ST. CLAIR CATHOLIC
DISTRICT SCHOOL BOARD

*Lighting the Way ~ Rejoicing in Our Journey*

# Addendum # 001

**TENDER NUMBER: 612-CP2108**

**Rear Yard Site Improvements**

**Christ the King Catholic School**

**227 Thomas Ave, Wallaceburg, ON**

**Submission Deadline and Location:**
**Thursday, September 10, 2020**
**4:00:00 PM Local Time**
**Submission Via Email**

**ISSUED: September 04, 2020**

ST. CLAIR CATHOLIC DISTRICT SCHOOL BOARD
*Lighting the Way ~ Rejoicing in Our Journey*

**ADDENDUM #001**

*This addendum forms part of the Contract Bid Documents and amends the original drawings and specifications issued for Bid on August 20th. 2020.*

## TABLE OF CONTENTS



## PART A – GENERAL

### .1 GENERAL

#### 1. SECTION 2.8 EXAMINATION OF SITE AND SITE VISIT

A Site Meeting was held at Christ the King Catholic School on Wednesday, August 26, 2020. At the beginning of the meeting it was emphasized that the Site Meeting was MANDATORY. The Board therefore, will only receive offers from the contractors listed below:

| Company | Representative | Phone | Email |
|---|---|---|---|
| Bill Hoekstra GC | Bill Hoekstra | 519-344-4855 | info@bh-gc.com |
| Dig 'R Wright Excavating | Jordan Hoekstra | 519-352-3805 | digrwright@ciaccess.com |
| Clarke Construction | Dan Vanderveen | 519-437-7878 | dan@clarkegroupontario.ca |
| Intrepid General Ltd | Justin Roy | 519-809-4953 | Justin.roy@intrepidgeneral.ca |
| Cope Construction | Jeff DeRush | 519-344-5221 | jderush@cope.on.ca |
| Elric Contractors | Bill Visser | 519-627-6031 | elriccontractors@gmail.com |
| Brandon Contractors | Wayne Brandon | 519-383-8895 | brandoncontractors@bellnet.ca |
| CSL Group Ltd | Kristin | 905-512-6394 | sales@cslgroup.ca |
| OSP Contractors | Shawn Carey | 519-328-1174 | shawn@ospcontractors.ca |

### .2 QUESTIONS AND ANSWERS

**RESPONSES TO QUESTIONS RECEIVED**

**Q1:** Would there be a soils report available to determine the thickness of the existing topsoil?

**A1:** **Refer to Soils Report accompanying this Addendum prepared by CT Soils & Engineering, prepared on April 20th. 2020. Refer to section - 3.2.2.**

**Q2:** Once the site has been stripped and the imported fill material placed, what thickness of topsoil do you require – 150mm?

**A2:** **Refer to Specification Section 31 22 19 on drawings for type and thickness of topsoil.**

**Q3:** Could you provide me with the Well Tag Number for the 2 wells in order that I may provide the required information to the decommissioning contractor.

**A3:** **The two wells are only water level monitoring wells. Refer to Geotechnical report.**

**Q4:** Can you please clarify the intent of the final grading on page SE3? Is the scope of work to include grass removal, regrading and reseeding to the area that I have bubbled as attached? Or are we only to repair what is damaged due to the drain installation?

**A4:** **Scope of grading and servicing works has been revised to include only the north field area. No servicing and grading is proposed within the existing play area south of the existing fence. Refer to the appended revised Civil Drawings.**

## PART B – SPECIFICATIONS

None at this time.

## PART C – ARCHITECTURAL DRAWINGS

None at this time.

ARCHITECTURAL SKETCHES

None at this time.

## PART D – STRUCTURAL DRAWINGS/SKETCHES

None at this time.

## PART E – MECHANICAL / ELECTRICAL DRAWINGS

None at this time.

## PART F – CIVIL AND SITE WORK DRAWINGS

SE 1
SE 2
SE 3
SE 4

**This concludes Addendum #001.**

SOIL & MATERIALS ENGINEERING INC.
CONSULTING ENGINEERS
A MEMBER OF INFRASTRUCTURE ENGINEERING GROUP INC.

# Report on the

Geotechnical Investigation for the

Drainage, Pavement, and Portable Classrooms at

Christ the King Elementary School

227 Thomas Avenue

Wallaceburg, Ontario

## Report Issued to

St. Clair Catholic District School Board

1930 Wildwood Drive

Bright's Grove, Ontario

N0N 1C0

**Attention: Tony Montanino, P.Eng., MBA**
Manager – Facility Services
Tony.montanino@ct-clair.net

## Date of Report

April 15, 2020

## Job No.

18G085
Rev.: 00

## Distribution of Report

1 e-copy – St. Clair District School Board
1 e-copy – Wilson Diaz Architects Inc.

# 1.0 INTRODUCTION

Tony Montanino, P.Eng., MBA, manager of Facility Services for the St. Clair Catholic District School Board, authorized Soil & Materials Engineering Inc. to complete a Geotechnical Investigation for the proposed portable classrooms addition to Christ the King Elementary School located at 227 Thomas Avenue, Wallaceburg, Ontario. The area of development is currently playground pavement and grass.

The scope of work is to carry out a geotechnical investigation and to prepare a geotechnical report based on soil borings and laboratory testing.

This report discusses the results of our investigation with respect to the proposed development. The results of the fieldwork and laboratory testing programs were used to determine the relevant soil and groundwater parameters at this site. The recommendations contained in this report refer to the geotechnical aspect of the soil conditions encountered in the exploratory holes.

## 2.0 INVESTIGATIVE PROGRAM

The field work portion of the geotechnical investigation consisted of ten augered and sampled testholes (Testholes 1 through 10) at the approximate locations determined by Wilson Diaz Architects Inc, as shown on the attached Site Maps (Drawings 1 and 2). The testholes were advanced with the use of a track-mounted (CME 55) and truck-mounted (Diedrich D50) geotechnical drill rigs owned and operated by C.T. Soil & Materials Testing Inc. The drill units are equipped with hollow stem augers, solid stem augers, and conventional soil sampling tools. The testholes were completed on November 23, 2018 under the direction of a geotechnical engineer. The testhole information from the geotechnical investigation is presented in graphical form on the Log of Testholes (Drawings 3 through 12). Table 1, below, presents a schedule of the testhole depths completed for this project.

**TABLE 1: Schedule of Testhole Depths**

| Testhole ID | Depth (m) | Testhole ID | Depth (m) |
|---|---|---|---|
| 1 | 2 | 6 | 6.55 |
| 2 | 2 | 7-MW | 3.5 |
| 3 | 2 | 8-MW | 3.5 |
| 4 | 6.55 | 9 | 3.5 |
| 5-MW | 3.5 | 10 | 3.5 |

Soil samples were retrieved at frequent intervals of depth using the Standard Penetration Test Method (ASTM D1586). To assess the in-situ soil strength, in situ undrained shear strength tests (ASTM D2573) and pocket penetrometer tests were conducted where applicable. The retained soil samples were field logged, placed in suitable containers and transported to our laboratory for further detailed examination and testing. The testholes designated with “MW” included the installation of groundwater monitoring wells, with construction details presented on the relevant Log of Testhole.

