wet. The clay deposits were firm to very stiff, medium to highly plastic and moist.

3.2 Groundwater Conditions, Sloughing

Groundwater seepage and sloughing conditions were encountered during test drilling. The depths at which groundwater seepage and sloughing conditions were encountered have been shown on the borehole logs. A summary of the groundwater levels recorded in the monitoring wells installed during this investigation has been presented in Table I.

Table I Recorded Groundwater Levels

Borehole No.	Monitoring Well Rim Elevation (m)	Ground Surface Elevation (m)	Groundwater Depth (m)		Groundwater Elevation (m)	
			Dec. 16/21	Jan. 10/22	Dec. 16/21	Jan. 10/22
21-2	506.66	505.61	2.48	2.49	503.13	503.12
21-4	505.60	504.89	DRY (>2.8)	DRY (>2.8)	DRY (<502.09)	DRY (<502.09)

TABLE I RECORDED GROUNDWATER LEVELS (CONTINUED)...

Borehole No.	Monitoring Well Rim Elevation (m)	Ground Surface Elevation (m)	Groundwater Depth (m)		Groundwater Elevation (m)	
			Dec. 16/21	Jan. 10/22	Dec. 16/21	Jan. 10/22
21-6	504.61	503.51	2.25	2.27	501.26	501.24
21-10	508.41	507.33	2.82	2.82	504.51	504.51
21-12	507.02	505.98	DRY (>3.6)	DRY (>3.6)	DRY (<503.42)	DRY (<503.42)
21-14	505.39	504.36	DRY (>3.0)	DRY (>3.0)	DRY (<501.36)	DRY (<501.36)
21-17	504.84	503.77	3.79	3.82	499.98	499.95
21-20	504.96	503.92	2.98	2.96	500.94	500.96

Upon review of Table I, the groundwater table was recorded at a depth of 2.27 to 3.82 m below existing grade on January 10, 2021 (elevation of 499.95 to 504.51 m). Groundwater levels should be expected to fluctuate seasonally by as much as 1 m (with the highest groundwater level in the spring and/or during/following spring thaw and/or periods of precipitation).

A groundwater contour map (interpreted/estimated groundwater levels as of January 10, 2022) has been shown plotted on Drawing No. 18682-1A.

3.3 COBBLESTONES AND BOULDERS

Cobblestones and/or boulders were not encountered within the depth of exploration.

4 LABORATORY ANALYSIS

The soil classification and index tests performed during this investigation consisted of a visual classification of the soil, moisture contents, Atterberg limits, unit weights, water-soluble sulphate contents and grain size distribution analysis.

The results of the soil classification and index tests conducted on representative samples of soil have been plotted on the drill logs alongside the corresponding depths at which the samples were recovered, as shown on Drawing Nos. 18682-2 to 21, inclusive.

The results of grain size distribution analyses have been shown plotted in Appendix C.

5 DESIGN RECOMMENDATIONS

Based on the foregoing outline of soil test results, the following foundation considerations and design recommendations have been presented.

5.1 DESIGN CONSIDERATIONS

It is understood that the subdivision will encompass an area of 161 acres and will consist of 127 residential lots with associated roadways/buried utilities.

The subsurface soil conditions consisted predominantly of sand (silt at some locations) overlying variable deposits of silt, clay and sand. The groundwater table was recorded at a depth of 2.27 to 3.82 m below existing grade on January 10, 2021 (elevation of 499.95 to 504.51 m). Groundwater levels should be expected to fluctuate seasonally by as much as 1 m (with the highest groundwater level in the spring and/or during/following spring thaw and/or periods of precipitation).

It is understood that houses, garages and decks will be constructed within the proposed subdivision. It is anticipated that basements will preferably be constructed (where feasible). Where basement construction is not feasible due to high groundwater conditions, structural floors over (shallower) crawlspaces or at-grade structures with grade-supported concrete slabs are recommended.

To minimize the potential for groundwater-related issues, all basements/crawlspaces should be based at least 1 m above the groundwater table (refer to Drawing No. 18682-1A for a groundwater elevation contour map). Existing topographical information along with future site grading plans should be used to determine whether or not basements/crawlspaces are feasible and to determine where structures should be situated within given lots to satisfy the groundwater clearance criteria.

The subgrade soils are frost susceptible and the potential depth of frost penetration could range from about 2 to 3 m, depending on surface cover and severity of the winter.

Footings or concrete raft foundations should be viable foundation alternatives for the anticipated structures within the proposed subdivision. The magnitude of frost-related differential movements can be reduced by ensuring adequate site/foundation drainage and utilizing strategically placed extruded polystyrene insulation adjacent to the foundations.

A deep foundation system consisting of helical screw piles is expected to be the most practical/economical deep foundation alternative for the anticipated structures to be constructed within the proposed subdivision.

Recommendations have been prepared for site preparation; excavations and dewatering; site classification for seismic site response; limit states resistance factors and serviceability; footings; concrete raft foundations; deep foundations; foundation drainage; foundation walls; floors; foundation concrete; and, traffic structures.

5.2 Site Preparation

All trees, vegetation, roots, organic topsoil and deleterious materials should be removed from the construction area. Topsoil thicknesses ranging from 100 to 300 mm were encountered in our boreholes during test drilling. Due to the large aerial extent of the site, deeper thicknesses of topsoil may be encountered, particularly in vegetated or low-lying areas. Staining and root intrusion from the overlying organic material and roots may be encountered during excavation within the subsurface mineral soils.

If these conditions are suspected, a representative of the Geotechnical Consultant should inspect the site during excavation to verify the depth of organic topsoil which should be removed in preparation of the site for construction. Additional information regarding topsoil composition and soil structure is presented in Appendix D.

The general intent of initial site preparation is to make the subgrade suitably stable for construction activities. It is recommended that the subgrade soils within the development footprint are compacted to the below specified densities.

Building Areas	96 percent standard Proctor density at optimum moisture content;
Traffic Areas	100 percent standard Proctor density at optimum moisture content;
Landscape Areas	90 percent standard Proctor density at optimum moisture content.

Soils which meet the required compaction level should be stable to support construction activities. It is anticipated that conventional site preparation (scarifying, moisture conditioning and re-compacting the soils) will suffice at this site. Soils which are unstable during site preparation and fail to achieve the required compaction will require additional treatment, which may include: over-excavation and replacement and/or geosynthetic stabilization. The need for additional treatment should be reviewed by the Geotechnical Consultant during the field construction with respect to the actual conditions and project requirements.

In areas with variable subgrade soils, proof rolling may be an acceptable alternative to density testing and should be reviewed by the Geotechnical Consultant.

Fill, required to bring the subgrade surface to the design elevation in construction areas, should preferably consist of imported granular material, locally available sand or non-expansive fine-grained soil (i.e., low to medium plastic). All proposed subgrade fill should be approved by the Geotechnical Consultant prior to placement. The fill should be placed in thin lifts (maximum 150 mm loose) and uniformly compacted to 96 percent of standard Proctor density at optimum moisture content.

Excavations are susceptible to settlement and should be adequately backfilled and compacted. The magnitude of settlement is directly related to the level of compaction of the backfill material. Well compacted fills will settle a small percentage of the fill thickness whereas poorly compacted fills can settle appreciably, particularly if frozen soils are incorporated in the backfill. Efforts should be made to meet the specified compaction level in areas sensitive to settlement.

The site should be graded to provide positive site drainage away from all work areas and structures prior to, during and following construction.

5.3 Excavations and Dewatering

Temporary excavations should be designed and excavated in accordance with current Saskatchewan Occupational Health and Safety Regulations. The Contractor is solely responsible for protecting the excavation by shoring, sloping, benching and/or other means as required to maintain the stability of both the excavation sides and the bottom.

The groundwater table was recorded at a depth of 2.27 to 3.82 m below existing grade on January 10, 2021 (elevation of 499.95 to 504.51 m). Groundwater levels should be expected to fluctuate seasonally by as much as 1 m (with the highest groundwater level in the spring and/or during/following spring thaw and/or periods of precipitation).

Excavation below the water table should be avoided wherever practical. Excavations below the groundwater table will encounter construction difficulties associated with groundwater seepage and sloughing conditions, particularly where saturated sand/silt soils are encountered (these soils will flow into excavations). De-watering of the excavations will be required during construction. De-watering should be conducted over the time period for which the excavations are left open. A sump (or multiple sumps, if required) should be set up at the deepest excavation points and the floor of the excavation sloped to the sump(s) to handle groundwater seepage and precipitation runoff. A self-actuated sump pump(s) should be operated on a continuous basis and should be discharged well away from the excavations. If conventional dewatering methods are ineffective, dewatering wells may be required.

Sideslopes should be no steeper than 1.5H : 1V above the groundwater table and no steeper than 3H : 1V to 4H : 1V below the groundwater table (as measured from the bottom of the excavation). Slope flattening will be required if unstable conditions are encountered during excavation. Continuous visual monitoring of the sideslopes should be undertaken to assess whether flatter sideslopes are required to maintain stability.

The stability of the excavation will be affected by wetting and drying of the exposed excavation walls, the length of time that the excavation remains open and the consistency and structure of the subgrade soils.

Excavated soil should be stockpiled away from the crest of the excavation to minimize potential sloughing of the excavation walls due to the soil surcharge loading. Similarly, equipment and construction materials should also be placed away from the crest of the excavation.

Depending on lateral constraints, excavations at this site may be completed with unbraced, sloped side walls. If there is insufficient room for excavation cuts, due to close proximity to other structures, then a temporary shoring system would be required.

5.4 Site Classification for Seismic Site Response

Based on the consistency of the subgrade soils encountered at the subject site and Table 4.1.8.4A of the 2015 National Building Code, the site classification for seismic site response falls within Class D.

5.5 Limit States Resistance Factors and Serviceability

The National Building Code of Canada (NBCC, 2015) requires the use of limit states design for the design of buildings and their structural components, including the design of shallow and deep foundations.

It is expected that the designer is familiar with the limit states design method and only a brief discussion will be presented. For a detailed discussion, it is recommended to review the NBCC (2015) and/or the Canadian Foundation Engineering Manual (CFEM, 2006).

Limit states are defined as those conditions under which a structure ceases to fulfill the function for which it was designed (i.e., unsatisfactory performance). In limit states design, two conditions are assessed with respect to performance, these are:

- ultimate limit states (ULS), and
- serviceability limit states (SLS)

Ultimate limit states are concerned with the collapse mechanisms of the structure (i.e., safety), whereas serviceability limit states consider mechanisms that restrict or constrain the intended use, function or occupancy of the structure.

As per NBCC (2015), the factored soil resistance utilized for foundation design may be determined using the following resistance factors applied to the ultimate resistance values presented in the following subsections of the report.

Shallow foundations:

- Compressive Resistance, $\Phi = 0.5$
- Sliding, Based on Friction (c=0), $\Phi = 0.8$

Deep foundations:

- Compressive Resistance, $\Phi = 0.4$
- Tensile Resistance, $\Phi = 0.3$

The above resistance factors have been provided to reflect that semi-empirical methods were used to derive the soil bearing resistances presented in this report using the laboratory and in-situ data collected during this investigation.

To satisfy serviceability limit states, a settlement analysis of the foundation must also be evaluated to ensure the structures are not negatively impacted by excessive settlement at the design load. Estimated foundation settlements have been provided in Sections 5.6, 5.7 and 5.8.2.

Piles exposed to lateral loads are typically designed to restrict lateral deflection of the pile head to tolerable limits. Lateral pile head deflection can be determined using the concepts presented in Section 5.8.3.

5.6 FOOTINGS

A footing foundation based within naturally deposited, undisturbed soil above the elevation of the groundwater table should perform satisfactorily. If the foundation is constructed during freezing conditions, the subgrade soil at the design footing elevation must be protected from freezing. If it is not practical to keep the subgrade from freezing then a deep foundation system should be constructed.

To minimize the potential for groundwater-related issues, all basements/crawlspaces should be based at least 1 m above the groundwater table (refer to Drawing No. 18682-1A for a groundwater elevation contour map). It is recommended that groundwater monitoring be conducted following spring thaw, as groundwater levels will be higher at that time and will likely better represent potential long-term groundwater levels. Existing topographical information along with future site grading plans should be used to determine whether or not basements/crawlspaces are feasible, to determine where structures should be situated within given lots to satisfy the groundwater clearance criteria and to determine at what depths footings should be based. Based on existing topography, full-depth basements will be feasible at some locations whereas basements/crawlspaces may not be feasible at other locations (unless site grading/filling is completed).

The following minimum recommendations should be incorporated into the design of a footing foundation. The recommendations are applicable to footings supporting vertical concentric loading only; footings subject to eccentric/unbalanced loading will require additional assessment.

1. Footings should be founded on naturally deposited, undisturbed soil (footings shall not be based on fill unless approved by the Geotechnical Consultant).

2. For permanently heated, at-grade structures (i.e., no basement or crawlspace), the footings should be based at a minimum depth of 1.8 m below finished grade. Where a heated basement or crawl-space is constructed, footings should be based at a minimum depth of 1.2 m below finished grade. These minimum depths are applicable only where the building envelope insulation is designed to allow heat loss to the foundation. If insulation is placed beneath the floor slab, an uninsulated strip width of at least 1 m is recommended adjacent to all exterior grade beams/foundation caps to allow for heat loss to the foundation. In unheated areas and/or where heat loss from the building to the foundation is not allowed, footings should be based below the potential depth of frost penetration (i.e., 3 m) or protected against frost action with strategically placed extruded polystyrene insulation.

3. If site topography/groundwater conditions do not allow for the construction of footings that meet the criteria outlined in point 2 above, the footings should be protected from frost action using extruded polystyrene insulation. Footing depths will vary within the subdivision depending on local topography and groundwater conditions, but all footings should be based at a minimum depth of 0.75 m below finished ground surface. The extents and thickness of insulation necessary to protect the foundation from frost will depend on heat-loss effects from the overlying building. In all cases, a continuous layer of insulation should be placed over the exterior face of the foundation wall/grade beam, extending vertically a minimum of 300 mm above grade. The lateral section of insulation should be based a minimum of 300 mm below finished grade to provide protection from damage and positively sloped to promote drainage away from the foundation. Suggested recommendations for insulation thickness/length have been summarized below (heat loss to the foundations must be allowed, as discussed above).

    - For footings supporting continually heated structures (heated to at least 18˚C year-round), the insulation should be a minimum of 50 mm in thickness and should extend laterally a minimum of 1.8 m beyond the perimeter of the footing foundation.

- For footings supporting continually heated structures (heated to a nominal temperature of at least 7˚C year-round), the insulation should be a minimum of 75 mm in thickness and should extend laterally a minimum of 2.4 m beyond the perimeter of the footing foundation.
- For footings supporting unheated structures or seasonally heated structures, the insulation should be a minimum of 125 mm in thickness and should extend laterally a minimum of 2.4 m beyond the perimeter of the footing foundation. In this case, the insulation will need to be placed on all sides of the foundations rather than just the external face and the supported walls must have an insulated layer directly above the foundation wall/grade beam to prevent frost from short-circuiting through the wall.
- In all cases, the thickness and lateral extent of the insulation should be increased by 1/3 (33 percent) at the building corners.
- If insulation is not utilized, frost-related movements should be expected and must be accepted to the Owner.

4. Footings based on naturally deposited, undisturbed soil may be designed to exert an unfactored ULS bearing pressure of 250 kPa and an SLS bearing pressure of 65 kPa (to limit settlements to less than 25 mm). A maximum spread footing dimension of 1.5 m and a maximum strip footing width of 1 m was considered to determine the SLS bearing pressure; for larger footing sizes, an updated settlement analysis will be required.

5. A representative of the Geotechnical Consultant should inspect the footing excavations prior to construction of the footings to verify that adequate soil conditions exist. After inspection, placement of a mud slab or well compacted layer of crushed granular base course material (minimum 75 mm thickness) over the prepared foundation level is recommended to provide protection from disturbance.

6. A minimum strip footing width of 500 mm is recommended. A minimum dimension of 1,000 mm is recommended for square and rectangular footings.

7. If the subgrade soil is disturbed during excavation below the design depth, then the disturbed soil should be removed to an undisturbed, level surface. Fill, required to raise the subgrade elevation to the underside of the footings, should be concrete

8. Footings should not be constructed on desiccated, frozen or wet subgrade soil. Frost should not be allowed to penetrate beneath the footings prior to, during or after construction.

9. The finished grade should be landscaped to provide for positive site drainage away from the structure.

5.7 CONCRETE RAFT FOUNDATIONS

The following minimum recommendations should be incorporated into the design of a reinforced concrete raft foundation. Conceptual raft foundation details have been shown on Figure No. 1.

1. All deleterious and organic material should be removed from the raft footprint. After removal of any unsuitable material and/or overexcavation required to reach the design subgrade level, scarify and compact the surface of the subgrade to 96 percent of standard Proctor density at optimum moisture content.

2. Overexcavate and replace soft areas with structural granular fill placed and compacted in thin lifts (150 mm loose) to 96 percent of standard Proctor density at optimum moisture content. High-strength geogrid/geotextile may be required to provide soil stabilization and separation where soft/wet/loose soil conditions are encountered. The need for special measures (i.e., over-excavation, geotextile, geogrid, and/or additional gravel fill) in soft/wet/loose areas must be subject to review by the Geotechnical Consultant during field construction.

3. Subgrade fill, if required, should preferably consist of locally available sand soils or imported granular fill, placed in thin lifts (maximum 150 mm loose) and compacted to 96 percent of standard Proctor density at optimum moisture content.

4. If possible, grade the subgrade surface to promote drainage to the outer edges of the foundation (allowing overland drainage away from the foundation) with a minimum cross slope of 5 percent.

5. A minimum of 300 mm of granular base course fill is recommended beneath the underside of the raft (Saskatchewan Ministry of Highways and Infrastructure Type 33 aggregate or approved equivalent). The granular fill should extend laterally away from the edge of the raft a distance at least equal to the fill thickness. The granular fill should be placed in thin lifts (maximum 150 mm loose) and compacted to 98 percent of standard Proctor density at optimum moisture content.

6. The slab thickenings, bearing on compacted granular fill over the prepared subgrade soil, may be designed to exert an unfactored ULS bearing pressure of 250 kPa. The SLS bearing pressure to limit foundation settlements to 25 mm or less is 65 kPa. The estimated settlement is based on typical slab thickening dimensions of 1 m or less. If a lesser settlement is required and/or larger slab thickening dimension will be constructed, PMEL should be re-evaluate the recommended SLS bearing capacity.

7. Extruded polystyrene insulation is recommended alongside the thickened edge foundation to minimize potential movements due to frost. The insulation should be placed adjacent to the foundation and should be positively sloped to direct water away from the foundation. For heated buildings, a vertical sheet of insulation should also be placed above the horizontal insulation, extending up to the insulated exterior wall. For unheated structures, the insulation should extend beneath the entire floor slab area. Recommended insulation details (thickness, extents etc.) have been shown on Figure I. If insulation is not utilized, frost-related movements should be expected and must be accepted to the Owner.

FIGURE 1A:
GENERAL
INSULATED
FOUNDATION
CONCEPT

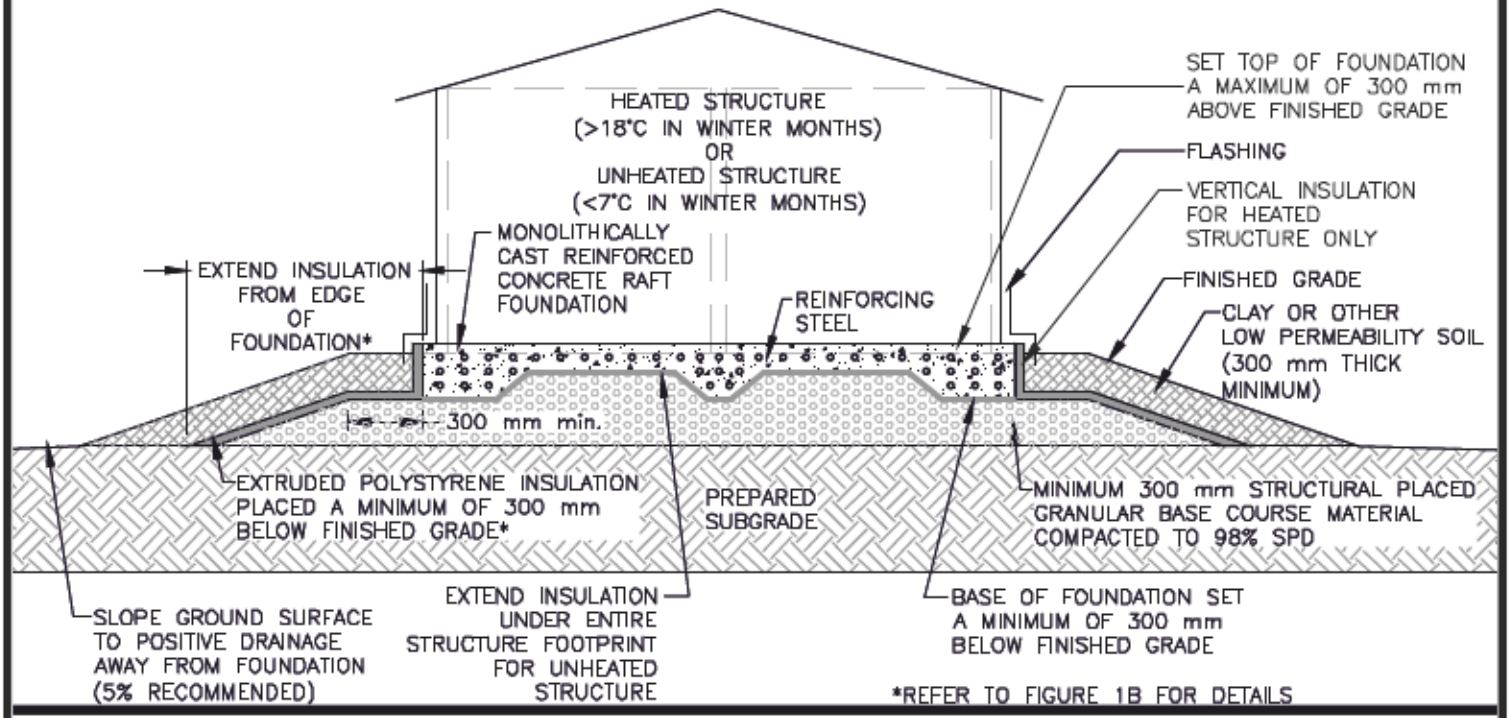
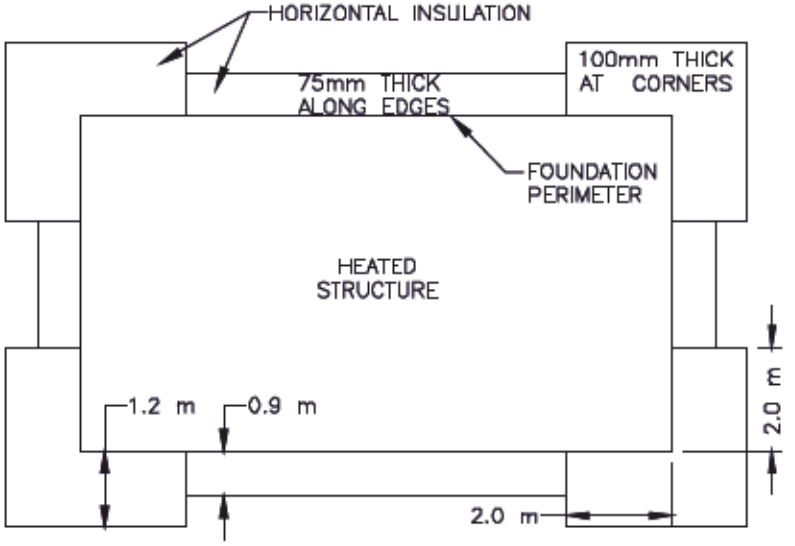


FIGURE 1B:
EXTENTS OF INSULATION



FOR UNHEATED BUILDING, INSULATION THICKNESS = 200 mm AND LATERAL EXTENT FROM FOUNDATION PERIMETER = 2.7 m; INSULATION MUST EXTEND UNDER THE ENTIRE STRUCTURE FOOTPRINT

NOTE:
1. THIS DRAWING IS FOR CONCEPTUAL PURPOSES ONLY. ACTUAL LOCATIONS MAY VARY AND NOT ALL STRUCTURES ARE SHOWN.

CONSULTING
GEOENVIRONMENTAL
GEOTECHNICAL
ENGINEERS

P. MACHIBRODA ENGINEERING LTD.

806 – 48th STREET EAST
SASKATOON, SK
S7K 3Y4

DRAWING TITLE: CONCRETE RAFT FOUNDATION		
PROJECT: PROPOSED EDGEMONT ESTATES EAST RESIDENTIAL SUBDIVISION SOUTH OF SASKATOON, SK		
APPROVED BY: CZ	DRAWN BY: TP	DRAWING NUMBER: 18682-FIGURE1
DATE: JANUARY, 2022	SCALE: NOT TO SCALE	

8. Reinforce the concrete slab and articulate the slab at regular intervals to provide for controlled cracking.

9. Separation joints should be used to isolate the raft from any structures/utilities that are not supported by the raft.

10. Provide positive site drainage away from the foundation.

11. The foundation should not be constructed on desiccated, wet, or frozen subgrade soil or base. Frost should not be allowed to penetrate beneath the foundation just prior to or during construction.

5.8 Deep Foundations

5.8.1 Helical Screw Piles

Helical screw piles are installed by rotating a steel pipe, equipped with one or more helix flightings, into the ground. For single helix screw piles, pile capacity is derived from shearing resistance along the pile shaft (i.e., shaft resistance) as well as end bearing capacity of the helix. For multi-helix piles, pile capacity may be derived from the sum of the shearing resistance along the portion of pile shaft above the uppermost helix and end bearing capacity of each helix. The helical plates should be spaced a minimum of 3 helix diameters apart.

The ULS and SLS soil resistance values for design of screw piles have been presented below.

TABLE II SHAFT RESISTANCE (SCREW PILES)

Depth (m) [1]	Shaft Resistance (kPa)	
	Unfactored ULS	SLS
0 to 2	0	0
Below 2	25	10

[1] Depth below existing ground level.

TABLE III END BEARING RESISTANCE (SCREW PILES)

Depth (m) [1]	End Bearing Resistance (kPa)	
	Unfactored ULS	SLS
Below 5	650	225

[1] Depth below existing ground level.
[2] Torque monitoring must be conducted to confirm that soil conditions are as expected.

Notes:

1. For the purposes of this report, design depths have been referenced to existing grade. The structural engineer must consider finished grade elevation relative to existing grade. If existing grade is altered significantly, PMEL should be consulted to confirm the design parameters.

2. The uppermost (embedded) 2 m of the pile shaft should be neglected in terms of axial capacity.

3. Piles beneath a heated building (i.e., continuously ≥ 15°C) may be designed to have helixes based a minimum depth of 6 m below existing grade, provided the building envelope insulation is designed to allow heat loss to the foundation (i.e., uninsulated floor) and the piles will not be exposed to a prolonged period of freezing conditions prior to the initial heating of the building (i.e., during construction). Where insulation is placed beneath the floor slab, an uninsulated strip width of at least 1 m is recommended adjacent to all exterior grade beams/foundation caps.

4. In unheated areas and/or where heat loss from the building to the foundation is not allowed, screw piles should be based a minimum depth of 8 m below existing ground surface to provide protection from frost action. Alternately, strategically placed insulation and/or piles that incorporate a bond breaker over the pile shaft within the depth of frost penetration (i.e., outer polyethylene sleeve that is isolated from the shaft and allowed to move freely with potential ground movements) could be considered to minimize risk of frost jacking and reduce required pile lengths. PMEL can review potential alternatives upon request.

5. When determining the compressive shaft resistance of the pile shaft, the portion of the pile shaft within 1D above the uppermost helix should be discounted due to interaction effects between the pile shaft and helix. For piles subject to tensile loads, the zone of zero shaft resistance should be increased to 2D above the uppermost helix.

6. Compressive end bearing capacity may be calculated utilizing the effective soil contact area of the helix (i.e., overall cross-sectional area for the lowest helix, helix area minus shaft area for upper helixes). Piles subject to tensile loads should use the effective area of the helix (i.e., helix area minus shaft area) when determining uplift pile capacity.

7. A minimum centre-to-centre pile spacing of 2.5D is recommended, where D=helix diameter. Lesser spacings may be acceptable, but must be approved by the Geotechnical Consultant.

8. The helical plate shall be normal to the central shaft (within 3 degrees) over its entire length. Multiple helixes (if applicable) should be spaced at increments of the helix pitch to ensure that all helixes travel the same path during installation.

9. Continuous monitoring of the installation torque should be undertaken during installation to determine whether the screw pile has been damaged during installation and to monitor the consistency of the subsurface soils.

10. Screw piles should be designed on the basis of conventional static analysis using the resistance values presented above. Installation torque should be used for monitoring purposes only and not to determine pile capacity.

11. The installation of screw piles typically disturbs the upper portion of the soils, often resulting in poor to no contact with the adjacent soils in this zone. As such, additional measures may be required if screw piles are required to resist lateral loading (i.e., pre-boring and backfilling of the annular space with lean mix concrete, construction of a buried pile cap/grade beam over the screw pile, use of larger diameter pile shafts etc.). If screw piles are required to resist lateral loads, the design details should be reviewed with the Geotechnical Consultant.

12. A representative of the Geotechnical Consultant should inspect and document the installation of each screw pile on a continuous basis.

5.8.2 Pile Settlement

With regards to serviceability of pile foundations, assuming good construction practices are followed and the appropriate resistance factors are applied; the settlement of individual piles at the design load will be small and should be within tolerable limits. The estimated pile settlement at working loads should be in the order of 10 to 20 mm for screw piles.

The above is applicable to individual piles and small pile groups. Although not anticipated, foundation settlement should be evaluated where large pile groups are employed to carry the foundation load (i.e., breadth of foundation or pile cap is a similar dimension as depth of piles).

Pile foundations designed utilizing the provided SLS bearing capacities would perform similarly to pile foundations designed using the provided ULS capacities.

5.8.3 Lateral Thrust Forces

Pile deflection typically governs the design of laterally loaded piles. Subgrade reaction theory may be utilized to estimate lateral pile deflection. The estimated coefficients of horizontal subgrade reaction of the subgrade soils have been presented in Table IV.

TABLE IV ESTIMATED COEFFICIENTS OF HORIZONTAL SUBGRADE REACTION

Depth (m)	Coefficient of Horizontal Subgrade Reaction, Ks, (kN/m^3)
0 to 1.5D	0
1.5D to 2	3,500z/D
Below 2	6,000/D

Where D = pile diameter and z = depth (m). For large diameter piles (i.e. exceeding 1 m) the zone of zero horizontal subgrade reaction should not exceed 1.5 m.

For the purposes of this report, design depths have been referenced to existing grade. The structural engineer must consider finished grade elevation relative to existing grade. If existing grade is altered significantly, PMEL should be consulted to confirm the design parameters.

The response of a pile to lateral loads is highly nonlinear. Methods that assume linear behaviour, such as horizontal subgrade reaction theory, are only applicable where pile deflections are small, loading is static and pile materials are linear; these conditions do not exist in most cases and soil-pile interaction modeling (i.e., p-y method) is required to accurately model the pile behaviour. If a more detailed lateral analysis is deemed warranted, PMEL can model the interaction between the soil and the pile, in accordance with the p-y method. Specific pile details (i.e., loading, type, diameter, length, etc.) will be required in order to perform the analysis.

The installation of screw piles typically disturbs the upper portion of the soils, often resulting in poor to no contact with the adjacent soils in this zone. As such, additional measures may be required if screw piles are required to resist lateral loading (i.e., pre-boring and backfilling of the annular space with lean mix concrete, construction of a buried pile cap/grade beam over the screw pile, (use of larger diameter pile shafts) etc.). If screw piles are required to resist lateral loads, the design details should be reviewed with the Geotechnical Consultant.

5.8.4 Grade Beams and Pile Caps

Grade beams and pile caps should be reinforced at both top and bottom throughout their entire length/cross section. Grade beams and pile caps exposed to frost action should be constructed to allow for a minimum of 100 mm of net void space between the underside of the grade beam and the subgrade soil (compressible void form). The finished grade/floor finish adjacent to all pile caps and grade beams should be such that water runoff is not allowed to infiltrate and collect in the void space.

5.9 Foundation Drainage

The finished grade must be landscaped to provide for positive site drainage away from the proposed structure, and site grades should be maintained as high as feasible. A perimeter weeping tile drainage system (installed at the base of the perimeter foundation) is recommended to reduce the potential for external water infiltration below the foundation.

An internal sub-surface drainage system should be constructed below all basements and within all crawlspaces to allow for controlled collection and discharge of water that may accumulate below the basement/within the crawlspace.

Many drainage system configurations are possible, but generally consist of clean, drainage aggregate (less than 3% fines) in conjunction with grading the subgrade surface to collection points (i.e., sump pits) and/or utilizing perforated drainage pipes to transmit water to collection points. The drainage system should be positively sloped to sump pits equipped with automatic sump pumps (or drained by gravity) to discharge water a suitable location well away from the proposed structure. Non-woven geotextiles should be utilized to separate the drainage aggregate from the subgrade soils. The drainage pipes and clean drainage aggregate should be fully encapsulated in non-woven geotextile capable of transmitting a flow of not less than 50 litres per second per square metre (ASTM D-4491). The sub-surface drainage system should incorporate provisions for mitigation of radon gas (i.e., traps in lines entering the sump, sealed sumps, etc.). A backup power supply for the sump pump(s) is recommended in the event of a power outage. Details for drainage systems should be reviewed by the geotechnical consultant prior to finalizing the design.

5.10 Foundation Walls

Foundation retaining walls should be designed to resist lateral earth pressure exerted by the soil as well as the horizontal pressure induced by any surcharge loading. The surcharge loading should be calculated on the basis of actual loads.

Backfill should be uniformly placed and compacted to minimize settlements as much as practical while limiting development of compaction induced pressures on the wall to an acceptable level.

Where the existing soils are used to backfill the foundation walls, the lateral earth pressure may be calculated on the basis of an equivalent fluid pressure distribution of 16 kN/m^3 (add hydrostatic pressure if a functional drainage system is not installed).

Where clean granular fill (i.e., less than 5 percent material finer than 0.071 mm) is used to backfill the foundation walls, the lateral earth pressure may be calculated on the basis of an equivalent fluid pressure distribution of 10 kN/m^3 (add hydrostatic pressure if a functional drainage system is not installed). In this case, the slope of the clean, granular backfill material must be no steeper than 45 degrees as measured from the base of the wall.

To prevent hydrostatic pressures from developing behind the wall, a drainage system should be incorporated into the design of the wall. A perforated drainage pipe should be installed with the invert elevation at or below the base of the foundation. The perimeter drainage system should be drained to a sump pit(s). The sump pit(s) should be equipped with an automatic sump pump. The perforated drainage pipe should be at least 100 mm in diameter and installed on non-woven geotextile capable of transmitting a flow of not less than 50 litres per second per square metre (ASTM D-4491). The geotextile should be placed on naturally deposited, undisturbed soil or free-draining sand as may be required for leveling. The geotextile should be used to encapsulate at least 300 mm of clean, granular drainage aggregate above the invert of the drainage pipe. The clean drainage aggregate should meet the aggregate gradation requirements shown in Table V.

TABLE V CLEAN, DRAINAGE AGGREGATE

Grain Size (mm)	Percent Passing
25.9	100
9.5	50 – 95
5.0	35 – 70
2.0	20 – 45
0.425	0 – 20
0.150	0 – 8
0.071	0 – 3

All water collected in the drainage system must be discharged in accordance with local regulations.

If a drainage system is not installed at the base of the wall, the wall must also be designed to withstand hydrostatic pressures.

The uppermost 500 mm of the backfill should consist of clay or other low permeability material.

5.11 FLOORS

5.11.1 GRADE-SUPPORTED CONCRETE SLABS

Provided that some slab movements and cracking can be tolerated, the following minimum provisions should be incorporated into the design of conventional, heated, grade-supported, cast-in-place, at-grade reinforced concrete slabs subject to light loading.

1. Prepare the site in accordance with Section 5.2. Level and compact the upper 150 mm of subgrade soil to 96 percent of standard Proctor density at optimum moisture content.

2. Subgrade fill, if required, should preferably consist of imported granular material or locally available sand soils, placed in thin lifts (maximum 150 mm loose) and uniformly compacted to 96 percent of standard Proctor density at optimum moisture content.

3. Soft subgrade areas should be excavated and replaced with suitable soil compacted to 96 percent of standard Proctor density at optimum moisture content. High-strength geogrid/geotextile may be required to provide soil stabilization and separation where soft/wet soil conditions are encountered. The need for special measures (i.e., over-excavation, geotextile, geogrid, and/or additional gravel fill) in soft/wet areas must be subject to review by the Geotechnical Consultant during field construction.

4. To provide a level working surface and uniform subgrade support, provide a layer of crushed granular base course material beneath the slab (150 mm minimum).

5. All structural fill should be placed and uniformly compacted in thin lifts (maximum 150 mm, loose) to 98 percent of standard Proctor density at optimum moisture content.

6. Isolate the slab from foundation walls, columns, etc., by means of separation joints.

7. Reinforce the concrete slab and articulate the slab at regular intervals to provide for controlled cracking.

8. Provide positive site drainage away from the proposed structure.

9. Floor slabs should not be constructed on desiccated, wet, or frozen subgrade soil or base.

10. Frost should not be allowed to penetrate beneath the floor slab just prior to, during or after construction.

11. A soil gas membrane (i.e., radon gas and moisture resistant) should be installed between the underside of the floor slab and the granular fill.

If slab movements and cracking cannot be tolerated, the slabs should be structurally supported on piles (refer to Section 5.11.2).

5.11.2 STRUCTURAL FLOORS

It is anticipated that structural floors over crawlspaces may be constructed for some structures. The crawlspaces should be covered with a soil gas membrane (i.e., radon gas and moisture resistant), followed by 50 mm of sand or lean mix concrete to hold it tightly to the soil surface.

The crawl space should be forced-air ventilated during warm weather and heated during cold temperatures. The depth of the crawlspaces should be based at least 1 m above the groundwater table (refer to previous discussions) and a drainage system is recommended within the crawlspace (refer to Section 5.9).

5.11.3 Slabs Exposed to Freezing Conditions

Grade-supported concrete slabs exposed to freezing conditions (i.e., exterior slabs/sidewalks, slabs within unheated building areas, etc.) will be subject to differential movements associated with frost action. The potential for differential movements associated with frost action can be minimized by placing sub-horizontal extruded polystyrene insulation below the slabs/sidewalks. Where applicable, the insulation should butt-up to the grade beam to direct heat to the underside of the slab. The insulation should have a minimum thickness of 75 mm and should extend sub-horizontally to a minimum distance of 1.8 m beyond the outer edges of the slab. If differential movements cannot be tolerated, the slab should be structurally supported on piles.

5.11.4 Soil Gas (Radon) Mitigation

The following minimum provisions should be incorporated into the design of a subsurface depressurization system.

1. Provide a minimum of 150 mm of clean, crushed aggregate (permeable layer) beneath the underside of the slab. The permeable layer should be lightly compacted using light weight vibratory compaction equipment and should meet the following gradation.

Table VI Aggregate for Permeable Layer

Grain Size (mm)	Percent Passing
37.5	100
25	50 – 95
19	35 – 70
12.5	20 – 45
9.5	0 – 20
% Fracture (Minimum)	60

2. A rough-in for the potential for future soil gas mitigation is recommended (in accordance with NBCC 2015, 9.13.4.2). The rough-in consists of an inlet through the slab to allow for depressurization (venting) of a permeable layer placed below the floor slab. Encase the aggregate (i.e., top and bottom) with a non-woven geotextile (Nilex 4551 or equivalent). The geotextile will provide separation between the aggregate and underlying soils (to prevent mixing of materials). Placing geotextile between the aggregate and bottom of floor slab may aid in preventing damage to the vapour barrier. The geotextile should be placed as per the manufacturer's specifications.

3. A suction pit, measuring 1.2 m square and 200 mm deep, should be constructed beneath the floor slab in approximately the centre of the building footprint. Alternatively, perforated drainage pipe could be placed below the floor slab (minimum of three lines extending the length of the building). A 100 mm (minimum) diameter pipe should be connected to the suction pit or perforated drainage pipe, that extends through the floor slab and is stubbed off within the building interior.

4. To minimize the potential for soil gas entering the building, it is recommended that a soil gas membrane be placed below the floor slab (in direct contact with the floor slab) and that all drain pipes should be equipped with traps to prevent entry of radon and/or other soil gases through the floor drains (as per NBCC 2015).

5.12 Foundation Concrete

The results of water-soluble sulphate testing on soil samples recovered from the subject site have been summarized in Table VII.

Table VII Water-Soluble Sulphate Test Results

Borehole No.	Depth (m)	Soil Type	Water Soluble Sulphate (%)	Class of Exposure	Degree of Sulphate Exposure
21-3	1.5	Clay	0.90	Severe	S-2
21-6	3.0	Clay	0.81	Severe	S-2
21-9	0.75	Silt	<0.05	Negligible	-
21-20	0.75	Silt	0.09	Negligible	-

An examination of Table VII revealed that the measured sulphate concentration of the tested soils was less than 0.05 percent to 0.90, which is considered negligible to severe in terms of potential degree of sulphate attack. As such, it is recommended to utilize sulphate resistant cement for all foundation concrete in contact with the subgrade soils. All concrete at this site should be manufactured in accordance with current CSA standards.

5.13 Traffic Structures

5.13.1 Design CBR

The subgrade soils near surface consisted predominately of sand. Silt was encountered near surface in four of the twenty boreholes. The Group Index and correlated soaked California Bearing Ratio (CBR) values for the sand and silt soils ranged from 4 (sandy silt) to 15 (sand, trace silt). Based on the results of the laboratory testing, a design soaked CBR value of 7 was utilized for design of the roadways.

It is understood that subgrade fill will be placed in some areas of the site. It is anticipated that the on-site subgrade will be utilized as fill. However, if imported fill (not consistent with the silt/sand subgrade encountered during our field investigation) is utilized, additional laboratory testing should be conducted to confirm the CBR of the imported fill. Based on the results of the laboratory testing, the proposed pavement structure may have to be modified.

5.13.2 Design Traffic Loading

BCL Ltd. has reported that the subdivision will be divided into approximately 130 lots with 2 access roads. It is understood that a Traffic Impact Assessment is in the process of being completed by KGS for the development. KGS reported, via email on January 13, 2022, that there will be a maximum number of 1300 vehicles per day on the roads.

The roadway design has been based off the design traffic assumptions presented in Table VIII. Based on the reported traffic volumes, a total N_{15} of 325,577 ESALs was calculated for the proposed Roadway. A detailed breakdown of the traffic volume calculation has been included in Appendix E.

Table VIII Traffic Information

Item	Value	Note
Design Life	15 years	As per the RM of Corman Park Country Residential Paved Roads specification
Number of Lanes per direction	1	Two-way traffic - One lane per direction
Directional Split	50%	Traffic will travel equally in each direction.
Design AADT - Year 1	496	Approximate assumed value based on expected growth rate (low population at Year 0)
Design AADT - Year 15	1,300	As per email dated January 17, 2022, 1300 vehicles per day.
Percent Growth Rate	10% - Year 0 to 10	Year 10 is assumed to be build out of the development
	0% - Year 10 to 15	
Percent Commercial Truck Traffic	5% - Year 0 to 5	Years 0 to 5 – high percentage of truck traffic due to construction of residences
	3% - Year 5 to 10	Years 5 to 10 – construction assumed to slow as development is nearing build out
	0.5% - Year 10 to 15	Years 10 to 15 – few to no construction trucks, truck traffic consists mainly of garbage/recycling trucks, septic trucks, fire trucks, delivery trucks, etc.
Truck Traffic Distribution	90%/10%*	*Single Unit Trucks/Tractor Semi-Trailer Combinations
Bus Traffic Passes, Daily	8	It was reported that there will be 8 bus passes per day during the school year. It is estimated that there is approximately 40 weeks in the school year.
ESALs per Unit – Trucks	3.0/6.3*	*Single Unit Trucks/Tractor Semi-Trailer Combinations
ESALs per Unit – Buses	5	

5.13.3 Recommended Pavement Structure

The R.M. of Corman Park Country Residential Paved Road Construction Standard requires the roadway to be designed in accordance with the Saskatchewan Ministry of Highways and Infrastructure's Shell curve method.

Based on the CBR ratings and design traffic loading (as summarized in Sections 5.13.1 and 5.13.2), the following asphalt concrete pavement structure has been presented in Table IX.

Table IX Thickness Design For Pavement Structures

Pavement Structure	Thickness (mm)
Asphalt Concrete (150-200A)*	80
Granular Base(Min CBR = 65)	150
Granular Sub-Base (Min CBR = 20)	150 (see Note 1)
Geotextile / Geogrid**	As Required (see Note 1)
Prepared Subgrade	(600)
Total Thickness (mm)	**380**

*Asphalt Concrete type as per the R.M. of Corman Park Residential Paved Road Construction Standard.
** Combigrid 40/40, EasyGrid 4-150GC, or equivalent

Note:

1. It should be noted that silt soils are generally poor as subgrade support for roadways, and will have a CBR of less than 7. As such, it is recommended that a proof roll/visual subgrade review be conducted following completion of subgrade preparation/prior to placement of the sub-base layer. Where silt/soft soils are encountered, it is recommended that a geotextile/geogrid combination (such as Combigrid 40/40, EasyGrid 4-150GC, or equivalent) be placed between the subgrade and sub-base as it will provide subgrade reinforcement and extend/improve the performance of the structure. Where a geotextile is placed, the sub-base thickness should be increased to 200 mm to minimize potential for damage of the geotextile during placement of the sub-base fill.

5.13.4 Pavement Construction Recommendations

The following minimum recommendations should be incorporated into the design of the asphalt concrete pavement structures. It should be noted that the R.M. of Corman Park has roadway construction standards. Detailed construction specifications (subgrade preparation, material type and compaction specifications, etc.) have been outlined in the R.M. of Corman Park Country Residential Paved Road Construction Standard (www.rmcormanpark.ca/DocumentCenter/View/1812/Country-Residential-Paved-Road). As such, the pavement should be designed in accordance with both the recommendations provided below and the construction specifications provided in the R.M. Paved Road Construction Standard.

In the event there is a discrepancy between the recommendations presented in our report and the R.M. of Corman Park Construction Standards, PMEL should be notified to review our recommendations.

1. Prepare the site in accordance with the R.M. of Corman Park Country Residential Paved Road Construction Standard.

2. Subgrade fill, if required, may consist of imported granular material or locally available sand soils. Subgrade fill should be placed in thin lifts (150 mm loose, maximum) and compacted to 100 percent of standard Proctor density at optimum moisture content.

3. Level and compact the upper 600 mm of subgrade soil to 100 percent of standard Proctor density at optimum moisture content. Soft subgrade areas should be excavated and replaced with suitable soil compacted to 100 percent of standard Proctor density at optimum moisture content. The subgrade should be graded to promote drainage to the ditches. The surface of the subgrade should be smooth drum rolled to create a smooth surface prior to placement of the sub-base.

4. If encountered, all cobblestones/boulders having a dimension of greater than or equal to 8 cm shall be removed from the upper 150 mm of the subgrade.

5. It is recommended that a visual review/proof roll be conducted on the subgrade following preparation (i.e., leveling and compaction). Based on the results of the proof roll, over-excavation, high strength geotextile/geogrid, and/or additional granular fill may be required.