The testhole locations were positioned in the field by C.T. Soil & Materials Testing Inc. at the locations specified by the Architect. The ground surface elevation was related to a local geodetic datum. The local benchmark used for this geotechnical investigation is the top of finished floor located at the

north playground entrance for the metal clad addition. The benchmark has a given level of El.177.26 metres. The depths and elevations presented in this report were derived for the sole benefit of the geotechnical analysis and stratigraphic evaluation by the geotechnical engineer. The depths presented in this report should not be used by others, for any other purpose.

The laboratory testing included a detailed visual and tactile examination of the retrieved samples along with soil moisture content determinations on selected soil samples. The results of the laboratory testing are presented on the Testhole Logs (Drawings 3 through 12).

# 3.0 SITE AND SUBSURFACE CONDITIONS

The proposed portable classroom addition will be located northwest of the existing school building with additional parking to the west and a bus lane to the south. The existing ground surface is building, grass, trees, and pavement covered property. The ground surface is relatively flat and level with grade changes at the testhole locations of less than ¾ metre.

## 3.1 Geological Condition

The site is located within the western part of an extensive clay plain formation (St Clair Clay Plain) characterized by fairly uniform geologic features. Standing between the basins of Lake Huron and Lake St. Clair, the surface is, essentially, a till plain overlying middle Devonian sedimentary rocks (limestone and shale). Shale underlies most of the Chatham-Kent County area; shale may be present beneath the soil column in the immediate area of the site. The thickness of the overburden in the general area is 25 $\pm$ 5 metres.

At various sites in the region, gas and/or oil pockets, and/or artesian sulphur water are encountered near or immediately below the bedrock surface.

No major faults or dislocations due to the breaking of the Palaeozoic bedrock are reported in southwestern Ontario.

## 3.2 Soil Condition

The stratigraphic and interpreted boundaries in the testholes were obtained from 38 mm diameter samples, retrieved from 115 mm or 165 mm diameter auger holes. The soil shear strength consistency, as provided on the enclosed testhole logs (Drawings 3 through 12) are based on "N"-values determined from the Standard Penetration Test Method (ASTM D1586), in situ undrained vane shear strengths (ASTM D2573), pocket penetrometer tests, and a visual and tactile examination of the retained soil samples.

#### 3.2.1 Pavement

Testhole 5-MW was the only testhole completed through the existing pavement structure. At this location, the pavement consists of 150 mm of asphalt concrete. The subgrade beneath the pavement structure is black organic clay topsoil. Fine grained sand is encountered beneath the topsoil to a depth of 0.6 metres below grade.

#### 3.2.2 Topsoil

All testholes, besides Testhole 5-MW, were completed through black organic clay topsoil. The depth of the topsoil varies between 0.18 metres to 0.31 metres below grade.

#### 3.2.3 Clayey Sand

All testholes, except for Testholes 7-MW through 10 (the field area), encountered “loose” to “compact” clayey sand below the topsoil. The clayey sand was encountered to a depth of 0.9 metres to 2.3 metres below grade.

#### 3.2.4 Silty Clay

The topsoil and clayey sand are underlain by a major deposit of native silty clay with embedded sand and gravel having a structure indicative of a glacial-fluvial depositional environment. The undrained shear strength consistency of the silty clay is that of “stiff” to “very stiff” to a depth of 1.95 metres to 3.6 metres below grade. The silty clay undergoes a reduction in undrained shear strength to that of “firm” to a depth of 1.95 metres to 4.5 metres below grade. Below a depth of 3.5 metres to 4.5 metres below grade, the silty clay has an undrained shear strength consistency of “firm” to “soft” to the depth extent of the geotechnical investigation, 6.55 metres below grade.

## 3.3 Groundwater

The groundwater level and the depth that the testhole remained open after the completion of drilling is presented on the Log of Testholes, where encountered. The measured water level upon completion of drilling was approximately 0.6 metres to 5.4 metres below grade. The deeper groundwater level measurements likely represent unstabilized conditions.

The long-term lowest level of the groundwater at this site is generally associated with the interface of the brown/grey silty clay soils, the grey colour indicating permanently saturated conditions. Therefore, based on the testhole information, it appears that the long-term lowest groundwater level is located approximately 3.5 metres to 3.8 metres below existing grade.

Perched water may be encountered in the surficial topsoil, fill materials, and non-cohesive lenses or seams of sand or silt at wetter times of the year. Perched groundwater conditions result from the fill materials or soil fissures having the capacity to temporarily store water from rain and snow melt before it percolates to the long-term level of the groundwater table.

# 4.0 DISCUSSION AND RECOMMENDATIONS

St. Clair Catholic District School Board is proposing to construct the new parking lot and portable addition for Christ the King Elementary School at 227 Thomas Avenue, Wallaceburg, Ontario. The new addition will include a new parking area to the west with a bus loading area to the south and new portables to the northwest of the existing school as shown on Drawings 1 and 2. The project loading conditions were not made available for our evaluation. Once loading and load distribution are known, the Geotechnical Consultant should be contacted for further evaluation.

## 4.1 Foundations

The exploratory testholes completed at this site reveal the shallow subsurface conditions are relatively variable in terms of soil composition and undrained shear strength consistency for foundations located at shallow depths. The site topsoil, asphalt and sand were found to extend to a depth of up to 0.58 metres below current grade at the testhole locations. Below the topsoil, asphalt, and sand layers, “loose” to “compact” clayey sand was encountered to a depth of 0.9 metres to 2.3 metres below grade. The clayey sand is underlain by a major deposit of the silty clay with embedded sand and gravel. The undrained shear strength consistency of the silty clay is “stiff” to “very stiff” to a depth of 1.95 metres to 3.6 metres below grade. The silty clay undergoes a reduction in undrained shear strength to that of “firm” to a depth of 1.95 metres to 4.5 metres below grade. Below a depth of 3.5 metres to 4.5 metres below grade, the silty clay has an undrained shear strength consistency of “firm” to “soft” to the depth extent of the geotechnical investigation, 6.55 metres below grade.

The bearing capacity of shallow foundations was therefore calculated for this report based on the presence of a “stiff” to “very stiff” silty clay soil underlain by “firm” to “soft” silty clay (i.e. two-layer soil model). The following subsections presents geotechnical resistance referenced to the ultimate limit states and the serviceability limit states for conventional shallow spread foundations at this site.

#### 4.1.1 Ultimate Limit States

The factored net geotechnical resistance at ultimate limit states (geotechnical resistance factor, $\Phi$, of 0.5) that may be used for conventional spread footing foundations are presented in Table 2, below.

**TABLE 2: U.L.S. Factored Bearing Resistance**

| Elevation (m) | Factored Geotechnical Resistance, $\Phi$R, at U.L.S. (kPa)* | | |
|---|---|---|---|
| | Isolated Square | Continuous Strip | Short Caissons |
| u/s fill to El.175.5 | 180 | 140 | 225 |
| El.175.3 to El.174.2 | 140 | 120 | 170 |
| El.174.1 to El.173.9 | 255 | 185 | 300 |

* Some locations may require subexcavation in order to achieve the stipulated bearing capacities.
** Dewatering prior to excavation may be required along with excavation sidewall support

The above factored geotechnical resistance at ultimate limit states incorporates 0.50 as an applied resistance factor, $\Phi$, to the ultimate geotechnical resistance. These values are net of the lowest surcharge pressure on the soil surrounding the footing.