6. Sub-base fill should be placed in 120 mm (maximum) thick lifts. The subbase should be compacted to 100 percent of standard Proctor density at optimum moisture content. The granular base course material should meet the aggregate gradation requirements in Table X.

    a) Where geotextile/geogrid is utilized, a minimum initial sub-base lift thickness of 200 mm should be placed (by end dump method) over the geotextile/geogrid to reduce the potential for damage to the geotextile. Construction traffic should be restricted to travelling on the sub-base to avoid damage to the geogrid/geotextile and underlying subgrade. Heavy duty construction equipment capable of compacting the entire 200 mm lift of sub-base must be utilized for compaction of the sub-base layer.

7. All granular base course placed above the sub-base should be placed in thin lifts (150 mm loose) and compacted to 100 percent of standard Proctor density at optimum moisture content. The granular base course material should meet the aggregate gradation requirements in Table X.

8. A prime coat shall be placed on the finished final lift of Granular Base Course within 24 hours, weather permitting.

9. The asphalt concrete mix design and construction shall meet the specifications as outlined in the R.M. of Corman Park Country Residential Paved Road Construction Standard.

10. If the asphalt concrete will be placed in multiple lifts, it is recommended that the top lift of asphalt concrete be deferred by two years to allow opportunity to correct any settlement or initial pavement deficiencies/defects and to restore the roadway serviceability following the initial construction traffic.

11. Positive surface drainage is recommended to reduce the potential for moisture infiltration through the pavement structure.

12. Surface water should be prevented from seeping back under the outer edges of the traffic structure. Where possible, grades should be designed such that the granular materials can freely discharge into ditches.

TABLE X AGGREGATE GRADATION REQUIREMENTS

Grain Size (mm)	Percent Passing	
	Sub-Base Course*	Base-Course *
50.0	100	100
18.0	--	100
12.5	--	75 – 100
5.0	--	50 – 75
2.0	0 – 80	32 – 52
0.900	--	20 – 35
0.400	0 – 45	15 – 25
0.160	0 – 20	8 – 15
0.071	0 – 8	6 – 11
Plasticity Index (%)	0 – 6	0 – 6
% Fracture (Min)	--	50
Lightweight Pieces (Max,%)	--	5

*As per the R.M. of Corman Park Residential Paved Road Construction Standard

13. Periodic maintenance, such as crack sealing, will be required for asphalt concrete pavement.

If soil embankments are constructed, the following additional recommendations should be considered.

1. All common borrow used for embankment construction should consist of imported granular material or locally available sand soils. Silt soils should not be utilized as embankment fill.

2. Positive surface drainage is recommended to minimize the potential for moisture infiltration into the subgrade soil. Ditches and culverts should be provided where necessary to provide adequate site drainage. Surface water should be prevented from seeping back under the outer edges of the road structure. The embankments should be constructed with a shoulder height of at least 1.0 m above ditchbottom elevation.

3. For sand or granular fill borrow materials, embankment slopes should be no steeper than 3 Horizontal to 1 Vertical (3H : 1V). Similarly, ditch sideslopes should be no steeper than 3H : 1V.

4. Erosion protection is recommended for all embankment sideslopes. The slopes should be covered with topsoil and seeded to encourage vegetation growth. Alternately, erosion control products could be considered, but would be subject to prior approval by the RM of Corman Park and PMEL.

5. The final road grade should be elevated a minimum of 600 mm above the average terrain to minimize snow accumulation on the road.

5.13.5 Optional Construction Considerations

Placement of geotextile/geogrid (such as Combigrid 40/40, EasyGrid 4-150GC, or equivalent) between the subgrade and granular sub-base for the first 50 to 100 m south of Grasswood Road at each access approach may help reduce pavement damage related to differing pavement structures, stopping, turning, etc. Geogrid between the base and sub-base course could also be considered. If utilized, the geotextile/geogrid should be laid flat with no bunching and overlapped by a minimum of 600 mm. The use of higher strength asphalt concrete and/or increasing the asphalt concrete thickness could also be considered within the above-mentioned transition zone.

6 Limitations

The presentation of the summary of the borehole logs and foundation design recommendations has been completed as authorized. Twenty, 150 mm diameter boreholes were dry drilled using our continuous flight, solid stem auger drilling equipment. Borehole logs were compiled during test drilling which, we believe, were representative of the subsurface conditions at the borehole locations at the time of test drilling.

Four piezocone penetration tests were conducted during the field investigation. The inferred subsoil stratigraphy has been shown on the attached CPTu plots.

Variations in the subsurface conditions from that shown on the borehole logs/CPTu plots at locations other than the exact test locations should be anticipated. If conditions should differ from those reported here, then we should be notified immediately in order that we may examine the conditions in the field and reassess our recommendations in the light of any new findings.

The Terms of Reference for this geotechnical investigation did not include any environmental assessment of the site. No detectable evidence of environmentally sensitive materials such as hydrocarbon odour was detected during the actual time of the field test drilling program. If, on the basis of any knowledge, other than that formally communicated to us, there is reason to suspect that environmentally sensitive materials may exist, then additional boreholes should be drilled and samples recovered for chemical analysis.

The subsurface investigation necessitated the drilling of deep boreholes. The boreholes were backfilled with bentonite chips at the completion of test drilling. Please be advised that some settlement of the backfill materials will occur which may leave a depression or an open hole. It is the responsibility of the client to inspect the site and backfill, as required, to ensure that the ground surface at each Borehole location is maintained level with the existing grade.

It is recommended that the monitoring wells should be decommissioned once they are no longer needed. PMEL will not accept any future liability associated with inadequate decommissioning of monitoring wells. Costs for decommissioning the monitoring wells can be provided by PMEL upon request.

This report has been prepared for the exclusive use of 102015575 Saskatchewan Ltd. (Darren Hagen), BCL Engineering Ltd. and their agents for specific application to the proposed Edgemont Estates East residential subdivision to be constructed south of Saskatoon, Saskatchewan. It has been prepared in accordance with generally accepted geotechnical engineering practices and no other warranty, express or implied, is made.

Any use which a Third Party makes of this report, or any reliance on decisions to be made based on it, is the responsibility of such Third Party. Governing Agencies such as municipal, provincial, or federal agencies having jurisdictions with respect to this development and/or construction of the facilities described herein have full jurisdiction with respect to the described development. Any other unspecified subsequent development would be considered Third Party and would, therefore, require prior review by PMEL. PMEL accepts no responsibility for damages, if any, suffered by any Third Party as a result of decisions made or actions based on this report.

The acceptance of responsibility for the design/construction recommendations presented in this report with respect to the foundation system are contingent on adequate and/or full-time inspection (as required, based on site conditions at the time of construction) by a representative of the Geotechnical Consultant. PMEL will not accept any responsibility on this project for any unsatisfactory performance if adequate and/or full-time inspection is not performed by a representative of PMEL.

This report has been digitally secured with personal passwords to lock the document. Due to the possibility of digital modification, only those reports sent directly by PMEL can be relied upon without fault.

We trust that this report fulfills your requirements for this project. Should you require additional information, please contact us.

P. MACHIBRODA ENGINEERING LTD.

Cory Zubrowski, P. Eng.

Jennifer Krasowski, P. Eng.

CZ/JK

DRAWINGS

P.MACHIBRODA
ENGINEERING LTD.

KEY PLAN
NOT TO SCALE

NOTE:
1.THIS DRAWING IS FOR CONCEPTUAL PURPOSES ONLY. ACTUAL LOCATIONS MAY VARY AND NOT ALL STRUCTURES ARE SHOWN.
2.THIS DRAWING WAS COMPILED FROM GOOGLE EARTH PRO ©2021, IMAGE ©2021 DIGITALGLOBE, (IMAGERY DATE: 8/23/15).
3. THIS DRAWING WAS COMPILED FROM A PRELIMINARY DRAWING PROVIDED BY BCL ENGINEERING LTD.

LEGEND

—PMEL BOREHOLE
—BENCHMARK
—PMEL BOREHOLE (MONITORING WELL INSTALLED)
—PMEL PIEZOCONE PENETRATION TEST

P. MACHIBRODA ENGINEERING LTD.

CONSULTING
GEOENVIRONMENTAL
GEOTECHNICAL
ENGINEERS

806 – 48th STREET EAST
SASKATOON, SK
S7K 3Y4

DRAWING TITLE:
SITE PLAN
BOREHOLE AND PIEZOCONE LOCATIONS

PROJECT:
PROPOSED EDGEMOUNT ESTATES EAST
RESIDENTIAL SUBDIVISION, SOUTH OF SASKATOON, SK

APPROVED BY:	DRAWN BY:
CZ	TP
DATE: JANUARY, 2022	DRAWING NUMBER: 18682-1
SCALE: AS SHOWN	

KEY PLAN
NOT TO SCALE

NOTE:
1. THIS DRAWING IS FOR CONCEPTUAL PURPOSES ONLY. ACTUAL LOCATIONS MAY VARY AND NOT ALL STRUCTURES ARE SHOWN.
2. THIS DRAWING WAS COMPILED FROM GOOGLE EARTH PRO ©2021, IMAGE ©2021 DIGITALGLOBE, (IMAGERY DATE: 08/23/15).

LEGEND

502.0 - GROUNDWATER ELEVATIONS (m) (JANUARY 10, 2022)

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CONSULTING
GEOENVIRONMENTAL
GEOTECHNICAL
ENGINEERS

806 – 48th STREET EAST
SASKATOON, SK
S7K 3Y4

DRAWING TITLE:
GROUNDWATER CONTOUR MAP

PROJECT:
PROPOSED EDGEMOUNT ESTATES EAST
RESIDENTIAL SUBDIVISION, SOUTH OF SASKATOON, SK

APPROVED BY: CZ	DRAWN BY: TP
DATE: JANUARY, 2022	DRAWING NUMBER: 18682-1A
SCALE: AS SHOWN	

P.MACHIBRODA ENGINEERING LTD.

BOREHOLE 21-1

DRAWING NUMBER: 18682-2

PROJECT: PROPOSED EDGEMONT ESTATES EAST RESIDENTIAL SUBDIVISION

LOCATION: SOUTH OF SASKATOON, SK

NORTHING (m): N/A EASTING (m): N/A ELEVATION (m): 507.22 DATE DRILLED: NOV 26/21

SAMPLE TYPE: CUTTINGS SPLIT SPOON SHELBY TUBE

WATER LEVELS
After Drilling
During Drilling

DEPTH (m)	STRATIGRAPHY	DESCRIPTION	SAMPLE TYPE	SPT (N) BLOWS/ 300 mm	WATER CONTENT (%)	LIQUID LIMIT (%)	PLASTIC LIMIT (%)	UNIT WEIGHT (kN/m³)	COMPRESSIVE STRENGTH (kPa)	POCKET PEN. (kg/m²)
0		TOPSOIL, moist, dark brown, organics, rootlets, frozen.			5.4					
		SAND, silty, loose, poorly graded, fine grained, moist, dark brown.			5.2					
1		brown below 0.5 m.			5.3					
2										
3		wet, seepage, sloughing below 2.9 m.		6	23.4					
4		mottled brown and grey below 4.2 m.		4	24.7					
5		CLAY, some silt, stiff, highly plastic, moist, brown.								
6					37.8					1.75
7										
8										
9										
10										
11										
12										

NOTES:
1. Borehole sloughed to 2.9 m Immediately After Drilling.

P.MACHIBRODA ENGINEERING LTD.

BOREHOLE 21-2

DRAWING NUMBER: 18682-3

PROJECT: PROPOSED EDGEMONT ESTATES EAST RESIDENTIAL SUBDIVISION

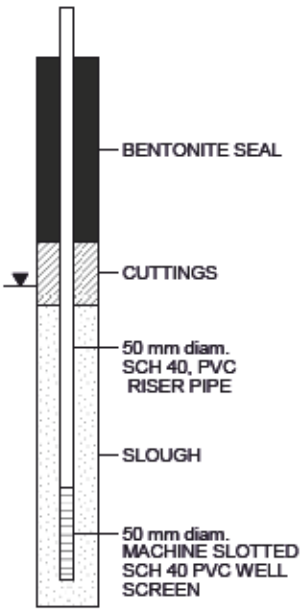
LOCATION: SOUTH OF SASKATOON, SK

NORTHING (m): N/A **EASTING (m):** N/A **ELEVATION (m):** 506.61 **DATE DRILLED:** NOV 26/21

SAMPLE TYPE: CUTTINGS SPLIT SPOON SHELBY TUBE

DEPTH (m)	STRATIGRAPHY	DESCRIPTION	SAMPLE TYPE	SPT (N) BLOWS/300 mm	WATER CONTENT (%)	LIQUID LIMIT (%)	PLASTIC LIMIT (%)	UNIT WEIGHT (kN/m³)	COMPRESSIVE STRENGTH (kPa)	POCKET PEN. (kg/m²)
0		TOPSOIL, moist, dark brown, organics, rootlets, frozen.			6.5					
		SAND, silty, loose, poorly graded, fine grained, moist, brown.			7.8					
1										
2		SILT, some clay, trace sand, soft to firm, low to medium plastic, moist, dark brown.		3	22.0					
3		SAND, silty, loose, poorly graded, fine grained, wet, brown, seepage, sloughing.			23.5					
4		CLAY, some silt, stiff, highly plastic, moist, brown, oxide stained. stiff to very stiff below 4.2 m.								
5				12	33.9			18.6		
6					39.0					2.0
7										
8										
9										
10										
11										
12										

WATER LEVELS
- After Drilling
- During Drilling



NOTES:
1. Borehole sloughed to 2.7 m Immediately After Drilling.
2. Recorded Groundwater Level at 2.49 m on Jan 7/22.

SHEET 1 OF 1

02-08-2022 Z:\2021 Projects\NEW\LOG\18682-GEO-SOUTH OF SASKATOON, SK\DWG\BH2-18682.bor

P.MACHIBRODA ENGINEERING LTD.

BOREHOLE 21-3

DRAWING NUMBER: 18682-4

PROJECT: PROPOSED EDGEMONT ESTATES EAST RESIDENTIAL SUBDIVISION

LOCATION: SOUTH OF SASKATOON, SK

NORTHING (m): N/A EASTING (m): N/A ELEVATION (m): 505.58 DATE DRILLED: NOV 26/21

SAMPLE TYPE: CUTTINGS SPLIT SPOON SHELBY TUBE

WATER LEVELS
After Drilling
During Drilling

DEPTH (m)	STRATIGRAPHY	DESCRIPTION	SAMPLE TYPE	SPT (N) BLOWS/300 mm	WATER CONTENT (%)	LIQUID LIMIT (%)	PLASTIC LIMIT (%)	UNIT WEIGHT (kN/m³)	SULPHATE CONTENT (%)	POCKET PEN. (kg/m²)
0		TOPSOIL, moist, dark brown, organics, rootlets, frozen.			12.8					
0.5		SILT, sandy, trace clay, stiff, low plastic, moist, dark brown. brown below 0.5 m.			12.7					
1.5		CLAY, some silt, stiff to very stiff, highly plastic, moist, brown, gypsum crystals.			26.9	60	19		0.902	
3.0		SILT, some sand, trace clay, firm, low plastic, moist, brown. wet, seepage, sloughing below 3.0 m.		4	31.2					
4.5		SAND, silty, loose to compact, poorly graded, fine grained, wet, brown, seepage, sloughing.		7	32.6					
6.0					28.5					

NOTES:
1. Borehole sloughed to 3.3 m Immediately After Drilling.

SHEET 1 OF 1

02-08-2022 Z:\2021 Projects\NEWLOG\18682-GEO-SOUTH OF SASKATOON, SK\DWG\BH3-18682.bor

P.MACHIBRODA ENGINEERING LTD.

BOREHOLE 21-4

DRAWING NUMBER: 18682-5

PROJECT: PROPOSED EDGEMONT ESTATES EAST RESIDENTIAL SUBDIVISION

LOCATION: SOUTH OF SASKATOON, SK

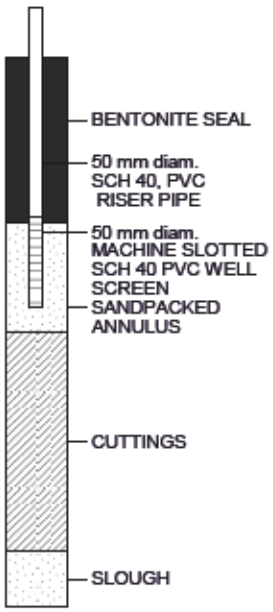
NORTHING (m): N/A **EASTING (m):** N/A **ELEVATION (m):** 504.89 **DATE DRILLED:** NOV 26/21

SAMPLE TYPE: CUTTINGS SPLIT SPOON SHELBY TUBE

WATER LEVELS
After Drilling
During Drilling

DEPTH (m)	STRATIGRAPHY	DESCRIPTION	SAMPLE TYPE	SPT (N) BLOWS/ 300 mm	WATER CONTENT (%)	LIQUID LIMIT (%)	PLASTIC LIMIT (%)	UNIT WEIGHT (kN/m³)	COMPRESSIVE STRENGTH (kPa)	POCKET PEN. (kg/m²)
0		TOPSOIL, moist, dark brown, organics, rootlets, frozen.			4.4					
					6.4					
1		SAND, silty, loose to compact, poorly graded, fine grained, moist, dark brown.								
		brown below 0.4 m.		9	6.3					
2										
3		wet, seepage, sloughing below 2.8 m.			27.3					2.0
		CLAY, some silt, stiff to very stiff, highly plastic, moist, brown, oxide stained, gypsum crystals.								
4										
				10	37.7			18.6		
5										
		SILT, trace sand, trace clay, firm, low to medium plastic, wet, brown, seepage, sloughing.			28.7					
6										
7										
8										
9										
10										
11										
12										

MONITORING WELL: BH21-4
ELEV.: 505.60 m



NOTES:
1. Borehole sloughed to 5.4 m Immediately After Drilling.
2. Recorded Groundwater Level Dry on Jan 7/22.

P.MACHIBRODA ENGINEERING LTD.

BOREHOLE 21-5

DRAWING NUMBER: 18682-6

PROJECT: PROPOSED EDGEMONT ESTATES EAST RESIDENTIAL SUBDIVISION

LOCATION: SOUTH OF SASKATOON, SK

NORTHING (m): N/A EASTING (m): N/A ELEVATION (m): 504.51 DATE DRILLED: NOV 26/21

SAMPLE TYPE: CUTTINGS SPLIT SPOON SHELBY TUBE

WATER LEVELS
After Drilling
During Drilling

DEPTH (m)	STRATIGRAPHY	DESCRIPTION	SAMPLE TYPE	SPT (N) BLOWS/300 mm	WATER CONTENT (%)	LIQUID LIMIT (%)	PLASTIC LIMIT (%)	UNIT WEIGHT (kN/m³)	COMPRESSIVE STRENGTH (kPa)	POCKET PEN. (kg/m²)	DEPTH (m)
0		TOPSOIL, moist, dark brown, organics, rootlets, frozen.			3.8						0
		SAND, silty, loose, poorly graded, fine grained, moist, dark brown.			3.3						
1		brown below 0.6 m.			5.1						1
2											2
3		wet, seepage, sloughing below 3.0 m.		7	22.6						3
4											4
5				6	23.9						5
6					25.6						6
7											7
8											8
9											9
10											10
11											11
12											12

NOTES:
1. Borehole sloughed to 3.0 m Immediately After Drilling.

SHEET 1 OF 1

02-08-2022 Z:\2021 Projects\NEWLOG\18682-GEO-SOUTH OF SASKATOON, SK\DWG\BH5-18682.bor

P.MACHIBRODA ENGINEERING LTD.

BOREHOLE 21-6

DRAWING NUMBER: 18682-7

PROJECT: PROPOSED EDGEMONT ESTATES EAST RESIDENTIAL SUBDIVISION

LOCATION: SOUTH OF SASKATOON, SK

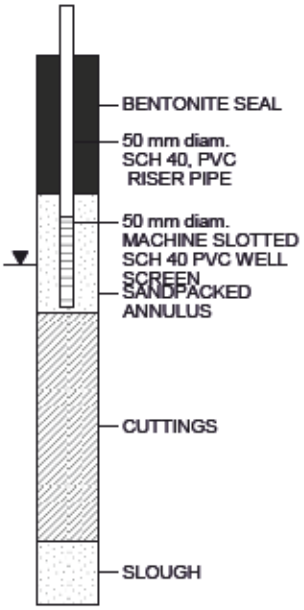
NORTHING (m): N/A **EASTING (m):** N/A **ELEVATION (m):** 503.51 **DATE DRILLED:** NOV 26/21

SAMPLE TYPE: CUTTINGS SPLIT SPOON SHELBY TUBE

WATER LEVELS
After Drilling
During Drilling

DEPTH (m)	STRATIGRAPHY	DESCRIPTION	SAMPLE TYPE	SPT (N) BLOWS/300 mm	WATER CONTENT (%)	LIQUID LIMIT (%)	PLASTIC LIMIT (%)	UNIT WEIGHT (kN/m³)	SULPHATE CONTENT (%)	POCKET PEN. (kg/m²)
0		TOPSOIL, moist, dark brown, organics, rootlets, frozen.			3.5					
					4.4					
1		SAND, silty, loose to compact, poorly graded, fine grained, moist, brown.								
		wet, seepage, sloughing below 1.6 m.		7	22.6					
2										
3		CLAY, some silt, trace sand, stiff, medium plastic, moist, brown, oxide stained, gypsum crystals.			26.6	41	11		0.811	1.5
		silty, wet, seepage, sloughing 3.2 to 4.4 m.								
4		highly plastic below 4.4 m.								
				9	37.6			18.1		
5										
6		SILT, some sand, some clay, firm, low to medium plastic, wet, brown.			32.4					
7										
8										
9										
10										
11										
12										

MONITORING WELL: BH21-6
ELEV.: 504.61



NOTES:
1. Borehole sloughed to 5.3 m Immediately After Drilling.
2. Recorded Groundwater Level at 2.27 m on Jan 7/22.

SHEET 1 OF 1

02-08-2022 Z:\2021 Projects\NEW\LOG\18682-GEO-SOUTH OF SASKATOON, SK\DWG\BH6-18682.bor

P.MACHIBRODA ENGINEERING LTD.

BOREHOLE 21-7

DRAWING NUMBER: 18682-8

PROJECT: PROPOSED EDGEMONT ESTATES EAST RESIDENTIAL SUBDIVISION

LOCATION: SOUTH OF SASKATOON, SK

NORTHING (m): N/A **EASTING (m):** N/A **ELEVATION (m):** 503.85 **DATE DRILLED:** NOV 30/21

SAMPLE TYPE: CUTTINGS SPLIT SPOON SHELBY TUBE

WATER LEVELS
- After Drilling
- During Drilling

DEPTH (m)	STRATIGRAPHY	DESCRIPTION	SAMPLE TYPE	SPT (N) BLOWS/ 300 mm	WATER CONTENT (%)	LIQUID LIMIT (%)	PLASTIC LIMIT (%)	UNIT WEIGHT (kN/m³)	COMPRESSIVE STRENGTH (kPa)	POCKET PEN. (kg/m²)
0		TOPSOIL, moist, dark brown, organics, rootlets, frozen.			4.6					
		SAND, silty, loose to compact, poorly graded, fine grained, moist, dark brown.			6.4					
1		brown below 0.3 m.			7.6					
2		wet, seepage, sloughing below 2.6 m.								
3					24.4					

NOTES:
1. Borehole sloughed to 2.6 m Immediately After Drilling.

SHEET 1 OF 1

02-08-2022 Z:\2021 Projects\NEWLOG\18682-GEO-SOUTH OF SASKATOON, SK\DWG\BH7-18682.bor

P.MACHIBRODA ENGINEERING LTD.