#### 4.1.2 Serviceability Limit States

For geotechnical calculation purposes, the gross bearing pressure at serviceability limit states has been taken for that pressure to generate 25 mm of total settlement beneath the footing, thereby generally assuring less than 20 mm differential settlement between any two foundation units. The composition of the unfactored loads to generate the calculated settlement will be dependent on the long-term sustained loading conditions which will include 100% of the dead loads and likely only a portion of the live loads and no component for transient loads such as wind or earthquake.

Geotechnical resistance at serviceability limit states that may be used for conventional spread footing foundations less than 1.5 metres (isolated square) and 0.9 metres (continuous strip) are presented below.

**TABLE 3: Geotechnical Resistance (Unfactored) at S.L.S.**

| Elevation (m) | Geotechnical Resistance at S.L.S. (kPa)* | | |
|---|---|---|---|
| | Isolated Square | Continuous Strip | Short Caissons |
| u/s fill to El.175.5 | 120 | 95 | 150 |
| El.175.3 to El.174.2 | 95 | 80 | 115 |
| El.174.1 to El.173.9 | 170 | 125 | 200 |

* Some locations may require subexcavation in order to achieve the stipulate bearing capacities.
** Dewatering prior to excavation may be required along with excavation sidewall support

Foundations exceeding the above design chart or maximum footing width may be feasible; however, a detailed geo-structural interaction analysis must be completed for proper evaluation.

#### 4.1.3 Foundation Design (General)

All the factored geotechnical resistance bearing pressures at ultimate limit states incorporate a factor, $\Phi$, of 0.5 against shear failure of the underlying soil strata (in accordance with the Canadian Foundation Design Manual, 4$^{th}$ Edition and Ontario Building Code (2012)). The expected total and differential settlements for footings constructed as outlined previously will be 25 mm and 20 mm, respectively.

The encounter of water bearing sand lenses at this site may require localized dewatering, subexcavation, or a combination of dewatering and subexcavation if the lower allotted soil bearing pressures are insufficient for the project design.

The settlement of such foundations must be assessed in conjunction with the existing overburden pressure, foundation size and construction procedure. The consolidation settlement occurring within the silty clay will occur over a period of time likely continuing after the completion of construction. For example, the estimated consolidation time under a conventional 2.5-metre-wide isolated square footing (established on “very stiff” silty clay) is less than 5 years. The consolidation time increases with the second power of the foundation width.

Some continuous footings or isolated square footings may be designed to be constructed at different elevations in the soil. In this case, the footings should be stepped such that the soil slope is cut no steeper than 2H:1V with a maximum slope height of one metre. Successive sloped sections must have a crest-toe separation of greater than 1.2 metres. Sand or silt sloped soil sections will require dewatering prior to excavation and flattened sloped of 3H:1V also with a maximum crest to toe height of one metre.

We recommend all soil bearing surfaces be inspected and approved by the Geotechnical Consultant to confirm that the soil exposed corresponds with the testhole observations and the design assumptions of the soil consistency. All exterior footings constructed adjacent to unheated areas must have a minimum of 1.2 metres of soil cover, or synthetic insulation of equal thermal value for protection against frost heave.

The native silty clay at this site is sensitive and is subject to disturbance when exposed to construction traffic and adverse weather conditions. We therefore recommend placing the foundation concrete on the same day the excavation is completed and the subgrade has been inspected and approved by the Geotechnical Consultant. If this is not possible, then following subgrade approval, a thin mat of lean concrete (mud mat) should be placed on the bearing surface in order to preserve its integrity.

## 4.2 Floor Slab-on-Grade

The portables will likely incorporate a structural floor suspended above the general grade. If, however, slab on grade will be constructed at this site, all fill and organic soil should be removed from the building area. The approved underfloor granular fill should be placed immediately after trimming to final subgrade level to avoid deterioration of the soil surface caused by construction traffic and adverse weather conditions.

The exposed subgrade should be proof rolled in the presence of the Geotechnical Consultant. Any "soft" areas encountered during proof-rolling and inspection must be sub-excavated and replaced with approved fill such as Granular "B Type II" (OPSS 1010) and compacted to at least 98% of its Standard Proctor maximum dry density. Fill used to raise the grade of the floor slab should be constructed similarly.

Presuming a service loading condition of less than 15 kPa, immediately beneath the floor slab, we recommend placing a minimum of 300 mm of Granular "A" (OPSS 1010) compacted to 100% of its Standard Proctor maximum dry density to provide uniform and adequate bearing surface. We recommend incorporation of a capillary break consisting of 100 mm of clearstone gravel (Granular “O”, OPSS 1010). Heavier loaded floor slabs should be specifically reviewed by this office.

An appropriately placed vapour retarder is recommended beneath all slab on grade constructions that include moisture sensitive floorings or areas requiring humidity control.

## 4.3 Pavement Construction

The topsoil, fill, and any other unsuitable materials should be completely stripped for the pavement subgrade. After stripping operations have been completed the exposed subgrade materials should be proof rolled in the presence of the geotechnical consultant. Excavations for subgrade within some areas may require additional fill removal if particularly incompetent. The exposed subgrade should be proof rolled, in the presence of the Geotechnical Consultant, to verify the general competency of the subgrade. General fill material required to raise the general subgrade can be composed of Granular “B Type I” (OPSS 1010) compacted to 98% of its Standard Proctor maximum dry density.

Once the subgrade has been proof-rolled and shaped to promote drainage (minimum 2% rate), the pavement materials can be placed on the approved subgrade. Back-of-curb subgrade drainage and catchbasin stub-drains (2.5 metres long, keyed into the subgrade, and radiating in all four directions) are recommended for all pavements.

Table 4, below, addresses the recommended pavement composition for this project.

**TABLE 4: Pavement Structure Recommendation**

| Material | Thickness of Pavement (mm) | |
|---|---|---|
| | Car Parking | Truck/Bus/Driveway Routes |
| HL-3 (OPSS 1150) | 40 | 40 |
| HL-4 (OPSS 1150) | 40 | 60 |
| Granular “A” (OPSS 1010) | 350 | 300 |
| Granular “B Type II” (OPSS 1010) | -- | 200 |
| Granular ‘B Type I” (OPSS 1010) | As needed for grading purposes | As needed for grading purposes |

The granular base should be compacted to 100% of its Standard Proctor maximum dry density in lift thicknesses commensurate with the employed compaction equipment. All asphalt concrete should be placed in accordance with the Ontario Provincial Standards and compacted to 92% of the Marshall maximum theoretical density.

In areas of tight turning radii or standing loaded trucks, consideration should be given to the use of Portland cement concrete pavement comprised of 300 mm of CSA A23.1 concrete (5% to 8% air content for 20 mm nominal aggregate with a maximum water-cement ratio of 0.45) on 200 mm of Granular “A” (OPSS 1010) compacted to 100% of its Standard Proctor maximum dry density

## 4.6 Sports Field Drainage

Four monitoring wells were installed at this site, two of which were installed within he southern portion of the open farm field to the north. The water table at the time of our fieldwork was near ground surface. The soil beneath the topsoil layer is decidedly clayey and, as a result, has poor drainage characteristics. As part of the sports field design, an extensive network of subdrains will be required in order to ensure usability within a reasonable period of time after rain events or snow melts.

## 4.7 Seismic Site Classification

The Ontario Building Code allows the site to be classified on the basis of the weighted average shear strength or standard penetration resistance profile within the upper 30 metres of the soil column. Based on investigations at testholes for this site investigation terminating at a depth of 6.55 metres, we recommend the site to receive a Class “E” classification for seismic site response resulting from the weighted average shear strength and standard penetration resistance profile of the cohesive and non-cohesive soils encountered below the testhole depths. Further investigation may suggest otherwise.

# 5.0 CLOSURE

This report presents our interpretation of factual information obtained from the investigation and is intended for the use of the design engineer. Where comments are made related to construction, they are provided only in order to highlight aspects of construction that could affect the design of the project.

The number of boreholes required to determine the localized underground conditions between testholes affecting construction would be much greater than has been carried out for design purposes.

Further examination and investigation should be carried out in order to verify the adequacy of the information for construction that may affect the contractor with regards to construction techniques, schedule, equipment capabilities, cost sequencing, etc. This report addresses the geotechnical aspects of the subsurface conditions at the site pertinent to the proposed project only.

All testholes were tightly backfilled at completion. The Owner retains responsibility for future maintenance and pedestrian safety of the property.

It is beyond the scope of this investigation and report to address any issues related to health or environmental aspects of the proposed works.

Should local site conditions differ materially from that contained in this report, contact this office immediately for guidance. Do not hesitate to contact us should questions arise concerning the contents of this report. We would be pleased to meet with you at your convenience.

Regards,
**Soil & Materials Engineering Inc.**


J. Guilbeault, EIT
Geotechnical EIT

T. O'Dwyer, P.Eng.
Consulting Engineer

Drawings/Enclosures

# SITE MAP


**LEGEND:**

- Soil Boring
- Monitoring Well
- Test Well
- DMT
- Inclinometer
- Test Pit


C.T. Soil & Materials Testing Inc.
2000 Legacy Park Drive
Windsor, ON N8W 5S6
Telephone: (519) 966-8863
Fax: www.ctsoil.com


Project: Drainage, Pavement, & Portable Buildings at Christ the King
Location: 227 Thomas Avenue, Wallaceburg, ON
Number: 18G085

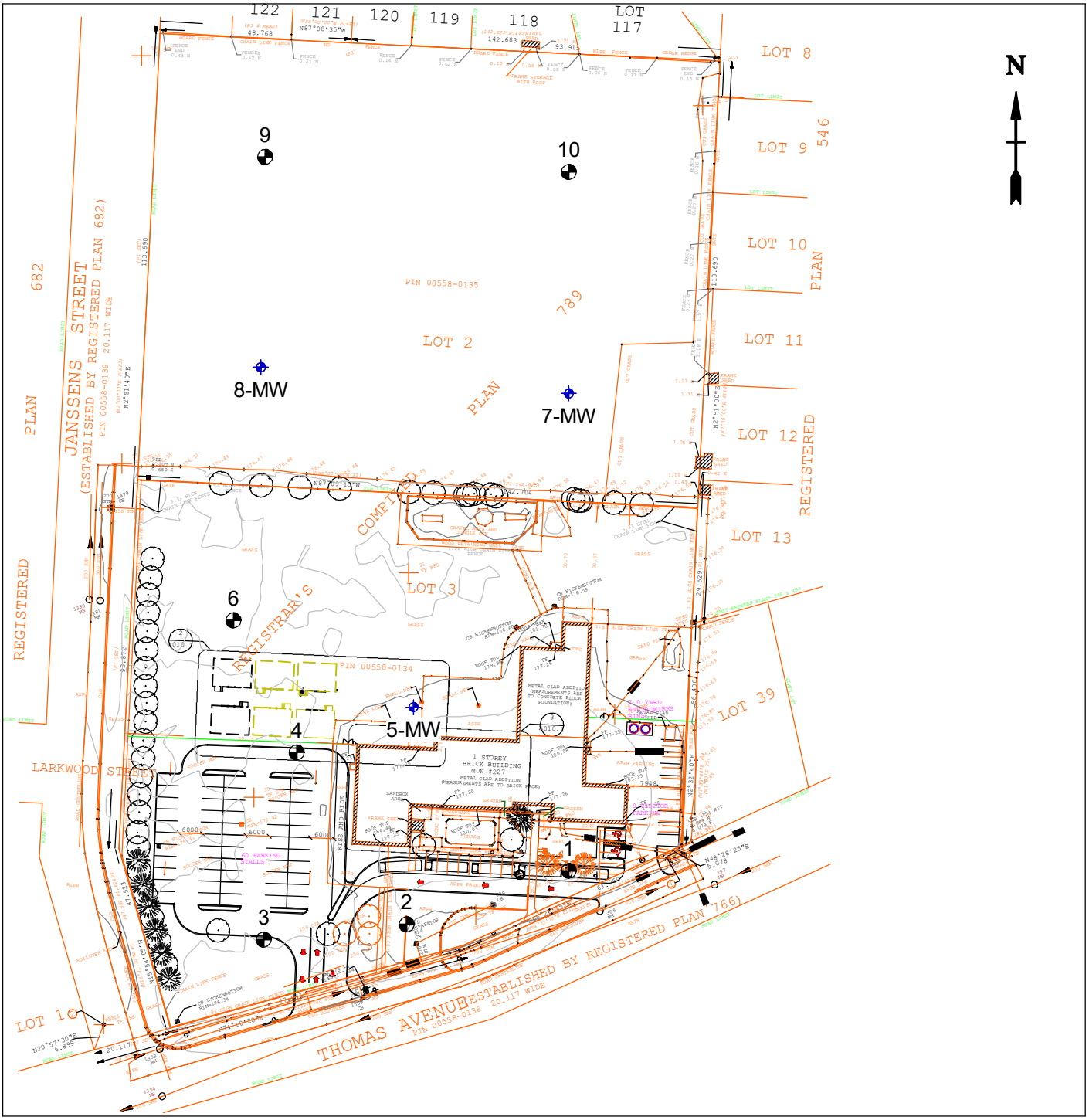
**Notes:**

**Testhole Locations**

DRAWING

**1**

# SITE MAP




## LEGEND:

- Soil Boring
- Monitoring Well
- Test Well
- DMT
- Inclinometer
- Test Pit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Project: Drainage, Pavement, & Portable Buildings at Christ the King
Location: 227 Thomas Avenue, Wallaceburg, ON
Number: 18G085