BOREHOLE 21-8

DRAWING NUMBER: 18682-9

PROJECT: PROPOSED EDGEMONT ESTATES EAST RESIDENTIAL SUBDIVISION

LOCATION: SOUTH OF SASKATOON, SK

NORTHING (m): N/A **EASTING (m):** N/A **ELEVATION (m):** 505.98 **DATE DRILLED:** NOV 30/21

SAMPLE TYPE: CUTTINGS SPLIT SPOON SHELBY TUBE

WATER LEVELS
- After Drilling
- During Drilling

DEPTH (m)	STRATIGRAPHY	DESCRIPTION	SAMPLE TYPE	SPT (N) BLOWS/ 300 mm	WATER CONTENT (%)	LIQUID LIMIT (%)	PLASTIC LIMIT (%)	UNIT WEIGHT (kN/m³)	COMPRESSIVE STRENGTH (kPa)	POCKET PEN. (kg/m²)	DEPTH (m)
0		TOPSOIL, moist, dark brown, organics, rootlets, frozen.			4.7						0
		SAND, silty, loose to compact, poorly graded, fine grained, moist, brown.			5.0						
1					5.8						1
2											2
3					12.9						3
4											4
5											5
6											6
7											7
8											8
9											9
10											10
11											11
12											12

NOTES:
1. Borehole open and dry Immediately After Drilling.

P.MACHIBRODA ENGINEERING LTD.

BOREHOLE 21-9

DRAWING NUMBER: 18682-10

PROJECT: PROPOSED EDGEMONT ESTATES EAST RESIDENTIAL SUBDIVISION

LOCATION: SOUTH OF SASKATOON, SK

NORTHING (m): N/A EASTING (m): N/A ELEVATION (m): 505.95 DATE DRILLED: NOV 30/21

SAMPLE TYPE: CUTTINGS SPLIT SPOON SHELBY TUBE

WATER LEVELS
After Drilling
During Drilling

DEPTH (m)	STRATIGRAPHY	DESCRIPTION	SAMPLE TYPE	SPT (N) BLOWS/300 mm	WATER CONTENT (%)	LIQUID LIMIT (%)	PLASTIC LIMIT (%)	UNIT WEIGHT (kN/m³)	SULPHATE CONTENT (%)	% FINES	DEPTH (m)
0		TOPSOIL, moist, dark brown, organics, rootlets, frozen.			26.9						0
1		SILT, trace sand, trace clay, firm, low to medium plastic, moist, dark brown.			18.6	27	15		0.093	50.2	1
		brown below 0.6 m.									
2		SAND, silty, loose to compact, poorly graded, fine grained, moist, brown.			19.0						2
		wet, seepage, sloughing below 2.1 m.									
3					24.3						3
4											4
5											5
6											6
7											7
8											8
9											9
10											10
11											11
12											12

NOTES:
1. Borehole sloughing to 2.3 m Immediately After Drilling.

SHEET 1 OF 1

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P.MACHIBRODA ENGINEERING LTD.

BOREHOLE 21-10

DRAWING NUMBER: 18682-11

PROJECT: PROPOSED EDGEMONT ESTATES EAST RESIDENTIAL SUBDIVISION

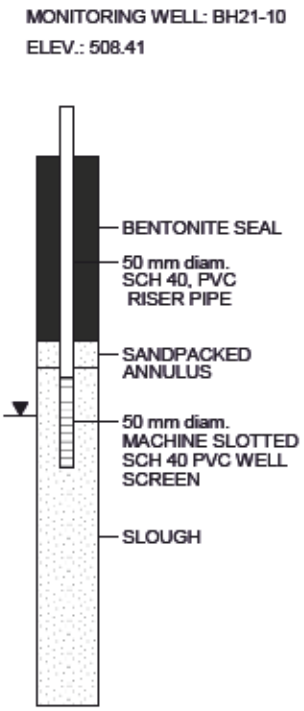
LOCATION: SOUTH OF SASKATOON, SK

NORTHING (m): N/A **EASTING (m):** N/A **ELEVATION (m):** 507.33 **DATE DRILLED:** NOV 26/21

SAMPLE TYPE: CUTTINGS SPLIT SPOON SHELBY TUBE

DEPTH (m)	STRATIGRAPHY	DESCRIPTION	SAMPLE TYPE	SPT (N) BLOWS/ 300 mm	WATER CONTENT (%)	LIQUID LIMIT (%)	PLASTIC LIMIT (%)	UNIT WEIGHT (kN/m³)	COMPRESSIVE STRENGTH (kPa)	POCKET PEN. (kg/m²)
0		TOPSOIL, moist, dark brown, organics, rootlets, frozen.			4.7					
					4.0					
1		SAND, silty, loose to compact, poorly graded, fine grained, moist, dark brown.								
		brown below 0.5 m.		7	11.8					
2										
		wet, seepage, sloughing below 2.7 m.			23.6					
3										
4										
		grey below 4.7 m.		4	25.4					
5										
6					26.5					
7										
8										
9										
10										
11										
12										

WATER LEVELS
- After Drilling
- During Drilling



NOTES:
1. Borehole sloughed to 2.3 m Immediately After Drilling.
2. Recorded Groundwater Level at 2.82 m on Jan 7/22.

P.MACHIBRODA ENGINEERING LTD.

BOREHOLE 21-11

DRAWING NUMBER: 18682-12

PROJECT: PROPOSED EDGEMONT ESTATES EAST RESIDENTIAL SUBDIVISION

LOCATION: SOUTH OF SASKATOON, SK

NORTHING (m): N/A EASTING (m): N/A ELEVATION (m): 506.32 DATE DRILLED: NOV 26/21

SAMPLE TYPE: CUTTINGS SPLIT SPOON SHELBY TUBE

WATER LEVELS
After Drilling
During Drilling

DEPTH (m)	STRATIGRAPHY	DESCRIPTION	SAMPLE TYPE	SPT (N) BLOWS/300 mm	WATER CONTENT (%)	LIQUID LIMIT (%)	PLASTIC LIMIT (%)	UNIT WEIGHT (kN/m³)	COMPRESSIVE STRENGTH (kPa)	POCKET PEN. (kg/m²)	DEPTH (m)
0		TOPSOIL, moist, dark brown, organics, rootlets, frozen.			5.6						0
		SAND, silty, loose to compact, poorly graded, fine grained, moist, brown.			7.4	23	20				
1											1
				10	13.8						
2											2
		wet, seepage, sloughing below 2.7 m.			22.5						
3		SILT, some sand, trace clay, firm, low plastic, wet, brown, seepage, sloughing,									3
4											4
				9	33.3						
5		some clay, trace sand, stiff, medium plastic, grey below 5.5 m.									5
6					31.4						6
7											7
8											8
9											9
10											10
11											11
12											12

NOTES:
1. Borehole sloughed to 2.7m Immediately After Drilling.

SHEET 1 OF 1

02-08-2022 Z:\2021 Projects\NEW\LOG\18682-GEO-SOUTH OF SASKATOON, SK\DWG\BH11-18682.bor

P.MACHIBRODA ENGINEERING LTD.

BOREHOLE 21-12

DRAWING NUMBER: 18682-13

PROJECT: PROPOSED EDGEMONT ESTATES EAST RESIDENTIAL SUBDIVISION

LOCATION: SOUTH OF SASKATOON, SK

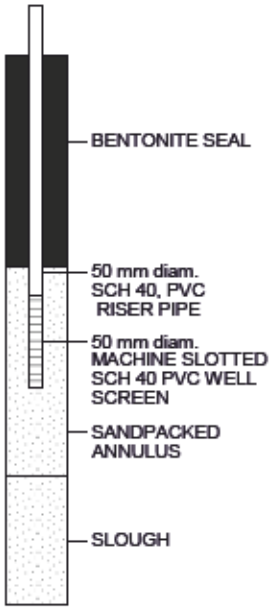
NORTHING (m): N/A **EASTING (m):** N/A **ELEVATION (m):** 505.98 **DATE DRILLED:** NOV 26/21

SAMPLE TYPE: CUTTINGS SPLIT SPOON SHELBY TUBE

WATER LEVELS
After Drilling
During Drilling

DEPTH (m)	STRATIGRAPHY	DESCRIPTION	SAMPLE TYPE	SPT (N) BLOWS/ 300 mm	WATER CONTENT (%)	LIQUID LIMIT (%)	PLASTIC LIMIT (%)	UNIT WEIGHT (kN/m³)	COMPRESSIVE STRENGTH (kPa)	POCKET PEN. (kg/m²)
0		TOPSOIL, moist, dark brown, organics, rootlets, frozen.			4.4					
		SAND, silty, loose to compact, poorly graded, fine grained, moist, dark brown.			3.7					
1		brown below 0.5 m.			5.1					
2										
3		wet, seepage, sloughing below 3.1 m.		10	22.0					
4										
		silt seam, some clay, trace sand, firm , medium plastic, moist to wet, dark brown 4.2 to 4.6 m.		9	26.2					
5		grey below 4.6 m.								
		olive grey below 5.3 m.			22.9					
6										
7										
8										
9										
10										
11										
12										

MONITORING WELL: BH21-12
ELEV.: 507.02



NOTES:
1. Borehole sloughed to 4.6 m Immediately After Drilling.
2. Recorded Groundwater Level Dry on Jan 7/22.

SHEET 1 OF 1

02-08-2022 Z:\2021 Projects\NEW\LOG\18682-GEO-SOUTH OF SASKATOON, SK\DWG\BH12-18682.bor

P.MACHIBRODA ENGINEERING LTD.

BOREHOLE 21-13

DRAWING NUMBER: 18682-14

PROJECT: PROPOSED EDGEMONT ESTATES EAST RESIDENTIAL SUBDIVISION

LOCATION: SOUTH OF SASKATOON, SK

NORTHING (m): N/A **EASTING (m):** N/A **ELEVATION (m):** 506.12 **DATE DRILLED:** NOV 26/21

SAMPLE TYPE: CUTTINGS SPLIT SPOON SHELBY TUBE

WATER LEVELS
After Drilling
During Drilling

DEPTH (m)	STRATIGRAPHY	DESCRIPTION	SAMPLE TYPE	SPT (N) BLOWS/ 300 mm	WATER CONTENT (%)	LIQUID LIMIT (%)	PLASTIC LIMIT (%)	UNIT WEIGHT (kN/m³)	COMPRESSIVE STRENGTH (kPa)	POCKET PEN. (kg/m²)	DEPTH (m)
0		TOPSOIL, moist, dark brown, organics, rootlets, frozen.			4.9						0
1		SAND, silty, compact, poorly graded, fine grained, moist, dark brown. brown below 0.6 m.			4.4						1
2				11	5.9						2
3					6.5					2.0	3
4		moist to wet below 4.1 m.									4
5		CLAY, some silt, stiff to very stiff, highly plastic, moist, brown, oxide stained.		9	36.9			18.3		2.0	5
6		SAND, silty, loose to compact, poorly graded, fine grained, wet, brown, seepage, sloughing.			28.3						6
7											7
8											8
9											9
10											10
11											11
12											12

NOTES:
1. Borehole sloughed to 5.7 m Immediately After Drilling.

SHEET 1 OF 1

02-08-2022 Z:\2021 Projects\NEW\LOG\18682-GEO-SOUTH OF SASKATOON, SK\DWG\BH13-18682.bor

P.MACHIBRODA ENGINEERING LTD.

BOREHOLE 21-14

DRAWING NUMBER: 18682-15

PROJECT: PROPOSED EDGEMONT ESTATES EAST RESIDENTIAL SUBDIVISION

LOCATION: SOUTH OF SASKATOON, SK

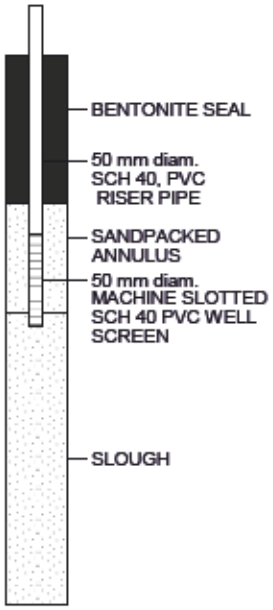
NORTHING (m): N/A **EASTING (m):** N/A **ELEVATION (m):** 504.36 **DATE DRILLED:** NOV 29/21

SAMPLE TYPE: CUTTINGS SPLIT SPOON SHELBY TUBE

WATER LEVELS
After Drilling
During Drilling

DEPTH (m)	STRATIGRAPHY	DESCRIPTION	SAMPLE TYPE	SPT (N) BLOWS/ 300 mm	WATER CONTENT (%)	LIQUID LIMIT (%)	PLASTIC LIMIT (%)	UNIT WEIGHT (kN/m³)	COMPRESSIVE STRENGTH (kPa)	POCKET PEN. (kg/m²)
0		TOPSOIL, moist, dark brown, organics, rootlets, frozen.			5.7					
0.5					5.1					
1		SAND, silty, loose, poorly graded, fine grained, moist, dark brown.								
		brown below 0.6 m.		4	18.6					
2										
3		wet, seepage, sloughing below 3.0 m.		3	37.8			17.6		
		CLAY, silty, soft to firm, medium plastic, moist, brown.								
4		sandy silt seam, wet, seepage, sloughing 3.3 to 3.6 m.			34.5					1.5
5		stiff, highly plastic below 4.2 m. grey below 4.8 m.								
6					34.8					1.5
7										
8										
9										
10										
11										
12										

MONITORING WELL: BH21-14
ELEV.: 505.39



NOTES:
1. Borehole sloughed to 3.8 m Immediately After Drilling.
2. Recorded Groundwater Level Dry on Jan 7/22.

P.MACHIBRODA ENGINEERING LTD.

BOREHOLE 21-15

DRAWING NUMBER: 18682-16

PROJECT: PROPOSED EDGEMONT ESTATES EAST RESIDENTIAL SUBDIVISION

LOCATION: SOUTH OF SASKATOON, SK

NORTHING (m): N/A **EASTING (m):** N/A **ELEVATION (m):** 502.67 **DATE DRILLED:** NOV 29/21

SAMPLE TYPE: CUTTINGS SPLIT SPOON SHELBY TUBE

WATER LEVELS
- After Drilling
- During Drilling

DEPTH (m)	STRATIGRAPHY	DESCRIPTION	SAMPLE TYPE	SPT (N) BLOWS/300 mm	WATER CONTENT (%)	LIQUID LIMIT (%)	PLASTIC LIMIT (%)	UNIT WEIGHT (kN/m³)	COMPRESSIVE STRENGTH (kPa)	POCKET PEN. (kg/m²)	DEPTH (m)
0		TOPSOIL, moist, dark brown, organics, rootlets, frozen.			16.0						0
0.6		SAND, silty, loose, poorly graded, fine grained, moist, dark brown.			9.1						
1		brown below 0.6 m.									1
1.5				5	22.0						
2		wet, seepage, sloughing below 2.2 m.									2
3		mottled brown and grey below 3.1 m.		7	28.3						3
4					29.1						4
5											5
5.5		SILT, some clay, trace sand, firm, low to medium plastic, wet, brown, seepage, sloughing.			33.7						
6		grey below 5.8 m.									6
7											7
8											8
9											9
10											10
11											11
12											12

NOTES:
1. Borehole sloughed to 2.2 m Immediately After Drilling.

SHEET 1 OF 1

02-08-2022 Z:\2021 Projects\NEW\LOG\18682-GEO-SOUTH OF SASKATOON, SK\DWG\BH15-18682.bor

P.MACHIBRODA ENGINEERING LTD.

BOREHOLE 21-16

DRAWING NUMBER: 18682-17

PROJECT: PROPOSED EDGEMONT ESTATES EAST RESIDENTIAL SUBDIVISION

LOCATION: SOUTH OF SASKATOON, SK

NORTHING (m): N/A **EASTING (m):** N/A **ELEVATION (m):** 506.39 **DATE DRILLED:** NOV 29/21

SAMPLE TYPE: CUTTINGS SPLIT SPOON SHELBY TUBE

WATER LEVELS
- After Drilling
- During Drilling

DEPTH (m)	STRATIGRAPHY	DESCRIPTION	SAMPLE TYPE	SPT (N) BLOWS/ 300 mm	WATER CONTENT (%)	LIQUID LIMIT (%)	PLASTIC LIMIT (%)	UNIT WEIGHT (kN/m³)	COMPRESSIVE STRENGTH (kPa)	POCKET PEN. (kg/m²)
0		TOPSOIL, moist, dark brown, organics, rootlets, frozen.			5.4					
		SAND, silty, loose to compact, poorly graded, fine grained, moist, brown.			3.8					
1										
				9	4.4					
2		some silt below 1.9 m.								
					5.7					
3										
4		oxide stained below 4.0 m.								
				10	10.2					
5		wet, seepage, sloughing below 5.2 m.								
					28.1					
6										
7										
8										
9										
10										
11										
12										

NOTES:
1. Borehole sloughed to 5.2 m Immediately After Drilling.

P.MACHIBRODA ENGINEERING LTD.

BOREHOLE 21-17

DRAWING NUMBER: 18682-18

PROJECT: PROPOSED EDGEMONT ESTATES EAST RESIDENTIAL SUBDIVISION

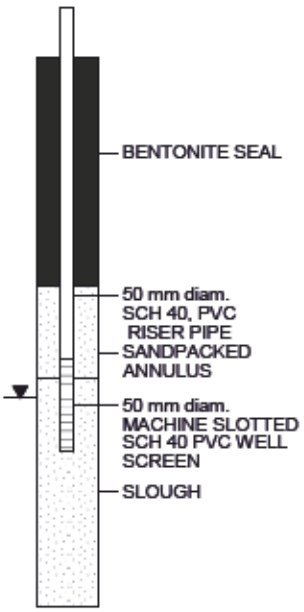
LOCATION: SOUTH OF SASKATOON, SK

NORTHING (m): N/A **EASTING (m):** N/A **ELEVATION (m):** 503.77 **DATE DRILLED:** NOV 29/21

SAMPLE TYPE: CUTTINGS SPLIT SPOON SHELBY TUBE

WATER LEVELS
After Drilling
During Drilling

DEPTH (m)	STRATIGRAPHY	DESCRIPTION	SAMPLE TYPE	SPT (N) BLOWS/ 300 mm	WATER CONTENT (%)	LIQUID LIMIT (%)	PLASTIC LIMIT (%)	UNIT WEIGHT (kN/m³)	COMPRESSIVE STRENGTH (kPa)	POCKET PEN. (kg/m²)
0		TOPSOIL, moist, dark brown, organics, rootlets, frozen.			5.3					
1		SAND, silty, loose, poorly graded, fine grained, moist, dark brown.			4.0					
		brown below 0.4 m.								
		some silt below 1.2 m.		4	4.3					
2										
3		wet, seepage, sloughing below 3.2 m.			6.2					
4										
5				3	28.2					
6					27.4					
7										
8										
9										
10										
11										
12										



NOTES:
1. Borehole sloughed to 3.5 m Immediately After Drilling.
2. Recorded Groundwater Level at 3.82 m on Jan 10/22.

P.MACHIBRODA ENGINEERING LTD.

BOREHOLE 21-18

DRAWING NUMBER: 18682-19

PROJECT: PROPOSED EDGEMONT ESTATES EAST RESIDENTIAL SUBDIVISION

LOCATION: SOUTH OF SASKATOON, SK

NORTHING (m): N/A EASTING (m): N/A ELEVATION (m): 505.28 DATE DRILLED: NOV 29/21

SAMPLE TYPE: CUTTINGS SPLIT SPOON SHELBY TUBE

WATER LEVELS
After Drilling
During Drilling

DEPTH (m)	STRATIGRAPHY	DESCRIPTION	SAMPLE TYPE	SPT (N) BLOWS/ 300 mm	WATER CONTENT (%)	LIQUID LIMIT (%)	PLASTIC LIMIT (%)	UNIT WEIGHT (kN/m³)	COMPRESSIVE STRENGTH (kPa)	POCKET PEN. (kg/m²)
0		TOPSOIL, moist, dark brown, organics, rootlets, frozen.			5.7					
0.5		SAND, silty, loose to compact, poorly graded, fine grained, moist, dark brown.			4.7					
1		brown below 0.5 m.			4.2					
3					10.7					

NOTES:
1. Borehole open and dry Immediately After Drilling.

SHEET 1 OF 1

02-08-2022 Z:\2021 Projects\NEW\LOG\18682-GEO-SOUTH OF SASKATOON, SK\DWG\BH18-18682.bor

P.MACHIBRODA ENGINEERING LTD.

BOREHOLE 21-19

DRAWING NUMBER: 18682-20

PROJECT: PROPOSED EDGEMONT ESTATES EAST RESIDENTIAL SUBDIVISION

LOCATION: SOUTH OF SASKATOON, SK

NORTHING (m): N/A EASTING (m): N/A ELEVATION (m): 502.25 DATE DRILLED: NOV 29/21

SAMPLE TYPE: CUTTINGS SPLIT SPOON SHELBY TUBE

WATER LEVELS
After Drilling
During Drilling

DEPTH (m)	STRATIGRAPHY	DESCRIPTION	SAMPLE TYPE	SPT (N) BLOWS/300 mm	WATER CONTENT (%)	LIQUID LIMIT (%)	PLASTIC LIMIT (%)	UNIT WEIGHT (kN/m³)	COMPRESSIVE STRENGTH (kPa)	% FINES	DEPTH (m)
0		TOPSOIL, moist, dark brown, organics, rootlets, frozen.			23.0					64.0	0
1		SILT, some clay, trace sand, firm to stiff, medium plastic, moist, dark brown.			21.1						1
		-brown below 0.6 m.									
2		SAND, silty, loose to compact, poorly graded, fine grained, moist, brown.		8	21.1						2
		loose below 2.2 m.									
		wet, seepage, sloughing below 2.7 m.									
3				3	32.4						3
4		grey below 4.2 m.			30.5						4
5											5
6		mottled grey with traces black, trace organic inclusions below 5.9 m.			31.7						6
7											7
8											8
9											9
10											10
11											11
12											12

NOTES:
1. Borehole sloughed to 2.7 m Immediately After Drilling.

P.MACHIBRODA ENGINEERING LTD.

BOREHOLE 21-20

DRAWING NUMBER: 18682-21

PROJECT: PROPOSED EDGEMONT ESTATES EAST RESIDENTIAL SUBDIVISION

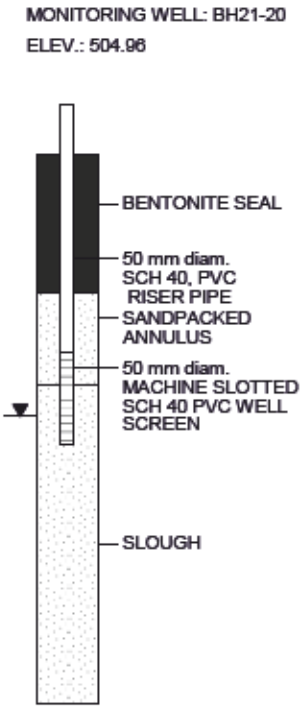
LOCATION: SOUTH OF SASKATOON, SK

NORTHING (m): N/A **EASTING (m):** N/A **ELEVATION (m):** 503.92 **DATE DRILLED:** NOV 29/21

SAMPLE TYPE: CUTTINGS SPLIT SPOON SHELBY TUBE

WATER LEVELS
After Drilling
During Drilling

DEPTH (m)	STRATIGRAPHY	DESCRIPTION	SAMPLE TYPE	SPT (N) BLOWS/300 mm	WATER CONTENT (%)	LIQUID LIMIT (%)	PLASTIC LIMIT (%)	UNIT WEIGHT (kN/m³)	SULPHATE CONTENT (%)	POCKET PEN. (kg/m²)
0		TOPSOIL, moist, dark brown, organics, rootlets, frozen.			14.7					
		SILT, sandy, clayey, firm to stiff, low to medium plastic, moist, dark brown.			11.1	30	12		<0.05	
1		brown below 0.3 m.		8	18.1					
2		SAND, silty, loose to compact, poorly graded, fine grained, moist, brown.								
3		loose, wet, grey, seepage, sloughing below 2.9 m.		5	29.8					
4					33.7					
5		SILT, trace sand, trace clay, firm, low plastic, wet, grey, seepage, sloughing.			32.1					
6										



NOTES:
1. Borehole sloughed to 2.5 m Immediately After Drilling.
2. Recorded Groundwater Level at 2.96 m on Jan 10/22.