**Notes:**

**Testhole Locations**

DRAWING

**2**

JOB No: **18G085**

TESTHOLE No. **1**

Dwg. No.: 3
Sheet 1 of 1

C.T. SOIL & MATERIALS TESTING INC.
WINDSOR ONTARIO

Client: **St. Clair District School Board c/o Wilson Diaz Architects Inc.**
Project: **Drainage, Pavement, & Portable Buildings at Christ the King**
Location: **227 Thomas Avenue, Wallaceburg, ON**

EQUIPMENT DATA
Machine: **Diedrich D50 Truck**
Method: **115 mm I.D. S/S Auger**
Size: **115 mm O.D.**
Date: **2018-11-23** TO **2018-11-23**

## SOIL LITHOLOGY

| EL/DPT (m) | DESCRIPTION (DMT) | DEPTH (m) | SYMBOL |
|---|---|---|---|
| | **TOPSOIL** - black organic clay | | |
| 0.18 / 176.92 | **CLAYEY SAND** - with fine sand lenses and seams | | |
| | firm | 0.5 | |
| | brown | | |
| | stiff | | |
| 0.90 / 176.20 | **SILTY CLAY (CL-ML)** - with embedded sand and gravel | | |
| | grey sandy silt seams, pink clay pockets | 1.0 | |
| | very stiff | 1.5 | |
| 1.95 / 175.15 | End of the hole | 2.0 | |
| | | 2.5 | |
| | | 3.0 | |

## SAMPLE

| SAMP ID | TYPE | N-VALUE |
|---|---|---|
| 0.0 | SPT | 6 |
| 2.0 | SPT | 17 |
| 5.0 | SPT | 9 |

SHEAR STR.(kPa)
DILATOMETER: Su● M(bars)▼
FIELD VANE: Peak × Rem. ⊗
LAB TEST: Unc. ■ P.P. □
50 100 150
PENETR. RESISTANCE DMT Phi(◆) ◆
STANDARD ● DYN.CONE ○
20 40 60

145

BULK UNIT WGHT (kN/m3)

WATER CONTENT (%)
Wp W Wl
10 20 30

WELL
No Well
DATA

ELEV. (m)
177
176
175

REMARKS & GRAIN SIZE DISTRIBUTION %
GR SA SI CL

Testhole open and dry upon completion

REVIEWING PROFESSIONAL:
**T. O'Dwyer, P.Eng., P.E.**
Soil & Materials Engineering Inc.

C.T. SOIL & MATERIALS TESTING INC.
2000 Legacy Park Drive
WINDSOR, ONTARIO, N8W 5S6
ph. (519) 966-8863, fx. (519) 966-8870
email ctsoil @ ctsoil.com

JOB No: **18G085**

TESTHOLE No. **2**

Dwg. No.: 4
Sheet 1 of 1

C.T. SOIL & MATERIALS TESTING INC.
WINDSOR ONTARIO

Client: **St. Clair District School Board c/o Wilson Diaz Architects Inc.**
Project: **Drainage, Pavement, & Portable Buildings at Christ the King**
Location: **227 Thomas Avenue, Wallaceburg, ON**

EQUIPMENT DATA
Machine: **Diedrich D50 Truck**
Method: **115 mm I.D. S/S Auger**
Size: **115 mm O.D.**
Date: **2018-11-23** TO **2018-11-23**

## SOIL LITHOLOGY

DESCRIPTION *DMT*

Ground Elev: **177.00** m

| EL/DPT (m) | DESCRIPTION | DEPTH (m) |
|---|---|---|
| 0.18 / 176.82 | **TOPSOIL** - black organic clay | |
| | **CLAYEY SAND** - with fine sand lenses and seams, stiff, mottled brown-grey | 0.5, 1.0 |
| 1.50 / 175.50 | **SILTY CLAY (CL-ML)** - with embedded sand and gravel, stiff | 1.5 |
| 1.95 / 175.05 | End of the hole | 2.0, 2.5, 3.0 |

SAMPLE

| SAMP ID | TYPE | N-VALUE |
|---|---|---|
| 0.0 | SPT | 10 |
| 2.0 | SPT | 12 |
| 5.0 | SPT | 10 |

SHEAR STR.(kPa)
DILATOMETER: Su● M(bars)▼
FIELD VANE: Peak × Rem. ⊗
LAB TEST: Unc. ■ P.P. □
50 100 150
PENETR. RESISTANCE DMT Phi(◆) ◆
STANDARD ● DYN.CONE ○
20 40 60

190 □

BULK UNIT WGHT (kN/m3)

WATER CONTENT (%)
Wp W Wl
10 20 30

WELL
No Well DATA

| ELEV. (m) |
|---|
| 176 |
| 175 |
| 174 |

REMARKS & GRAIN SIZE DISTRIBUTION %
GR SA SI CL

Water level at 1.47m 0.5h after completion

CTMET 18G085.GPJ BETA.TOM.20190801.GDT 20-4-7

REVIEWING PROFESSIONAL:
**T. O'Dwyer, P.Eng., P.E.**
Soil & Materials Engineering Inc.

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JOB No: **18G085**

TESTHOLE No. **3**

Dwg. No.: 5
Sheet 1 of 1

C.T. SOIL & MATERIALS TESTING INC.
WINDSOR ONTARIO

Client: **St. Clair District School Board c/o Wilson Diaz Architects Inc.**
Project: **Drainage, Pavement, & Portable Buildings at Christ the King**
Location: **227 Thomas Avenue, Wallaceburg, ON**

EQUIPMENT DATA
Machine: **Diedrich D50 Truck**
Method: **115 mm I.D. S/S Auger**
Size: **115 mm O.D.**
Date: **2018-11-23** TO **2018-11-23**

## SOIL LITHOLOGY

DESCRIPTION *DMT*

Ground Elev: **176.60** m

| EL/DPT (m) | DESCRIPTION | DEPTH (m) |
|---|---|---|
| 0.25 / 176.35 | **TOPSOIL** - black organic clay | |
| | **CLAYEY SAND** - with fine sand lenses and seams | 0.5 |
| | firm | |
| | mottled brown-grey | 1.0 |
| 1.50 / 175.10 | **SILTY CLAY (CL-ML)** - with embedded sand | 1.5 |
| | firm | |
| | brown | |
| 1.95 / 174.65 | End of the hole | 2.0 |
| | | 2.5 |
| | | 3.0 |

SAMPLE

| SAMP ID | TYPE | N-VALUE |
|---|---|---|
| 0.0 | SPT | 8 |
| 2.0 | SPT | 8 |
| 5.0 | SPT | 6 |

SHEAR STR.(kPa)
DILATOMETER: Su● M(bars)▼
FIELD VANE: Peak × Rem. ⊗
LAB TEST: Unc. ■ P.P. □
50 100 150
PENETR. RESISTANCE DMT Phi(◆) ◆
STANDARD ● DYN.CONE ○
20 40 60

25 □

BULK UNIT WGHT (kN/m3)

WATER CONTENT (%)
Wp W Wl
10 20 30

WELL: No Well
DATA

ELEV. (m): 176, 175, 174

REMARKS & GRAIN SIZE DISTRIBUTION %
GR SA SI CL

Testhole open and dry upon completion

REVIEWING PROFESSIONAL:
**T. O'Dwyer, P.Eng., P.E.**
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JOB No: **18G085**