APPENDIX A

Explanation of Terms on
Borehole Logs

CLASSIFICATION OF SOILS

Coarse-Grained Soils: Soils containing particles that are visible to the naked eye. They include gravels and sands and are generally referred to as cohesionless or non-cohesive soils. Coarse-grained soils are soils having more than 50 percent of the dry weight larger than particle size 0.080 mm.

Fine-Grained Soils: Soils containing particles that are not visible to the naked eye. They include silts and clays. Fine-grained soils are soils having more than 50 percent of the dry weight smaller than particle size 0.080 mm.

Organic Soils: Soils containing a high natural organic content.

Soil Classification By Particle Size

Soil Type	Particles of Size
Clay	< 0.002 mm
Silt	0.002 – 0.060 mm
Sand	0.06 – 2.0 mm
Gravel	2.0 – 60 mm
Cobbles	60 – 200 mm
Boulders	>200 mm

TERMS DESCRIBING CONSISTENCY OR CONDITION

Coarse-grained soils: Described in terms of compactness condition and are often interpreted from the results of a Standard Penetration Test (SPT). The standard penetration test is described as the number of blows, N, required to drive a 51 mm outside diameter (O.D.) split barrel sampler into the soil a distance of 0.3 m (from 0.15 m to 0.45 m) with a 63.5 kg weight having a free fall of 0.76 m.

Compactness Condition	SPT N-Index (blows per 0.3 m)
Very loose	0-4
Loose	4-10
Compact	10-30
Dense	30-50
Very dense	Over 50

Fine-Grained Soils: Classified in relation to undrained shear strength.

Consistency	Undrained Shear Strength (kPa)	N Value (Approximate)	Field Identification
Very Soft	<12	0-2	Easily penetrated several centimetres by the fist.
Soft	12-25	2-4	Easily penetrated several centimetres by the thumb.
Firm	25-50	4-8	Can be penetrated several centimetres by the thumb with moderate effort.
Stiff	50-100	8-15	Readily indented by the thumb, but penetrated only with great effort.
Very Stiff	100-200	15-30	Readily indented by the thumb nail.
Hard	>200	>30	Indented with difficulty by the thumbnail.

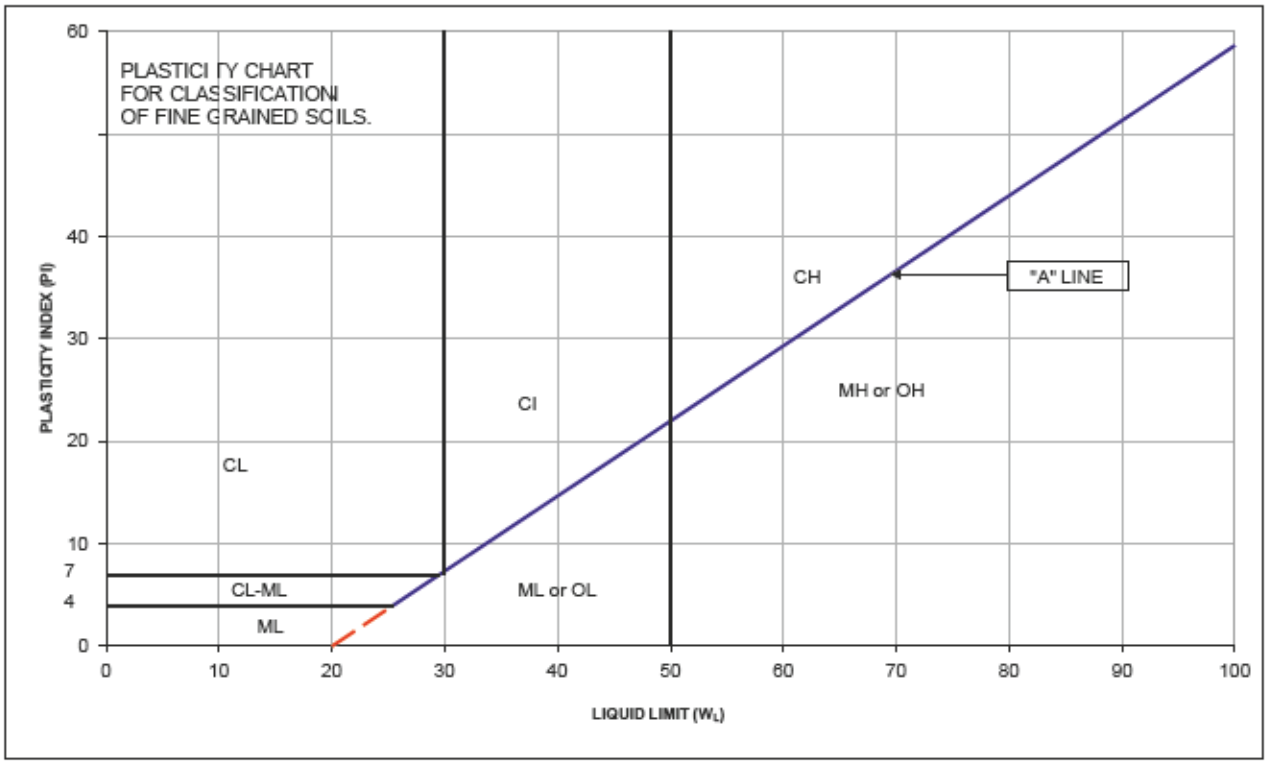
Organic Soils: Readily identified by colour, odour, spongy feel and frequently by fibrous texture.

DESCRIPTIVE TERMS COMMONLY USED TO CHARACTERIZE SOILS

Poorly Graded	- predominance of particles of one grain size.
Well Graded	- having no excess of particles in any size range with no intermediate sizes lacking.
Mottled	- marked with different coloured spots.
Nuggety	- structure consisting of small prismatic cubes.
Laminated	- structure consisting of thin layers of varying colour and texture.
Slickensided	- having inclined planes of weakness that are slick and glossy in appearance.
Fissured	- containing shrinkage cracks.
Fractured	- broken by randomly oriented interconnecting cracks in all 3 dimensions

SOIL CLASSIFICATION SYSTEM (MODIFIED U.S.C.)

MAJOR DIVISION			GROUP SYMBOL	TYPICAL DESCRIPTION	LABORATORY CLASSIFICATION CRITERIA
HIGHLY ORGANIC SOILS			Pt	PEAT AND OTHER HIGHLY ORGANIC SOILS	STRONG COLOUR OR ODOUR AND OFTEN FIBROUS TEXTURE
COARSE-GRAINED SOILS(MORE THAN HALF BY WEIGHT LARGER THAN NO. 200 SIEVE SIZE)	GRAVELS More than half coarse fraction larger than No. 4 sieve size	CLEAN GRAVELS	GW	WELL-GRADED GRAVELS, GRAVEL-SAND MIXTURES <5% FINES	$C_u = \frac{D_{60}}{D_{10}} > 4 \quad C_c = \frac{(D_{30})^2}{D_{60} \times D_{10}} = 1 \text{ to } 3$
			GP	POORLY-GRADED GRAVELS AND GRAVEL-SAND MIXTURES <5% FINES	NOT MEETING ALL ABOVE REQUIREMENTS FOR GW
		DIRTY GRAVELS	GM	SILTY GRAVELS, GRAVEL-SAND-SILT MIXTURES >12% FINES	ATTERBERG LIMITS BELOW "A" LINE OR PI < 4
			GC	CLAYEY GRAVELS, GRAVEL-SAND-CLAY MIXTURES >12% FINES	ATTERBERG LIMITS ABOVE "A" LINE WITH PI > 7
	SANDS More than half coarse fraction smaller than No. 4 sieve size	CLEAN SANDS	SW	WELL-GRADED SANDS, GRAVELLY SANDS MIXTURES <5% FINES	$C_u = \frac{D_{60}}{D_{10}} > 6 \quad C_c = \frac{(D_{30})^2}{D_{60} \times D_{10}} = 1 \text{ to } 3$
			SP	POORLY-GRADED SANDS OR GRAVELLY SANDS <5% FINES	NOT MEETING ALL GRADATION REQUIREMENTS FOR SW
		DIRTY SANDS	SM	SILTY SANDS, SAND-SILT MIXTURES >12% FINES	ATTERBERG LIMITS BELOW "A" LINE OR PI < 4
			SC	CLAYEY SANDS, SAND-CLAY MIXTURES >12% FINES	ATTERBERG LIMITS ABOVE "A" LINE WITH PI >7
FINE-GRAINED SOILS (MORE THAN HALF BY WEIGHT PASSING NO. 200 SIEVE SIZE)	SILTS Below "A" line on plasticity chart; negligible organic content		ML	INORGANIC SILTS AND VERY FINE SANDS, ROCK FLOUR, SILTY SANDS OF SLIGHT PLASTICITY	$W_L < 50$
			MH	INORGANIC SILTS, MICACEOUS OR DIATOMACEOUS, FINE SANDY OR SILTY SOILS	$W_L > 50$
	CLAYS Above 'A" line on plasticity chart; negligible organic content		CL	INORGANIC CLAYS OF LOW PLASTICITY, GRAVELLY, SANDY, OR SILTY CLAYS, LEAN CLAYS	$W_L < 30$
			CI	INORGANIC CLAYS OF MEDIUM PLASTICITY, SILTY CLAYS	$W_L > 30 < 50$
			CH	INORGANIC CLAYS OF HIGH PLASTICITY, FAT CLAYS	$W_L > 50$
	ORGANIC SILTS & ORGANIC CLAYS Below "A" line on plasticity chart		OL	ORGANIC SILTS AND ORGANIC SILTY CLAYS OF LOW PLASTICITY	$W_L < 50$
			OH	ORGANIC CLAYS OF HIGH PLASTICITY	$W_L > 50$



P.MACHIBRODA ENGINEERING LTD.

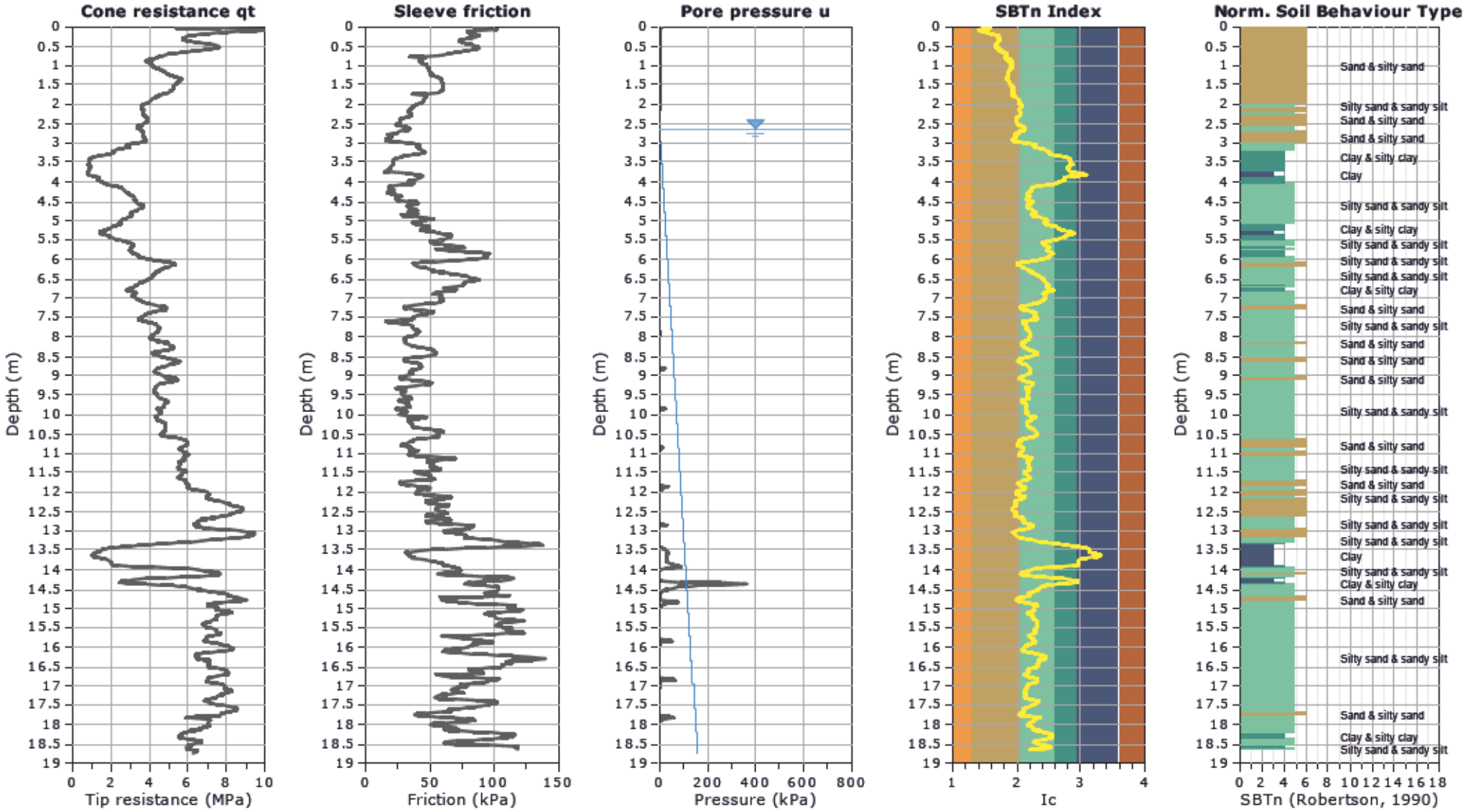
APPENDIX B

CPTu Plots

P. Machibroda Engineering Ltd.
806-48th Street East
Saskatoon, Saskatchewan S7K 3Y4
www.machibroda.com

Project: **Proposed Edgemont Estates East Residential Subdivision**
Location: **South of Saskatoon, SK**

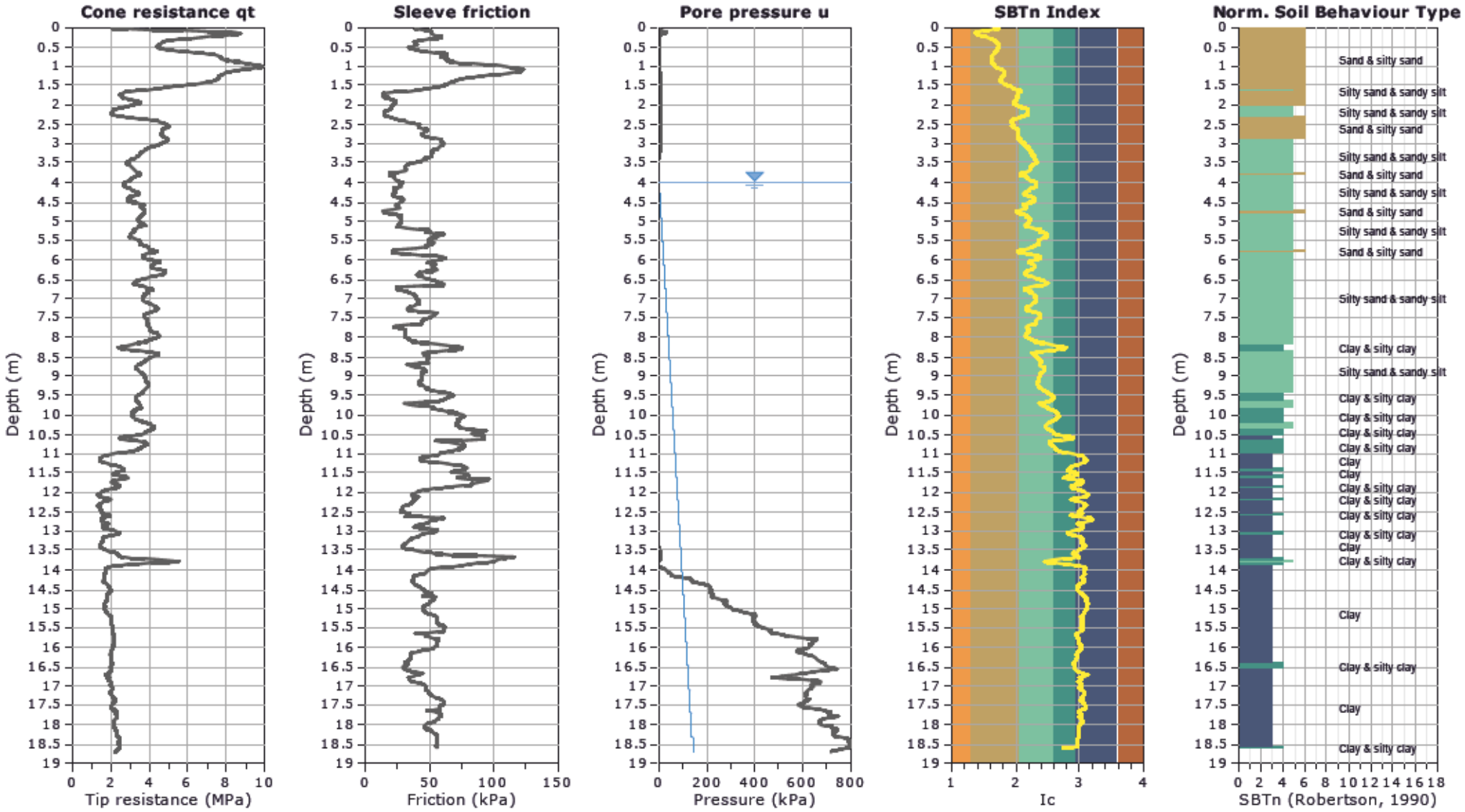
CPT: 21-7
Total depth: 18.74 m, Date: 11/29/2021
Surface Elevation: 503.90 m
Cone Type: Vertek 15 cm^2
Cone Operator: PMEL



P. Machibroda Engineering Ltd.
806-48th Street East
Saskatoon, Saskatchewan S7K 3Y4
www.machibroda.com

Project: **Proposed Edgemont Estates East Residential Subdivision**
Location: **South of Saskatoon, SK**

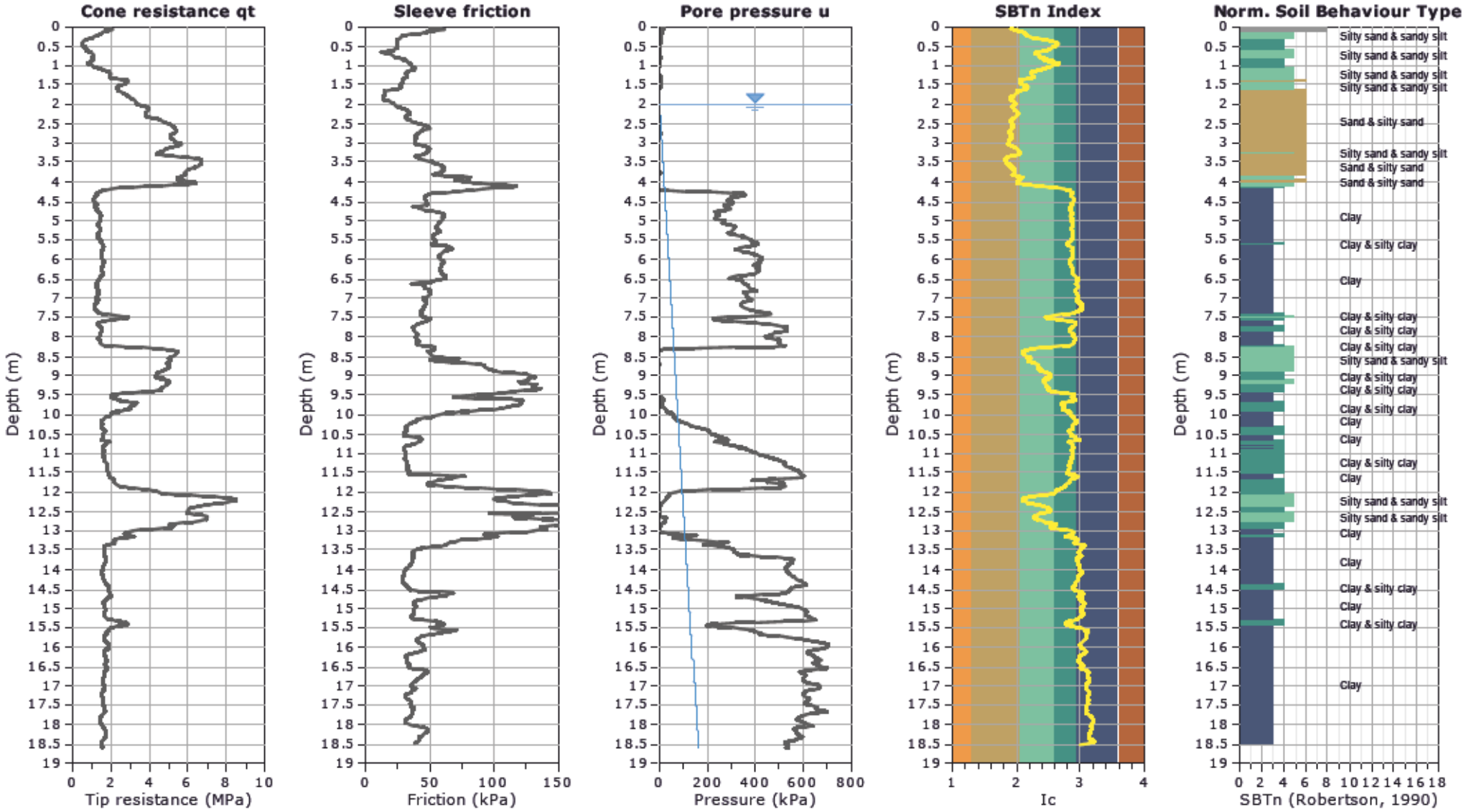
CPT: 21-8
Total depth: 18.70 m, Date: 11/29/2021
Surface Elevation: 506.00 m
Cone Type: Vertek 15 cm^2
Cone Operator: PMEL



P. Machibroda Engineering Ltd.
806-48th Street East
Saskatoon, Saskatchewan S7K 3Y4
www.machibroda.com

Project: **Proposed Edgemont Estates East Residential Subdivision**
Location: **South of Saskatoon, SK**

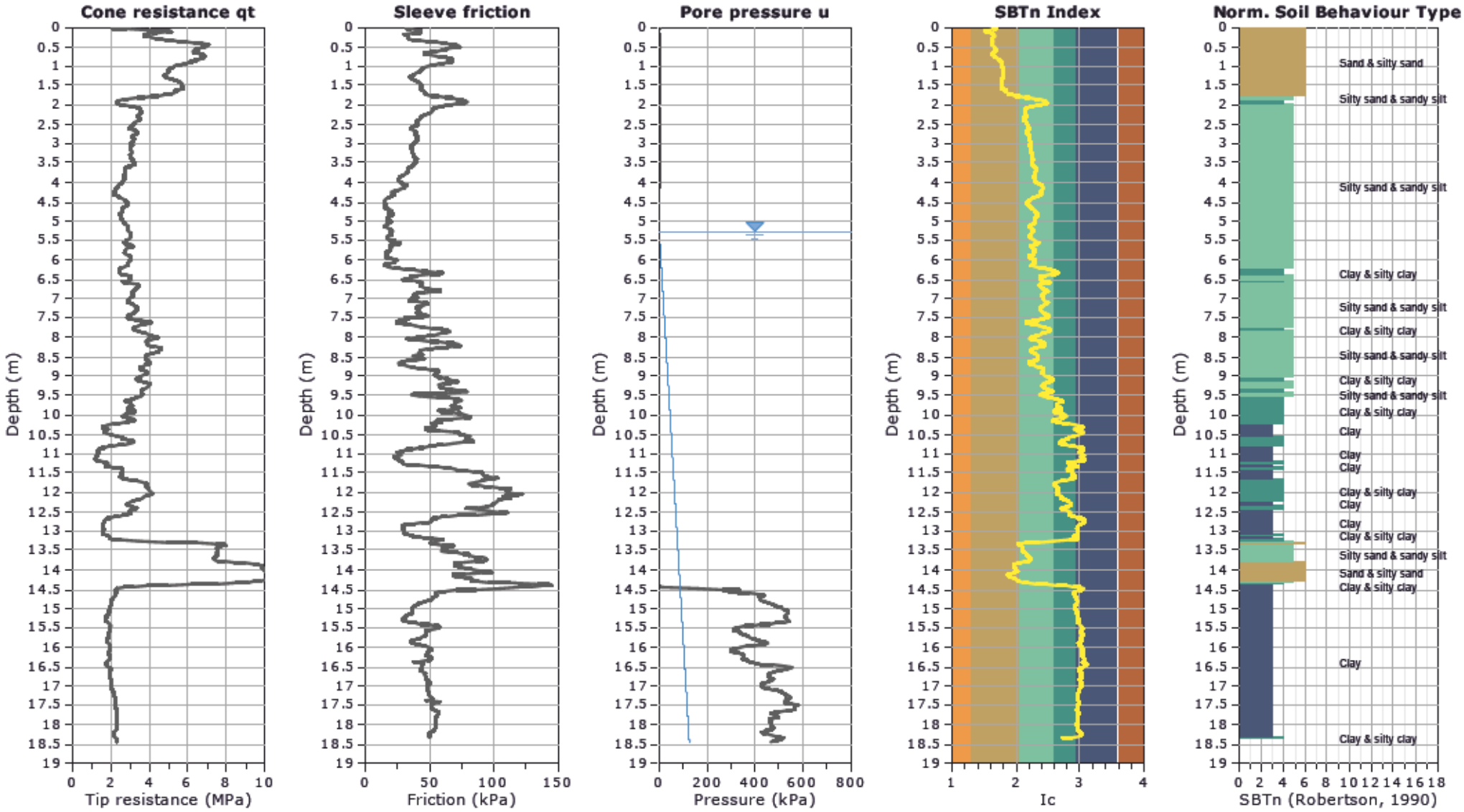
CPT: 21-9
Total depth: 18.60 m, Date: 11/29/2021
Surface Elevation: 506.00 m
Cone Type: Vertek 15 cm^2
Cone Operator: PMEL



P. Machibroda Engineering Ltd.
806-48th Street East
Saskatoon, Saskatchewan S7K 3Y4
www.machibroda.com

Project: **Proposed Edgemont Estates East Residential Subdivision**
Location: **South of Saskatoon, SK**

CPT: 21-18
Total depth: 18.44 m, Date: 11/29/2021
Surface Elevation: 505.30 m
Cone Type: Vertek 15 cm^2
Cone Operator: PMEL



APPENDIX C

Grain Size Distribution Analysis
Test Results

P.MACHIBRODA ENGINEERING LTD.