TESTHOLE No. **4**

Dwg. No.: 6
Sheet 1 of 1

C.T. SOIL & MATERIALS TESTING INC.
WINDSOR ONTARIO

Client: **St. Clair District School Board c/o Wilson Diaz Architects Inc.**
Project: **Drainage, Pavement, & Portable Buildings at Christ the King**
Location: **227 Thomas Avenue, Wallaceburg, ON**

EQUIPMENT DATA
Machine: **Diedrich D50 Truck**
Method: **83 mm I.D. H/S Auger**
Size: **165 mm O.D.**
Date: **2018-11-23** TO **2018-11-23**

## SOIL LITHOLOGY

DESCRIPTION *DMT*
Ground Elev: **176.50** m

| EL/DPT (m) | DESCRIPTION | DEPTH (m) | SYMBOL |
|---|---|---|---|
| 0.25 / 176.25 | **TOPSOIL** - black organic clay | | |
| | **CLAYEY SAND** - with fine sand lenses and seams | | |
| | firm | 0.5 | |
| | stiff | | |
| | mottled brown-grey | 1.0 | |
| 1.50 / 175.00 | **SILTY CLAY (CL-ML)** - with embedded sand and gravel | 1.5 | |
| | brown | 2.0 | |
| | stiff | 2.5 | |
| | | 3.0 | |
| | | 3.5 | |
| | firm | | |
| | grey | 4.0 | |
| | | 4.5 | |
| | firm to soft | 5.0 | |
| | | 5.5 | |
| | | 6.0 | |
| 6.55 / 169.95 | End of the hole | 6.5 | |

SAMPLE

| SAMP ID | TYPE | N-VALUE |
|---|---|---|
| 0.0 | SPT | 9 |
| 2.0 | SPT | 12 |
| 5.0 | SPT | 10 |
| 7.5 | SPT | 11 |
| 10.0 | SPT | 10 |
| 12.5 | SPT | 3 |
| 15.0 | SPT | 1 |
| 20.0 | SPT | 1 |

SHEAR STR.(kPa)
DILATOMETER: Su● M(bars)▼
FIELD VANE: Peak × Rem. ⊗
LAB TEST: Unc. ■ P.P. □
50 100 150
PENETR. RESISTANCE DMT Phi(◆) ◆
STANDARD ● DYN.CONE ○
20 40 60

190
95
0
20
55
10
35

BULK UNIT WGHT (kN/m3)

WATER CONTENT (%)
Wp W Wl
10 20 30

WELL DATA: No Well

| ELEV. (m) |
|---|
| 176 |
| 175 |
| 174 |
| 173 |
| 172 |
| 171 |
| 170 |

REMARKS & GRAIN SIZE DISTRIBUTION %
GR SA SI CL

Water level at 1m 1.5h after completion

Water level at 5.4m upon completion

CTMET 18G085.GPJ BETA.TOM.20190801.GDT 20-4-7

REVIEWING PROFESSIONAL:
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JOB No: **18G085**

TESTHOLE No. **5-MW**

Dwg. No.: 7
Sheet 1 of 1

C.T. SOIL & MATERIALS TESTING INC.
WINDSOR ONTARIO

Client: **St. Clair District School Board c/o Wilson Diaz Architects Inc.**
Project: **Drainage, Pavement, & Portable Buildings at Christ the King**
Location: **227 Thomas Avenue, Wallaceburg, ON**

EQUIPMENT DATA
Machine: **Diedrich D50 Truck**
Method: **115 mm I.D. S/S Auger**
Size: **115 mm O.D.**
Date: **2018-11-23** TO **2018-11-23**

## SOIL LITHOLOGY

| EL/DPT (m) | DESCRIPTION (DMT) | DEPTH (m) | SYMBOL | SAMP ID | TYPE | N-VALUE |
|---|---|---|---|---|---|---|
| 0.15 / 176.80 | **ASPHALT** | | | | | |
| 0.31 / 176.64 | **TOPSOIL** - black organic clay | | | | | |
| | **SAND** - fine | | | | | |
| 0.58 / 176.37 | brown loose | 0.5 | | 0.5 | SPT | 7 |
| | **CLAYEY SAND** - with fine sand lenses and seams | | | | | |
| | mottled brown-grey compact | 1.0 | | 2.5 | SPT | 10 |
| | loose | 1.5 | | 5.0 | SPT | 6 |
| 2.30 / 174.65 | **SILTY CLAY (CL-ML)** with embedded sand | 2.0 | | | | |
| | stiff brown | 2.5 | | 7.5 | SPT | 8 |
| | very stiff | 3.0 | | 10.0 | SPT | 17 |
| 3.50 / 173.45 | End of the hole | 3.5 | | | | |

SHEAR STR.(kPa)
DILATOMETER: Su ● M(bars) ▼
FIELD VANE: Peak × Rem. ⊗
LAB TEST: Unc. ■ P.P. □
50 100 150
PENETR. RESISTANCE DMT Phi(◆) ◆
STANDARD ● DYN.CONE ○
20 40 60
120
180

BULK UNIT WGHT (kN/m3)

WATER CONTENT (%)
Wp W Wl
10 20 30

WELL DATA

ELEV. (m)
176
175
174
173
172
171

REMARKS & GRAIN SIZE DISTRIBUTION %
GR SA SI CL

water level at 0.81m on 2018-11-29

Testhole open and dry upon completion

CTMET 18G085.GPJ BETA.TOM.20190801.GDT 20-4-15

REVIEWING PROFESSIONAL:
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JOB No: **18G085**

TESTHOLE No. **6**

Dwg. No.: 8
Sheet 1 of 1

C.T. SOIL & MATERIALS TESTING INC.
WINDSOR ONTARIO

Client: **St. Clair District School Board c/o Wilson Diaz Architects Inc.**
Project: **Drainage, Pavement, & Portable Buildings at Christ the King**
Location: **227 Thomas Avenue, Wallaceburg, ON**

EQUIPMENT DATA
Machine: **Diedrich D50 Truck**
Method: **83 mm I.D. H/S Auger**
Size: **165 mm O.D.**
Date: **2018-11-23** TO **2018-11-23**

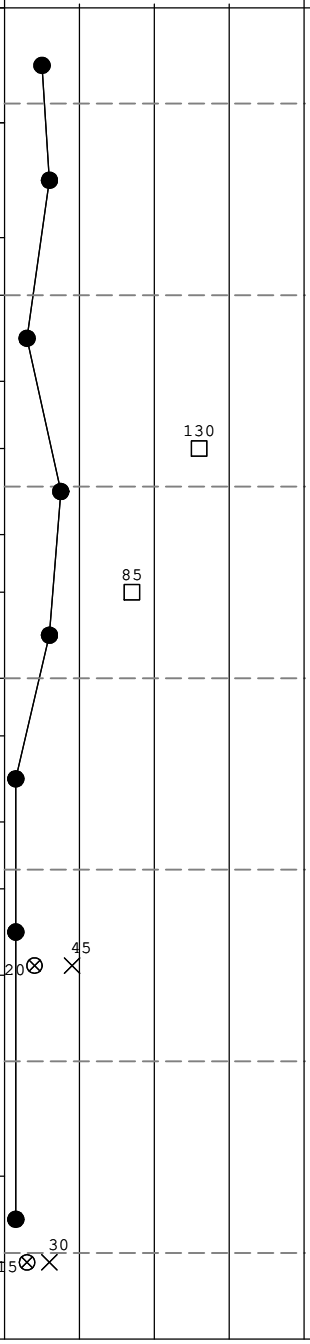
## SOIL LITHOLOGY

| EL/DPT (m) | DESCRIPTION (DMT) | DEPTH (m) | SYMBOL |
|---|---|---|---|
| 0.20 / 176.30 | **TOPSOIL** - black organic clay | | |
| | **CLAYEY SAND** - with fine sand lenses and seams | | |
| | mottled brown-grey | | |
| | stiff | 1.5 | |
| | firm | 2.0 | |
| 2.30 / 174.20 | **SILTY CLAY (CL-ML)** - with embedded sand and gravel | | |
| | brown | | |
| | stiff | 3.0 | |
| | grey | 4.0 | |
| | firm to soft | 4.5 | |
| 6.55 / 169.95 | End of the hole | 6.5 | |

Ground Elev: **176.50** m

| SAMP ID | TYPE | N-VALUE |
|---|---|---|
| 0.0 | SPT | 10 |
| 2.0 | SPT | 12 |
| 5.0 | SPT | 6 |
| 7.5 | SPT | 15 |
| 10.0 | SPT | 12 |
| 12.5 | SPT | 3 |
| 15.0 | SPT | 3 |
| 20.0 | SPT | 3 |

SHEAR STR.(kPa)
DILATOMETER: Su ● M(bars) ▼
FIELD VANE: Peak × Rem. ⊗
LAB TEST: Unc. ■ P.P. □
PENETR. RESISTANCE DMT Phi(◆) ◆
STANDARD ● DYN.CONE ○




BULK UNIT WGHT (kN/m3)

WATER CONTENT (%)
Wp W Wl
10 20 30

WELL: No Well DATA

ELEV. (m): 176, 175, 174, 173, 172, 171, 170

REMARKS & GRAIN SIZE DISTRIBUTION %
GR SA SI CL

Water level at 1 m 2.5h after completion

Water level at 5.1 m upon completion

REVIEWING PROFESSIONAL:
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JOB No: **18G085**

TESTHOLE No. **7-MW**

Dwg. No.: 9
Sheet 1 of 1

C.T. SOIL & MATERIALS TESTING INC.
WINDSOR ONTARIO

Client: **St. Clair District School Board c/o Wilson Diaz Architects Inc.**
Project: **Drainage, Pavement, & Portable Buildings at Christ the King**
Location: **227 Thomas Avenue, Wallaceburg, ON**

EQUIPMENT DATA
Machine: **CME 55**
Method: **115 mm I.D. S/S Auger**
Size: **115 mm O.D.**
Date: **2018-11-23** TO **2018-11-23**

## SOIL LITHOLOGY

DESCRIPTION *DMT*
Ground Elev: **176.45** m

| EL/DPT (m) | DESCRIPTION | DEPTH (m) |
|---|---|---|
| 0.25 / 176.20 | **TOPSOIL** - black organic clay | |
| | **SILTY CLAY (CL-ML)** - with embedded sand and gravel | |
| | stiff | 0.5 |
| | firm | 1.0 |
| | mottled brown-grey | |
| | | 1.5 |
| | | 2.0 |
| | brown | 2.5 |
| | very stiff | 3.0 |
| 3.50 / 172.95 | End of the hole | 3.5 |
| | | 4.5 |

SAMPLE

| SAMP ID | TYPE | N-VALUE |
|---|---|---|
| 0.0 | SPT | 11 |
| 2.0 | SPT | 8 |
| 5.0 | SPT | 6 |
| 7.5 | SPT | 18 |
| 10.0 | SPT | 16 |

SHEAR STR.(kPa)
DILATOMETER: Su● M(bars)▼
FIELD VANE: Peak × Rem. ⊗
LAB TEST: Unc. ■ P.P. □
50 100 150
PENETR. RESISTANCE DMT Phi(◆) ◆
STANDARD ● DYN.CONE ○
20 40 60
70
25
25
120
145

BULK UNIT WGHT (kN/m3)

WATER CONTENT (%)
Wp W Wl
10 20 30

WELL DATA

| ELEV. (m) |
|---|
| 176 |
| 175 |
| 174 |
| 173 |
| 172 |

REMARKS & GRAIN SIZE DISTRIBUTION %
GR SA SI CL

Water level at 0.22m on 2018-11-29

Water level at 0.6m upon completion

REVIEWING PROFESSIONAL:
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JOB No: **18G085**

TESTHOLE No. **8-MW**

Dwg. No.: 10
Sheet 1 of 1

C.T. SOIL & MATERIALS TESTING INC.
WINDSOR ONTARIO

Client: **St. Clair District School Board c/o Wilson Diaz Architects Inc.**
Project: **Drainage, Pavement, & Portable Buildings at Christ the King**
Location: **227 Thomas Avenue, Wallaceburg, ON**

EQUIPMENT DATA
Machine: **CME 55**
Method: **115 mm I.D. S/S Auger**
Size: **115 mm O.D.**
Date: **2018-11-23** TO **2018-11-23**

## SOIL LITHOLOGY

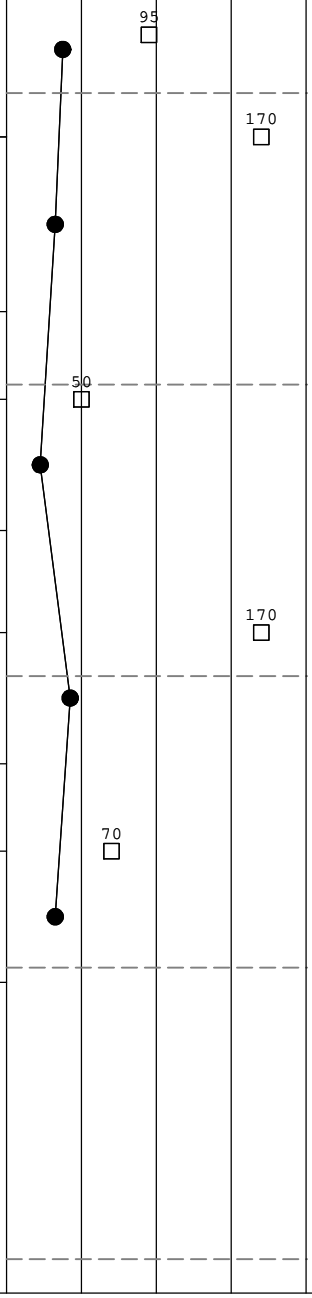
DESCRIPTION *DMT*
Ground Elev: **176.45** m

| EL/DPT (m) | DESCRIPTION | DEPTH (m) |
|---|---|---|
| 0.25 / 176.20 | **TOPSOIL** - black organic clay | |
| | **SILTY CLAY (CL-ML)** - with embedded sand and gravel | |
| | stiff | 0.5 |
| | mottled brown-grey | 1.0 |
| | | 1.5 |
| | | 2.0 |
| | very stiff | 2.5 |
| | brown | |
| | | 3.0 |
| | stiff | |
| 3.50 / 172.95 | End of the testhole | 3.5 |
| | | 4.0 |
| | | 4.5 |