ASTM C136: GRAIN SIZE ANALYSIS

Project: Edgemont Estates East Residential Subdivision

Location: South of Saskatoon, SK

Project No.: 18682

Date Tested: January 6, 2022

Borehole No: 21-1

Sample No.: 3

Depth: 1.5

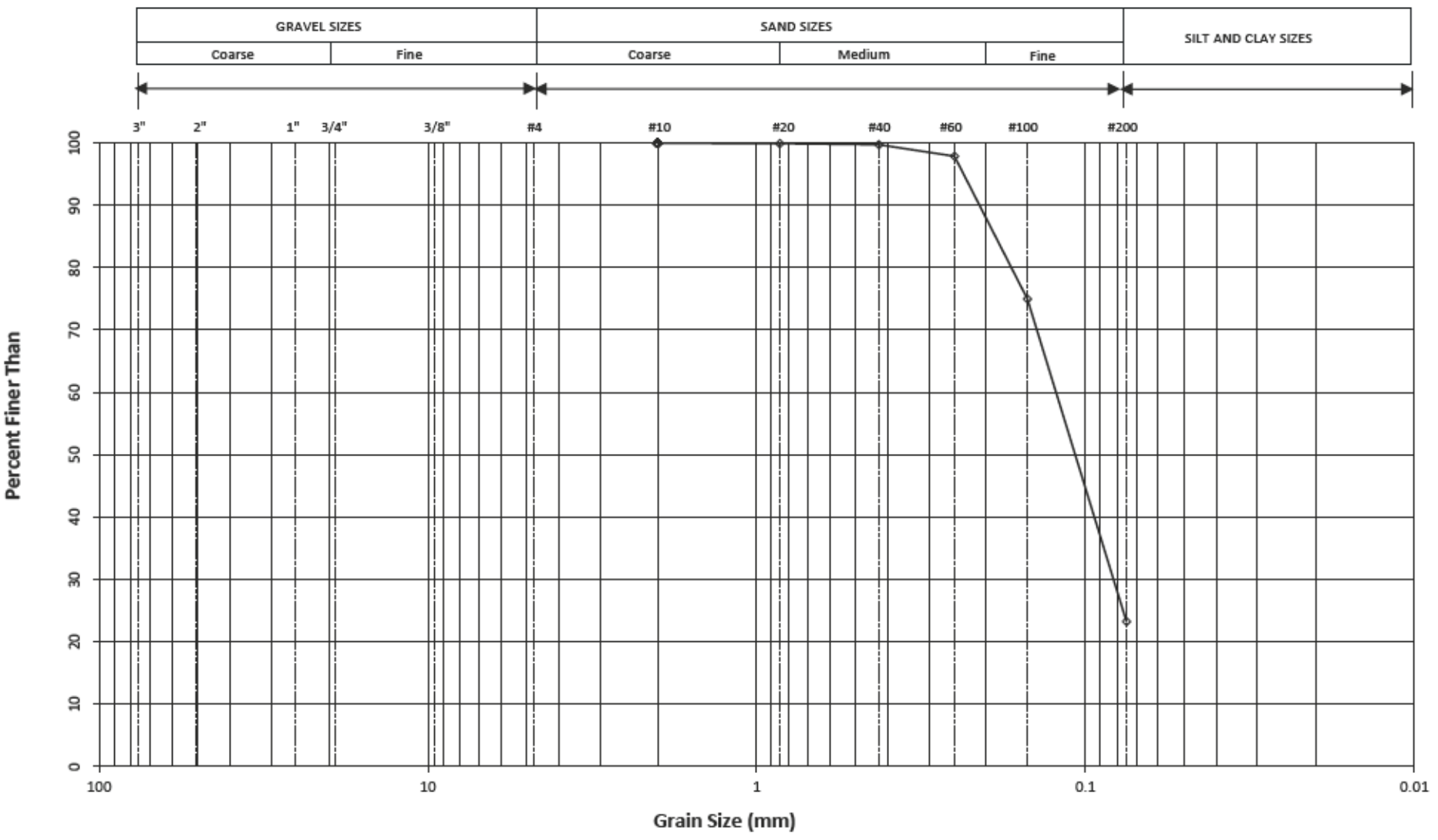
Sieve Analysis:

Sieve	Diameter mm	% Finer
	76.200	100
	63.500	100
	50.000	100
	37.500	100
	25.000	100
	19.000	100
	12.500	100
	9.500	100
	4.750	100
	2.000	100
	0.850	100
	0.425	100
	0.250	98
	0.150	75
	0.075	23

Material Description:

% Gravel Sizes	% Sand Sizes	% Silt and Clay Sizes
0	77	23

Remarks:



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DRAWING NO.

Appendix C-1

WE CERTIFY TESTING PROCEDURES ARE IN ACCORDANCE WITH ASTM C136 AND C117 CSTANDARDS
P. MACHIBRODA ENGINEERING LTD.

PER

P.MACHIBRODA ENGINEERING LTD.

ASTM C136: GRAIN SIZE ANALYSIS

Project: Edgemont Estates East Residential Subdivision

Location: South of Saskatoon, SK

Project No.: 18682

Date Tested: January 6, 2022

Borehole No: 21-6

Sample No.: 57

Depth: 1.5-1.9

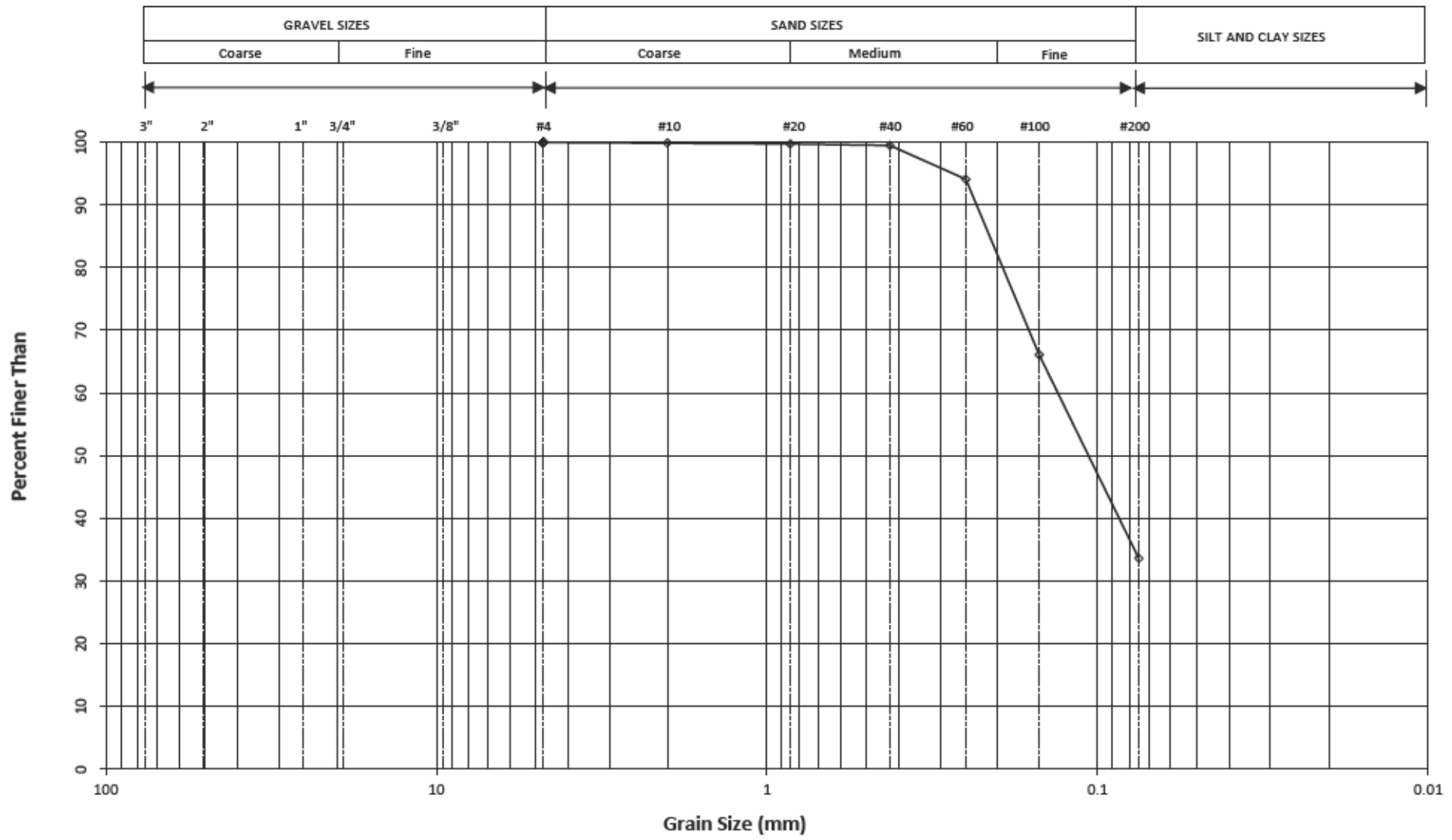
Sieve Analysis:

Sieve	Diameter mm	% Finer
	76.200	100
	63.500	100
	50.000	100
	37.500	100
	25.000	100
	19.000	100
	12.500	100
	9.500	100
	4.750	100
	2.000	100
	0.850	100
	0.425	100
	0.250	94
	0.150	66
	0.075	34

Material Description:

% Gravel Sizes	% Sand Sizes	% Silt and Clay Sizes
0	66	34

Remarks:



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Appendix C-2

WE CERTIFY TESTING PROCEDURES ARE IN ACCORDANCE WITH ASTM C136 AND C117 CSTANDARDS
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PER Preston Schergeintz

APPROVED BY: RAY MACHIBRODA; REVISION NO. 2

DECEMBER 13, 2018

P.MACHIBRODA ENGINEERING LTD.

ASTM C136: GRAIN SIZE ANALYSIS

Project: Edgemont Estates East Residential Subdivision

Location: South of Saskatoon, SK

Project No.: 18682

Date Tested: January 6, 2022

Borehole No: 21-7

Sample No.: 104

Depth: 3.0

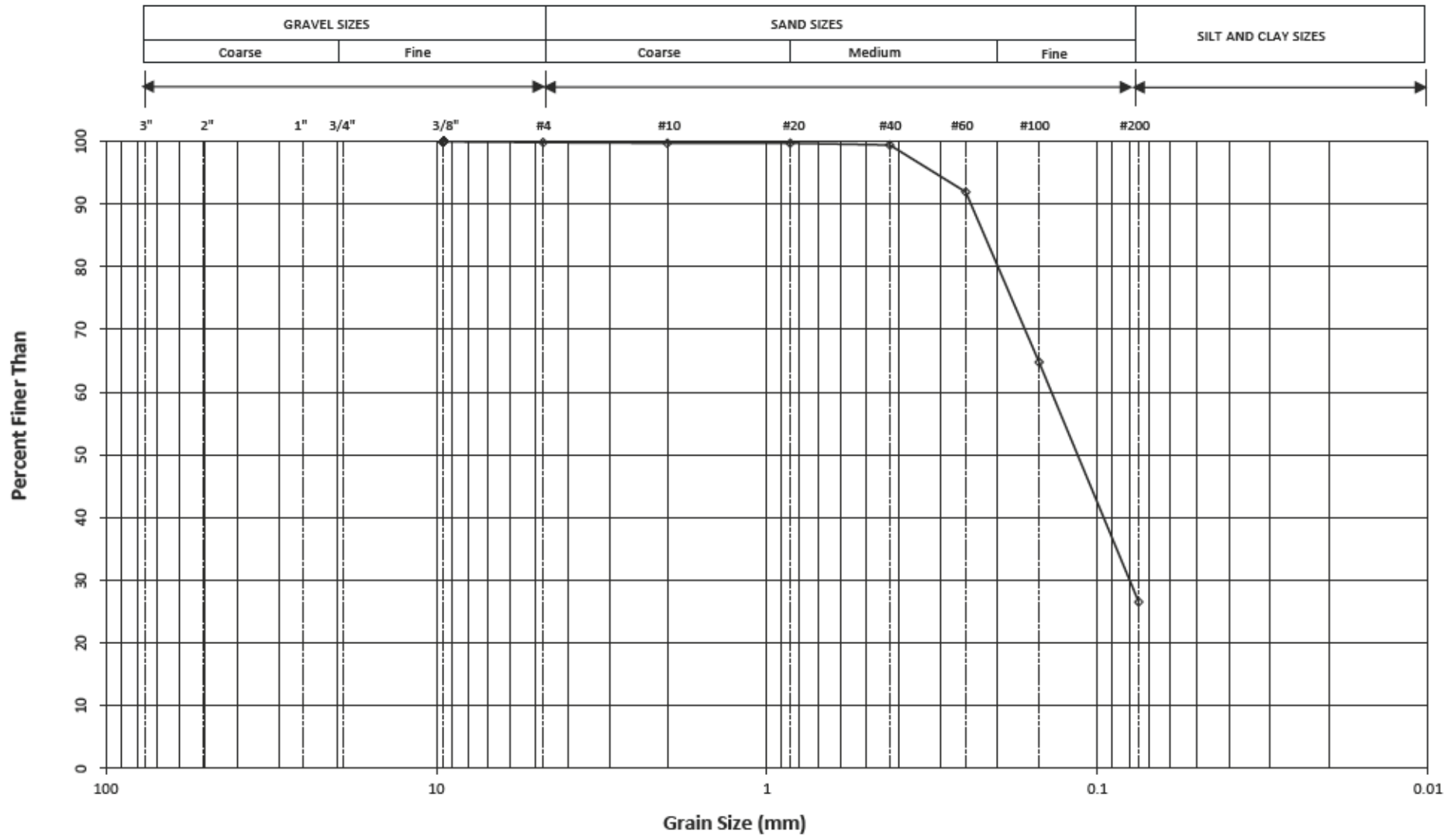
Sieve Analysis:

Sieve	Diameter mm	% Finer
	76.200	100
	63.500	100
	50.000	100
	37.500	100
	25.000	100
	19.000	100
	12.500	100
	9.500	100
	4.750	100
	2.000	100
	0.850	100
	0.425	99
	0.250	92
	0.150	65
	0.075	26

Material Description:

% Gravel Sizes	% Sand Sizes	% Silt and Clay Sizes
0	73	27

Remarks:



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Appendix C-3

WE CERTIFY TESTING PROCEDURES ARE IN ACCORDANCE WITH ASTM C136 AND C117 CSTANDARDS P. MACHIBRODA ENGINEERING LTD.

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P.MACHIBRODA ENGINEERING LTD.

AASHTO T 88: PARTICLE SIZE ANALYSIS OF SOILS

Project: Edgemont Estates East Residential Subdivision

Location: South of Saskatoon, SK

Project No.: 18682

Date Tested: January 5, 2022

Borehole No.: 21-8

Sample No.: 110

Depth (m): 0.8

Sieve Analysis:

Sieve	Diameter mm	% Finer
1.5"	38.1	100
1"	25.4	100
3/4"	19.1	100
1/2"	12.7	100
3/8"	9.5	100
# 4	4.75	100
# 10	2	100
# 20	0.85	100
# 40	0.425	99.5
#60	0.25	95.3
# 100	0.15	76.7
# 200	0.075	36.5

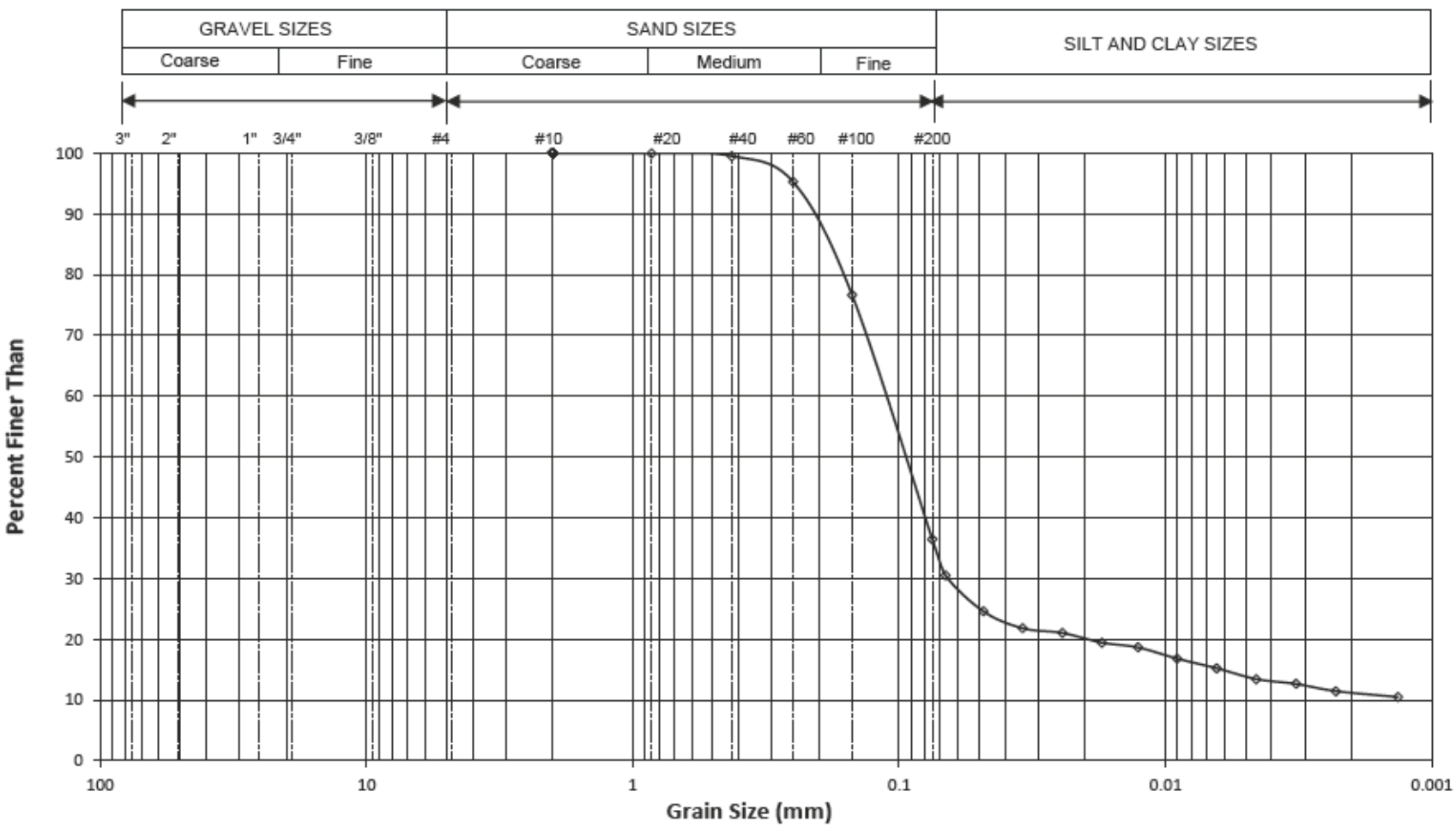
Hydrometer Analysis:

	Diameter mm	% Finer
Dispersing Agent:	0.0670	30.6
Sodium Hexametaphosphate	0.0482	24.6
	0.0344	21.8
	0.0244	21.1
	0.0173	19.5
	0.0127	18.7
	0.0090	16.8
	0.0064	15.2
	0.0046	13.5
	0.0032	12.7
	0.0023	11.5
	0.0013	10.5

Material Description:

% Gravel Sizes	% Sand Sizes	% Silt Sizes	% Clay Sizes
0	63	26	11

Remarks:



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Drawing No.

Appendix C-4

WE CERTIFY TESTING PROCEDURES ARE IN ACCORDANCE WITH AASHTO T 88 STANDARD
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PER

P.MACHIBRODA ENGINEERING LTD.

ASTM C136: GRAIN SIZE ANALYSIS

Project: Edgemont Estates East Residential Subdivision

Location: South of Saskatoon, SK

Project No.: 18682

Date Tested: January 6, 2022

Borehole No: 21-11

Sample No.: 39

Depth: 1.5-1.9

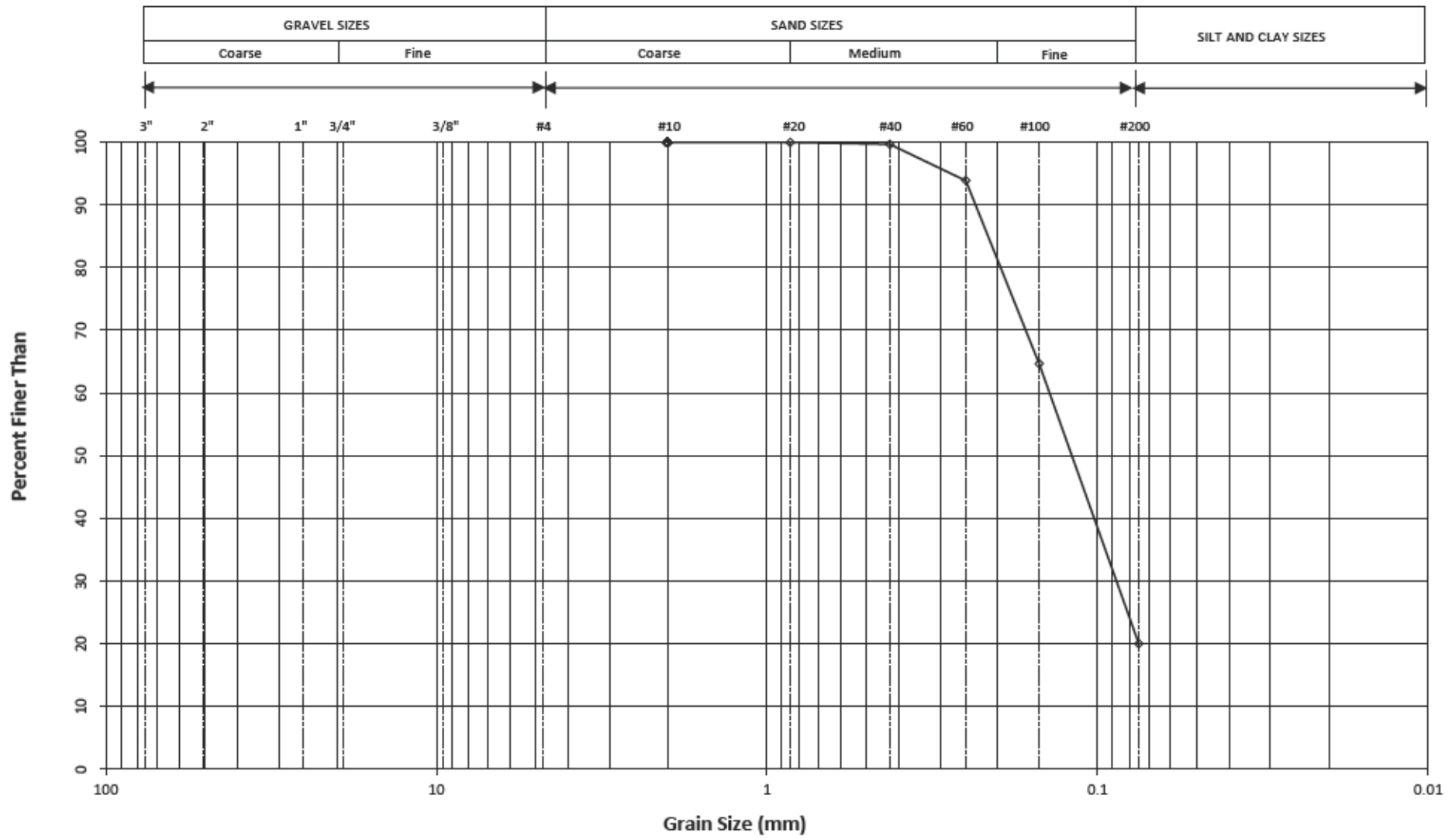
Sieve Analysis:

Sieve	Diameter mm	% Finer
	76.200	100
	63.500	100
	50.000	100
	37.500	100
	25.000	100
	19.000	100
	12.500	100
	9.500	100
	4.750	100
	2.000	100
	0.850	100
	0.425	100
	0.250	94
	0.150	65
	0.075	20

Material Description:

% Gravel Sizes	% Sand Sizes	% Silt and Clay Sizes
0	80	20

Remarks:



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DRAWING NO.

Appendix C-5

WE CERTIFY TESTING PROCEDURES ARE IN ACCORDANCE WITH ASTM C136 AND C117 CSTANDARDS
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PER

P.MACHIBRODA ENGINEERING LTD.

ASTM C136: GRAIN SIZE ANALYSIS

Project: Edgemont Estates East Residential Subdivision

Location: South of Saskatoon, SK

Project No.: 18682

Date Tested: January 6, 2022

Borehole No: 21-14

Sample No.: 69

Depth: 1.5-1.9

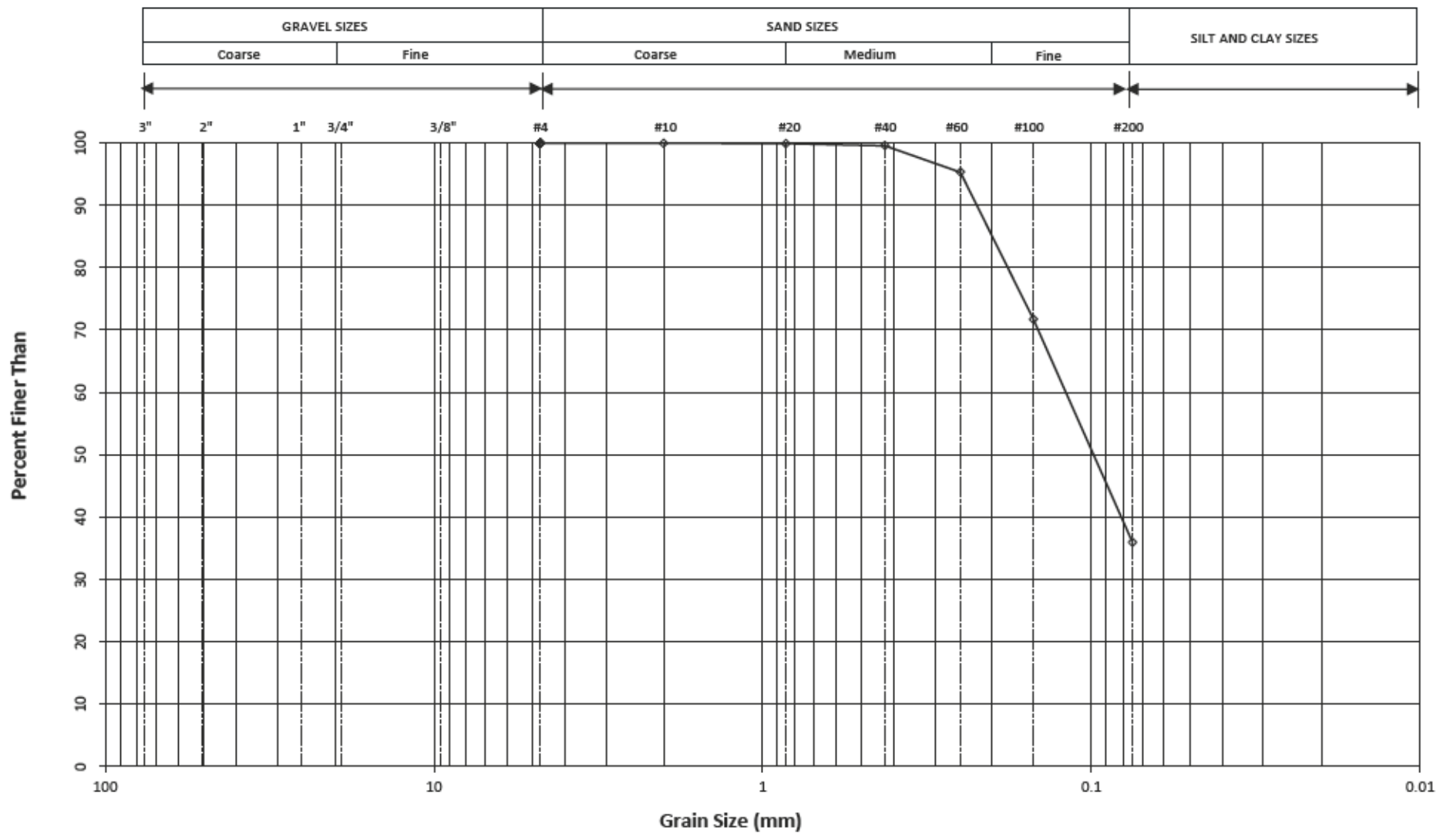
Sieve Analysis:

Sieve	Diameter mm	% Finer
	76.200	100
	63.500	100
	50.000	100
	37.500	100
	25.000	100
	19.000	100
	12.500	100
	9.500	100
	4.750	100
	2.000	100
	0.850	100
	0.425	100
	0.250	95
	0.150	72
	0.075	36

Material Description:

% Gravel Sizes	% Sand Sizes	% Silt and Clay Sizes
0	64	36

Remarks:



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Appendix C-6

WE CERTIFY TESTING PROCEDURES ARE IN ACCORDANCE WITH ASTM C136 AND C117 CSTANDARDS
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PER

P.MACHIBRODA ENGINEERING LTD.

AASHTO T 88: PARTICLE SIZE ANALYSIS OF SOILS

Project: Edgemont Estates East Residential Subdivision

Location: South of Saskatoon, SK

Project No.: 18682

Date Tested: January 5, 2022

Borehole No.: 21-15

Sample No.: 62

Depth (m): 0.8

Sieve Analysis:

Sieve	Diameter mm	% Finer
1.5"	38.1	100
1"	25.4	100
3/4"	19.1	100
1/2"	12.7	100
3/8"	9.5	100
# 4	4.75	100
# 10	2	100
# 20	0.85	100
# 40	0.425	99.3
#60	0.25	88.8
# 100	0.15	49.0
# 200	0.075	17.6

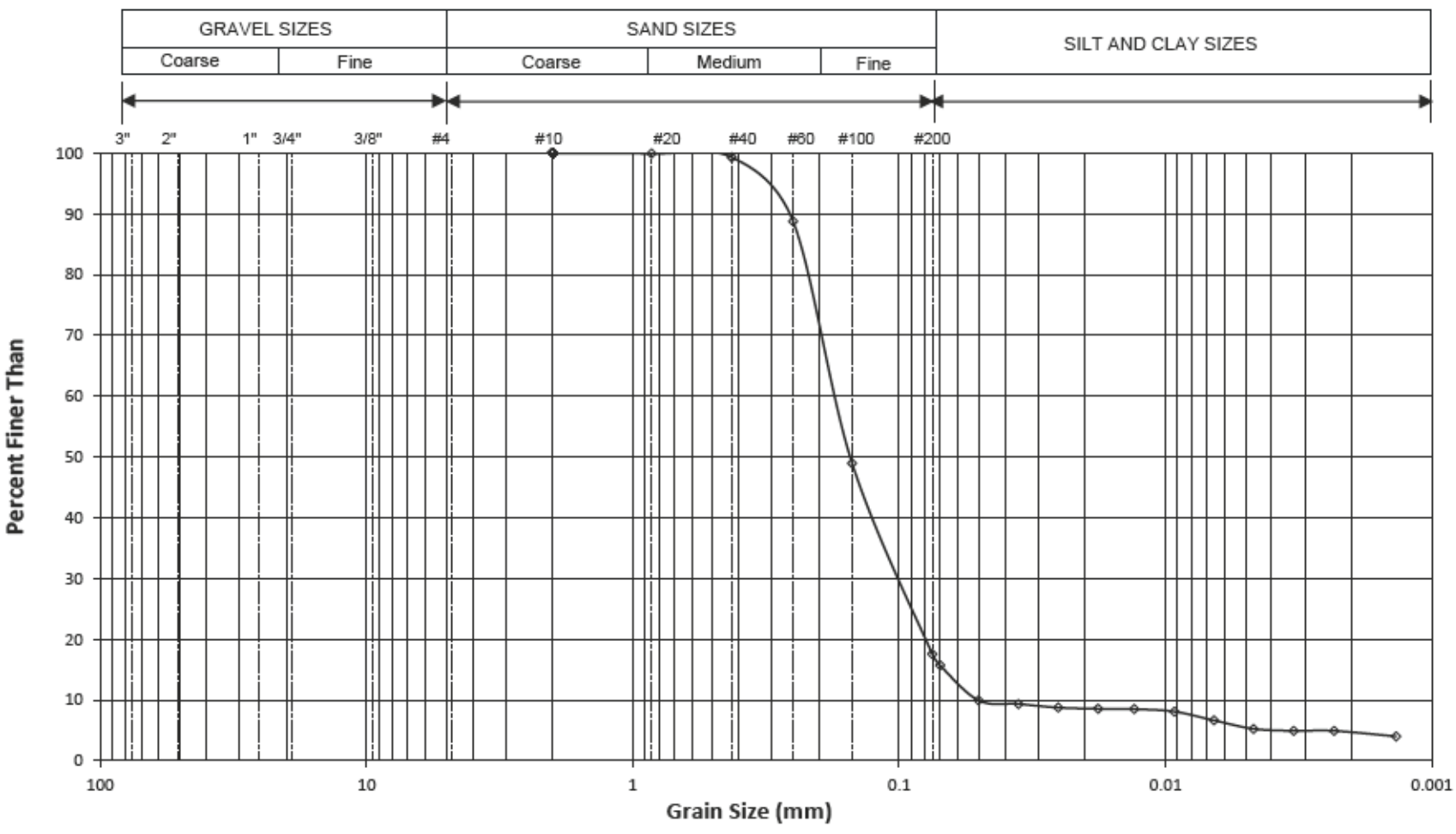
Hydrometer Analysis:

	Diameter mm	% Finer
Dispersing Agent:	0.0700	15.7
Sodium Hexametaphosphate	0.0503	10.0
	0.0357	9.4
	0.0253	8.8
	0.0179	8.6
	0.0131	8.5
	0.0092	8.1
	0.0066	6.7
	0.0047	5.3
	0.0033	4.9
	0.0023	4.9
	0.0014	4.0

Material Description:

% Gravel Sizes	% Sand Sizes	% Silt Sizes	% Clay Sizes
0	82	13	5

Remarks:



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Drawing No.

Appendix C-7

WE CERTIFY TESTING PROCEDURES ARE IN ACCORDANCE WITH AASHTO T 88 STANDARD
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PER

P.MACHIBRODA ENGINEERING LTD.

ASTM C136: GRAIN SIZE ANALYSIS

Project: Edgemont Estates East Residential Subdivision

Location: South of Saskatoon, SK

Project No.: 18682

Date Tested: January 6, 2022

Borehole No: 21-17

Sample No.: 82

Depth: 3.0

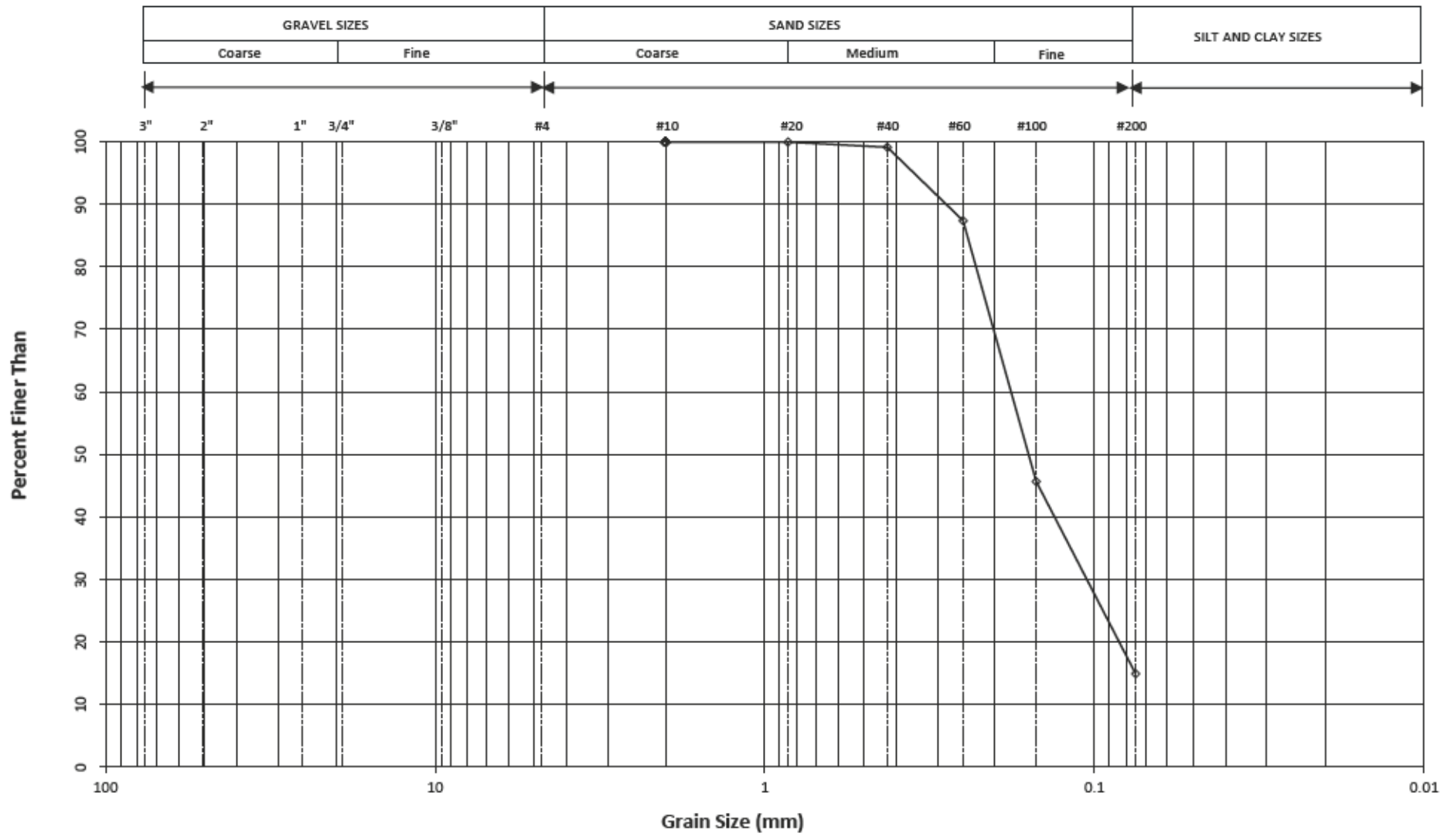
Sieve Analysis:

Sieve	Diameter mm	% Finer
	76.200	100
	63.500	100
	50.000	100
	37.500	100
	25.000	100
	19.000	100
	12.500	100
	9.500	100
	4.750	100
	2.000	100
	0.850	100
	0.425	99
	0.250	87
	0.150	46
	0.075	15

Material Description:

% Gravel Sizes	% Sand Sizes	% Silt and Clay Sizes
0	85	15

Remarks:



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Appendix C-8

WE CERTIFY TESTING PROCEDURES ARE IN ACCORDANCE WITH ASTM C136 AND C117 CSTANDARDS
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AASHTO T 88: PARTICLE SIZE ANALYSIS OF SOILS

Project: Edgemont Estates East Residential Subdivision

Location: South of Saskatoon, SK

Project No.: 18682

Date Tested: January 5, 2022

Borehole No.: 21-20

Sample No.: 92

Depth (m): 0.8

Sieve Analysis:

Sieve	Diameter mm	% Finer
1.5"	38.1	100
1"	25.4	100
3/4"	19.1	100
1/2"	12.7	100
3/8"	9.5	100
# 4	4.75	100
# 10	2	100
# 20	0.85	100
# 40	0.425	99.7
#60	0.25	97.5
# 100	0.15	87.8
# 200	0.075	66.0

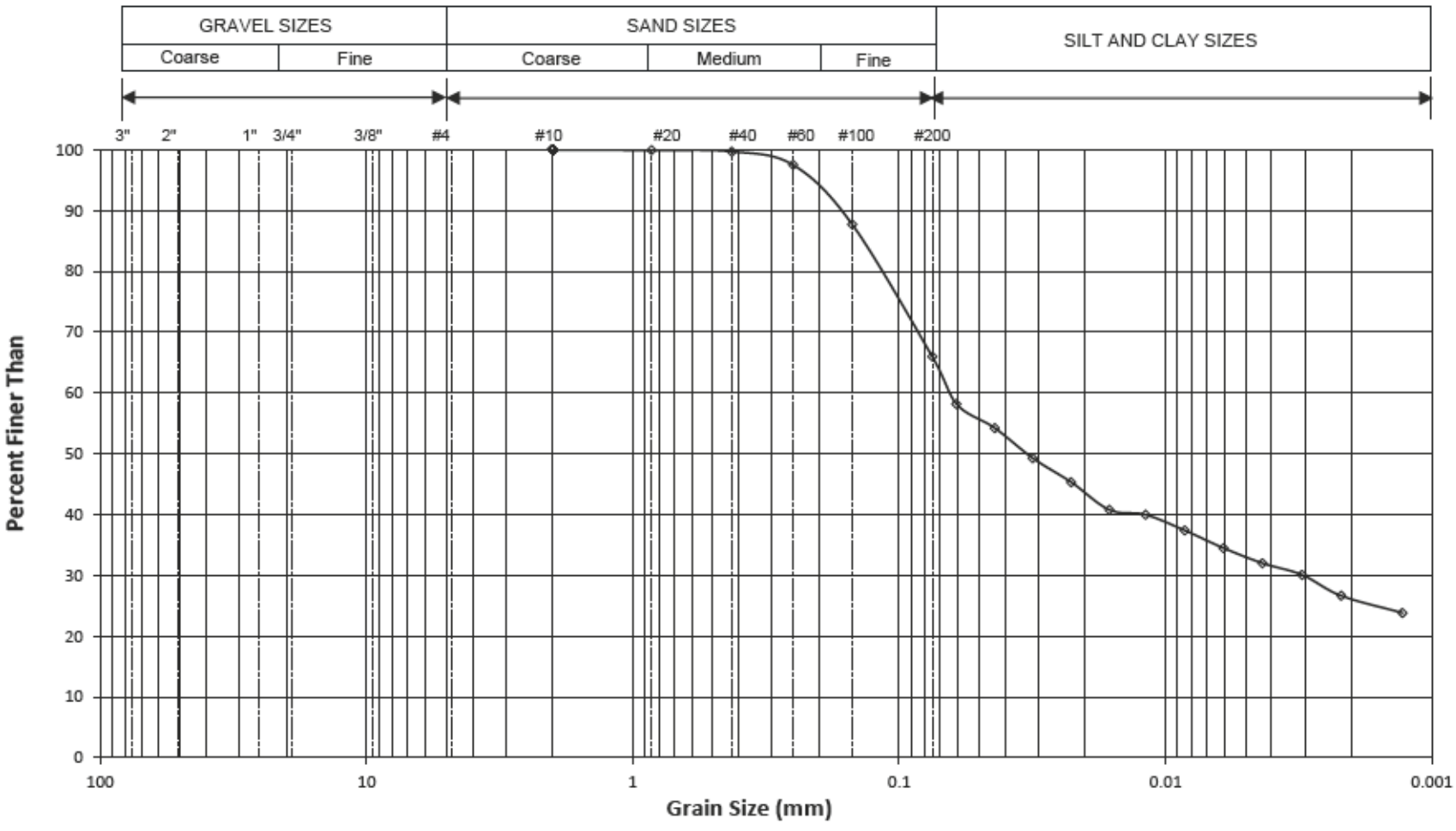
Hydrometer Analysis:

	Diameter mm	% Finer
Dispersing Agent:	0.0609	58.2
Sodium Hexametaphosphate	0.0437	54.3
	0.0315	49.3
	0.0226	45.3
	0.0162	40.8
	0.0119	40.0
	0.0085	37.4
	0.0061	34.5
	0.0043	32.0
	0.0031	30.1
	0.0022	26.7
	0.0013	23.8

Material Description:

% Gravel Sizes	% Sand Sizes	% Silt Sizes	% Clay Sizes
0	34	40	26

Remarks:



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Drawing No.

Appendix C-9

WE CERTIFY TESTING PROCEDURES ARE IN ACCORDANCE WITH AASHTO T 88 STANDARD
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ASTM C136: GRAIN SIZE ANALYSIS

Project: Edgemont Estates East Residential Subdivision

Location: South of Saskatoon, SK

Project No.: 18682

Date Tested: January 6, 2022

Borehole No: 21-20

Sample No.: 93

Depth: 1.5-1.9

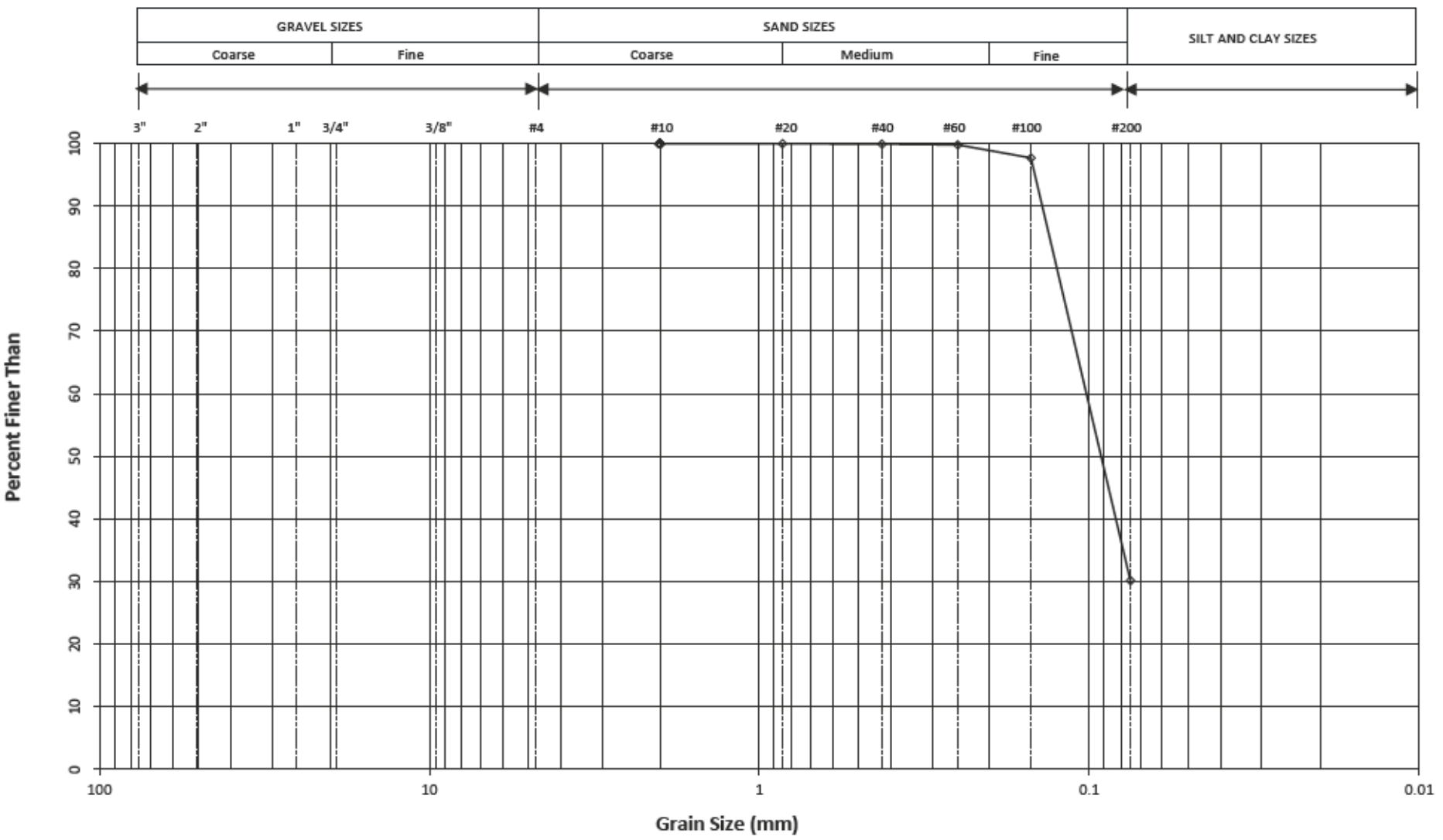
Sieve Analysis:

Sieve	Diameter mm	% Finer
	76.200	100
	63.500	100
	50.000	100
	37.500	100
	25.000	100
	19.000	100
	12.500	100
	9.500	100
	4.750	100
	2.000	100
	0.850	100
	0.425	100
	0.250	100
	0.150	98
	0.075	30

Material Description:

% Gravel Sizes	% Sand Sizes	% Silt and Clay Sizes
0	70	30

Remarks:



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Appendix C-10

WE CERTIFY TESTING PROCEDURES ARE IN ACCORDANCE WITH ASTM C136 AND C117 CSTANDARDS
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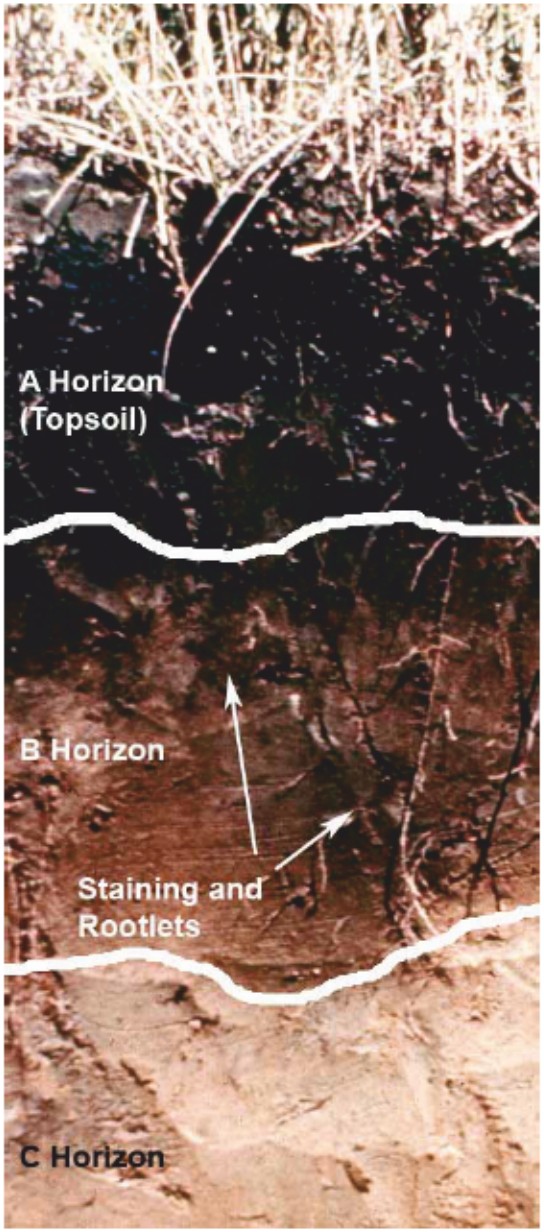
PER

APPENDIX D

Topsoil, Organic Matter
and Organics



A Horizon

The A horizon is the topsoil layer of the soil strata. It is characterized by a build up of organic matter, and a lower unit weight than subsequent layers. The organic matter content of this layer is typically 4-10% by mass.

The colour of this horizon varies from dark black to brown, depending on surface vegetation and climatic conditions.

B Horizon

Typically reddish brown in colour and contains accumulations of matter that have been washed down from the A Horizon. The B horizon is generally composed of clay that has been washed out of the A Horizon, but can also contain iron, calcium and sodium deposits as well.

C Horizon

Unweathered parent soil.

Topsoil is a mixture of mineral soil and organic matter. The organic matter is developed from decaying biological material (leaves, grass, trees, animals, etc.) and contributes to the brown to black colour of the soil. Following the topsoil is the B horizon which is a transition layer, where staining from the overlying topsoil is common. This results in a darker colour of the soil immediately below the organic topsoil layer. Depending on the surface vegetation, rootlets may be present below the depth of topsoil. However it should be recognized that these rootlets are not the same as organic matter in topsoil.

Physically speaking in comparison to mineral soil, topsoil has a significantly lower bulk density and a lower unit weight as compared to the underlying parent soil. This is due to larger pore spaces and non mineral materials in the soil matrix. Along with lower density, topsoil is often spongy and colloidal/fibrous. The following figure is of a typical prairie soil. Each horizon is labelled accordingly to demonstrate a typical soil profile.

Reference

Henry L. 2003. Henry's Handbook of Soil and Water, Henry Perspectives, Saskatoon, SK.

APPENDIX E

Detailed Traffic
Structure Design

P.MACHIBRODA
ENGINEERING LTD.

TRAFFIC INFORMATION

1) Design Traffic Loading (ESALs)

BCL Ltd. has reported that the subdivision will be divided into approximately 130 lots with 2 access roads. It is understood that a Traffic Impact Assessment is in the process of being completed by KGS for the development. KGS reported, via email on January 13, 2022, that there will be a maximum number of 1300 vehicles per day on the roads.

The roadway design has been based off the following design traffic loading assumptions.

TABLE E1 Traffic Volume

Item	Value	Note
Design Life	15 years	As per the RM of Corman Park Country Residential Paved Roads specification
Number of Lanes per direction	1	2 way traffic - 1 lane per direction
Directional Split	50%	Traffic will travel equally in each direction.
Design AADT - Year 1	496	Approximate assumed value based on expected growth rate (low population at Year 0)
Design AADT - Year 15	1,300	As per email dated January 17, 2022, 1300 vehicles per day.
Percent Growth Rate	10% - Year 0 to 10 0% - Year 10 to 15	Year 10 is assumed to be build out of the development
Percent Commercial Truck Traffic	5% - Year 0 to 5 3% - Year 5 to 10 0.5% - Year 10 to 15	Years 0 to 5 – high percentage of truck traffic due to construction of residences Years 5 to 10 – construction assumed to slow as development is nearing build out Years 10 to 15 – few to no construction trucks, truck traffic consists mainly of garbage/recycling trucks, septic trucks, fire trucks, delivery trucks, etc.
Truck Traffic Distribution	90%/10%	*Single Unit Trucks/Tractor Semi-Trailer Combinations
Bus Traffic Passes, Daily	8	It was reported that there will be 8 bus passes per day during the school year. It is estimated that there is approximately 40 weeks in the school year.
ESALs per Unit – Trucks	3.0/6.3*	*Single Unit Trucks/Tractor Semi-Trailer Combinations
ESALs per Unit – Buses	5	

Based on the above assumption, the following truck traffic volume is assumed to use the roadway over the design life:

TABLE E2 Cumulative Truck Traffic

Year	Growth Rate (per year)	AADT	AADT - Design Lane[2]	Percent Commercial Traffic	Total Trucks - Design Lane (per day)[3]	Total Trucks - Design Lane (per year)[4]	Cumulative Truck Traffic
0	10%	496	248.2	5%	12.4	4,529.7	4,529.7
1	10%	547	273.3	5%	13.7	4,987.4	9,517.0
2	10%	602	300.9	5%	15.0	5,491.3	15,008.4
3	10%	663	331.3	5%	16.6	6,046.2	21,054.6
4	10%	730	364.8	5%	18.2	6,657.2	27,711.8
5	10%	803	401.6	3%	12.0	4,398.0	32,109.8
6	10%	884	442.2	3%	13.3	4,842.4	36,952.2
7	10%	974	486.9	3%	14.6	5,331.7	42,283.9
8	10%	1,072	536.1	3%	16.1	5,870.5	48,154.3
9	10%	1,181	590.3	3%	17.7	6,463.7	54,618.0
10	0%	1,300	649.9	0.5%	3.2	1,186.1	55,804.1
11	0%	1,300	649.9	0.5%	3.2	1,186.1	56,990.3
12	0%	1,300	649.9	0.5%	3.2	1,186.1	58,176.4
13	0%	1,300	649.9	0.5%	3.2	1,186.1	59,362.5
14	0%	1,300	649.9	0.5%	3.2	1,186.1	60,548.7
15	0%	1,300	649.9	0.5%	3.2	1,186.1	61,734.8

Where:

[1] 'AADT' = AADT(20XX) * (1+Growth Rate)

[2] 'AADT-Design Lane' = 'AADT' * 'Directional Split' * 'Load Distribution Factor (Truck)'

[3] 'Total Trucks - Design Lane (per day)' = 'AADT - Design Lane' * 'Percent Commercial Traffic'

[4] 'Total Trucks - Design Lane (per year)' = 'Total Trucks - Design Lane' * 365

Load Equivalency Factor, LEF

TABLE E3 Weight ESALs, Commercial

Vehicle Type	Assumed Percent Vehicle Type	Corresponding ESALs per Unit (primary weights) - Based on DDSM
Single unit Trucks	90.0	3
Tractor Semi-Trailer Cominations	10.0	6.3
	Weighted ESALs =	3.33

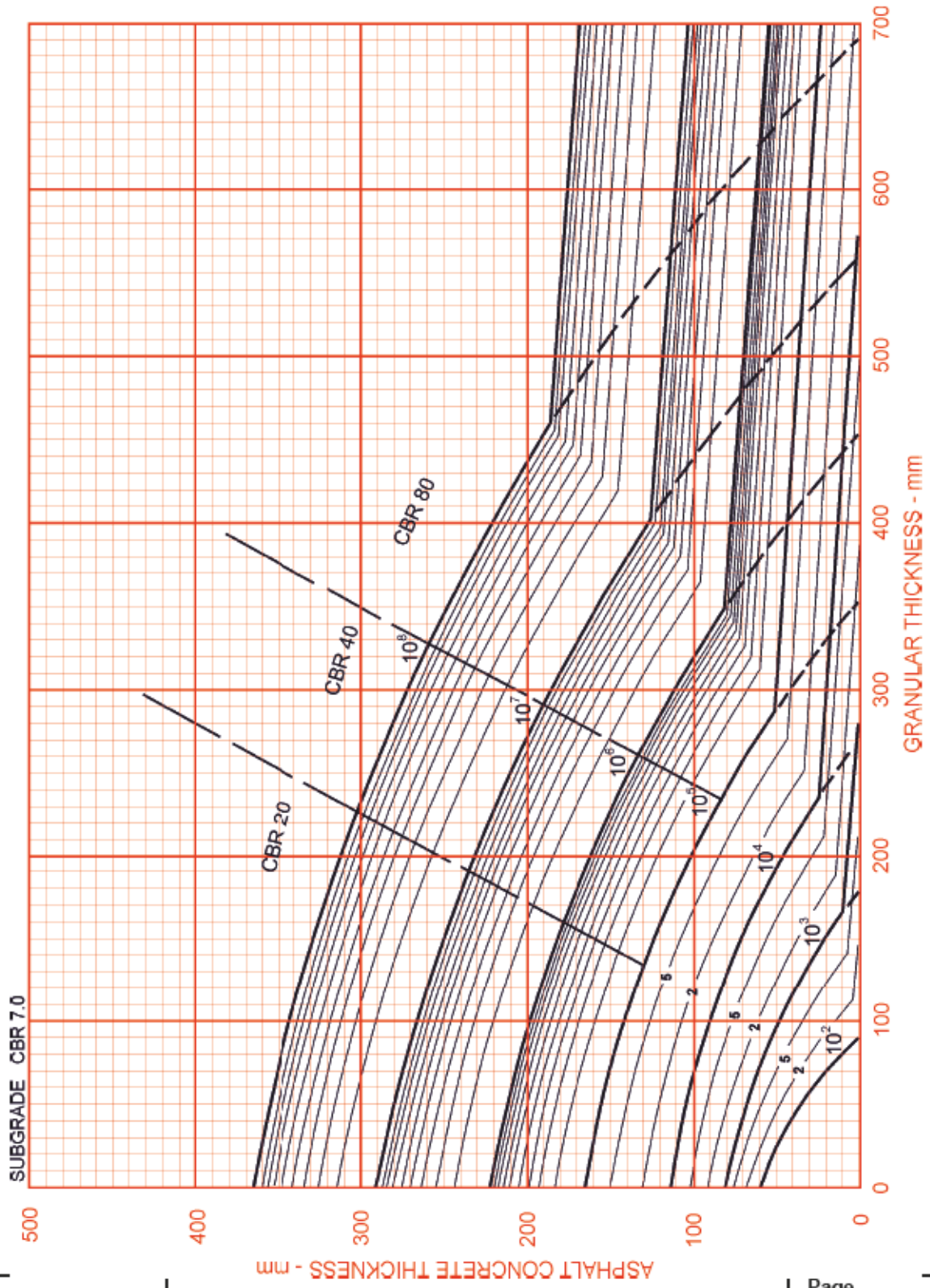
Bus Traffic

It was reported that there will be 8 bus passes per day per week day during the school year. It is estimated that there is approximately 40 weeks in the school year. As such, the following number of buses are assumed over the design life:

24000 buses/design life (8 bus passes per day*5 days/school week * 40 school weeks/year*15 years)

Design ESALS/lane

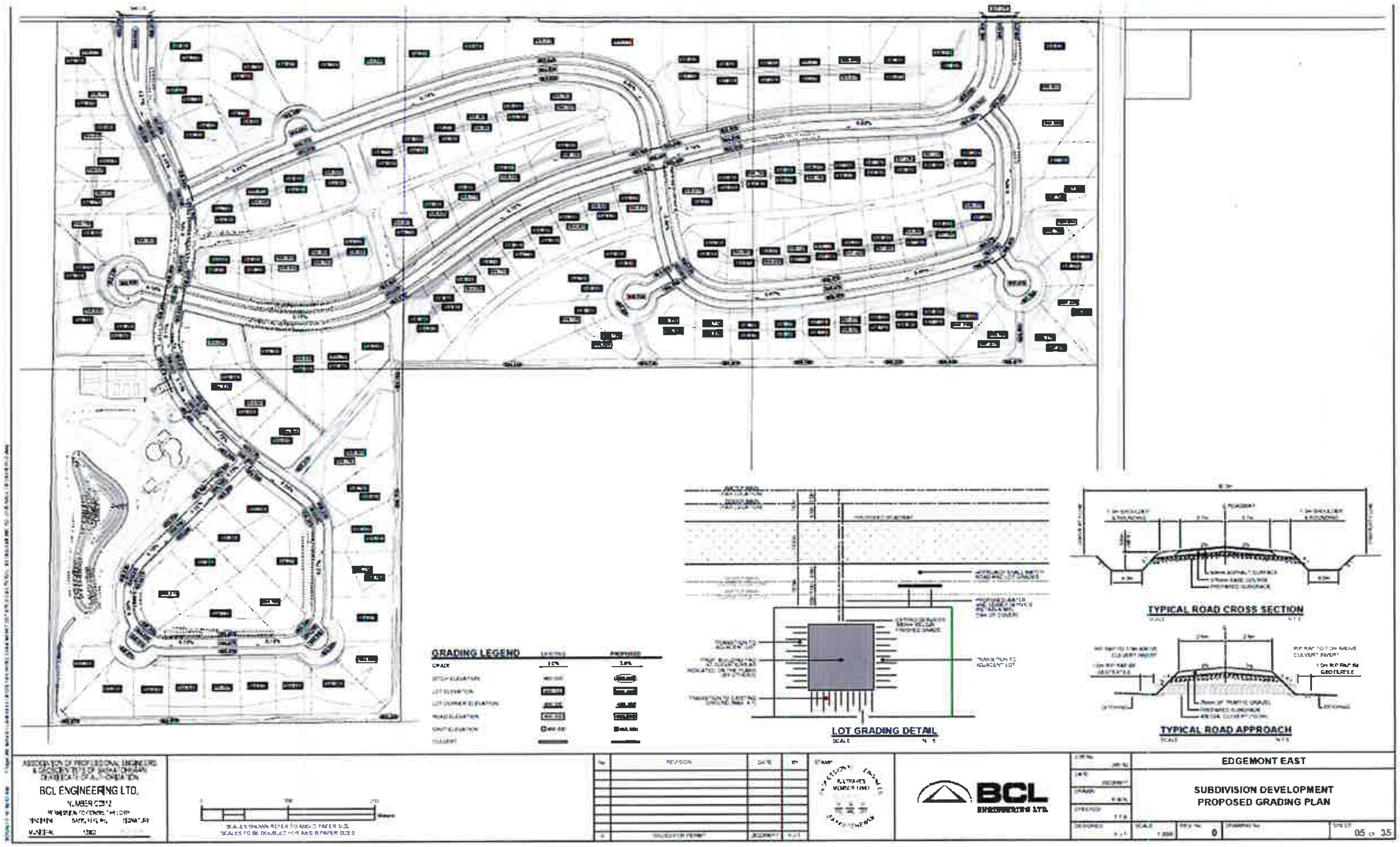
Commercial =	205,577	(Weighted ESALs * 15 Year Cumulative Truck Traffic from Table E2)
Buses =	120,000	(Bus ESAL from Table EI *buses/design life)
Design ESALs/Lane =	325,577	


SUBGRADE CBR 7.0
CBR 80
CBR 40
CBR 20
10^8
10^7
10^6
10^5
10^4
10^3
10^2
5
2
5
2
5
2
0
100
200
300
400
500
600
700
GRANULAR THICKNESS - mm
500
400
300
200
100
0
ASPHALT CONCRETE THICKNESS - mm

APPENDIX "B"

Drainage & Grading Plan

See next page for Drainage & Grading Plan document


GRADING LEGEND
TYPICAL ROAD CROSS SECTION
TYPICAL ROAD APPROACH
LOT GRADING DETAIL
BCL ENGINEERING LTD.
BCL
EDGEMONT EAST
SUBDIVISION DEVELOPMENT
PROPOSED GRADING PLAN
05 of 35

APPENDIX "C"
Architectural Controls

Proposed Edgemont East Architectural Controls

Buildings:

In order to obtain a building permit, the Rural Municipality of Corman Park may require either a site-specific geotechnical report or a foundation design approved by a certified engineer.

Buildings must be a minimum of 1,600 square feet for bungalow, or 2,100 square feet for two-storey.

Any out-buildings, fences, and additional garages must match facade of the house and must be approved by the Edgemont East Building Committee prior to construction.

Foundations:

Foundations must be concrete or insulated block only.

Wood foundations are not permitted.

Height of Structure:

Roof pitch must be a minimum of 6/12 roof, or as approved by the Edgemont East Building Committee (including flat roof designs)

Structures must meet all Edgemont East Committee (EEBC) standards and National Building Code of Canada regulations and receive approval from EPEBC.

Approved Exterior Materials and Colours:

Building exteriors may be acrylic stucco, brick, or stone, with a minimum of 30% frontage and 4-foot returns.

Other such materials must be approved by the Edgemont East Building Committee.

Roofs:

Roofs must be asphalt shingle (minimum 30 years).

Clay, metal, or other such material will be considered but must be approved by the Edgemont ~~Estates~~ East Building Committee.

Roof pitch must be a minimum of 6/12 roof, or as approved by the Edgemont East Building Committee (including flat roof designs)

Porches, Terraces and Decks:

Covered decks and front porches are allowed.

Porch, terrace, and deck material must be treated wood or wood composite

Chimneys and Outdoor Fire Pits:

Chimneys and outdoor fire pits must meet National Building Code of Canada requirements and must be approved by the Edgemont East Building Committee.

Garages and Garage Doors:

At a minimum, garages must be double attached.

Changes to Original Plans or Additional Construction:

Changes to originally submitted plans and additional construction plans must be submitted to the Edgemont East Building Committee for approval.

All engineering costs will be owned by the contractor and be submitted with the plans for revision.

Setbacks:

All setback plans must be submitted to the Edgemont East Building Committee for approval.

Outdoor Storage:

All storage of vehicles, equipment, and machinery must be approved by the Edgemont East Building Committee (EEBC).

All applications for shipping containers may be considered for storage purposes only but must be approved by the EEBC.

Lighting:

All outdoor lighting must consist of "Dark-Sky Friendly" lighting, as defined by the International Dark-Sky Association and must be approved by the Edgemont East Building Committee.

Fencing:

All fencing must be approved for material, size, location, and colour by the Edgemont East Building Committee.

Timelines for Completion:

The start time is 2 years from the time of purchase and then a further 2 years to complete.

All homeowners are required to become a member in good standing of the Edgemont East Homeowners Association.

Note on Ready to Move and Mobile Homes:

All lots are for new home construction only. Ready-to-move (RTM) and mobile homes will not be accepted.