SAMPLE

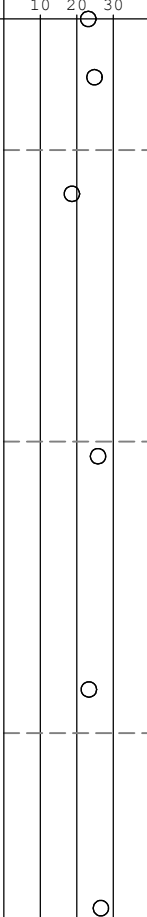
| SAMP ID | TYPE | N-VALUE |
|---|---|---|
| 0.0 | SPT | 15 |
| 2.0 | SPT | 13 |
| 5.0 | SPT | 9 |
| 7.5 | SPT | 17 |
| 10.0 | SPT | 13 |

SHEAR STR.(kPa)
DILATOMETER: Su● M(bars)▼
FIELD VANE: Peak × Rem. ⊗
LAB TEST: Unc. ■ P.P. □
50 100 150
PENETR. RESISTANCE DMT Phi(◆) ◆
STANDARD ● DYN.CONE ○
20 40 60

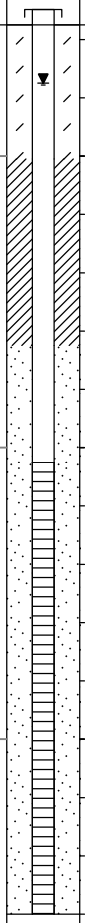



BULK UNIT WGHT (kN/m3)

WATER CONTENT (%)
Wp W Wl
10 20 30



WELL DATA



ELEV. (m)
176
175
174
173
172

REMARKS & GRAIN SIZE DISTRIBUTION %
GR SA SI CL

Water level at 0.2m on 2018-11-29

Testhole open and dry upon completion

REVIEWING PROFESSIONAL:
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JOB No: **18G085**

TESTHOLE No. **9**

Dwg. No.: 11
Sheet 1 of 1

C.T. SOIL & MATERIALS TESTING INC.
WINDSOR ONTARIO

Client: **St. Clair District School Board c/o Wilson Diaz Architects Inc.**
Project: **Drainage, Pavement, & Portable Buildings at Christ the King**
Location: **227 Thomas Avenue, Wallaceburg, ON**

EQUIPMENT DATA
Machine: **CME 55**
Method: **115 mm I.D. S/S Auger**
Size: **115 mm O.D.**
Date: **2018-11-23** TO **2018-11-23**

## SOIL LITHOLOGY

| EL/DPT (m) | DESCRIPTION (DMT) | DEPTH (m) | SYMBOL |
|---|---|---|---|
| | Ground Elev: **176.40** m | | |
| | **TOPSOIL** - black organic clay | | |
| 0.25 / 176.15 | **SILTY CLAY (CL-ML)** with embedded sand and gravel | | |
| | mottled brown-grey | 0.5 | |
| | firm | 1.0 | |
| | | 1.5 | |
| | | 2.0 | |
| | stiff | 2.5 | |
| | | 3.0 | |
| | brown | | |
| 3.50 / 172.90 | End of the hole | 3.5 | |
| | | 4.0 | |
| | | 4.5 | |

## SAMPLE

| SAMP ID | TYPE | N-VALUE |
|---|---|---|
| 0.0 | SPT | 10 |
| 2.0 | SPT | 7 |
| 5.0 | SPT | 8 |
| 7.5 | SPT | 16 |
| 10.0 | SPT | 11 |

SHEAR STR.(kPa)
DILATOMETER: Su● M(bars)▼
FIELD VANE: Peak × Rem. ⊗
LAB TEST: Unc. ■ P.P. □
50 100 150
PENETR. RESISTANCE DMT Phi(◆) ◆
STANDARD ● DYN.CONE ○
20 40 60

70 □
95 □
50 □
170 □
95 □

BULK UNIT WGHT (kN/m3)

WATER CONTENT (%)
Wp W Wl
10 20 30

WELL: No Well DATA

Water level at 2.1m upon completion

| ELEV. (m) | REMARKS & GRAIN SIZE DISTRIBUTION % GR SA SI CL |
|---|---|
| 176 | |
| 175 | |
| 174 | |
| 173 | |
| 172 | |

REVIEWING PROFESSIONAL:
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JOB No: **18G085**

TESTHOLE No. **10**

Dwg. No.: 12
Sheet 1 of 1

C.T. SOIL & MATERIALS TESTING INC.
WINDSOR ONTARIO

Client: **St. Clair District School Board c/o Wilson Diaz Architects Inc.**
Project: **Drainage, Pavement, & Portable Buildings at Christ the King**
Location: **227 Thomas Avenue, Wallaceburg, ON**

EQUIPMENT DATA
Machine: **CME 55**
Method: **115 mm I.D. S/S Auger**
Size: **115 mm O.D.**
Date: **2018-11-23** TO **2018-11-23**

## SOIL LITHOLOGY

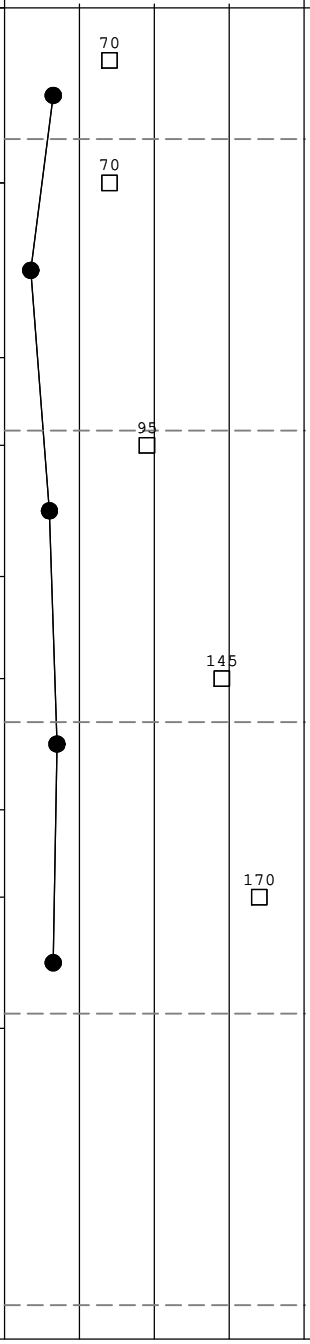
DESCRIPTION *DMT*
Ground Elev: **176.45** m

| EL/DPT (m) | DESCRIPTION | DEPTH (m) |
|---|---|---|
| 0.18 / 176.27 | **TOPSOIL** - black organic clay | |
| | **SILTY CLAY (CL-ML)** - with embedded sand and gravel | |
| | mottled brown-grey | |
| | firm | 1.5 |
| | brown | |
| | stiff | |
| 3.50 / 172.95 | End of the hole | 3.5 |

SAMPLE

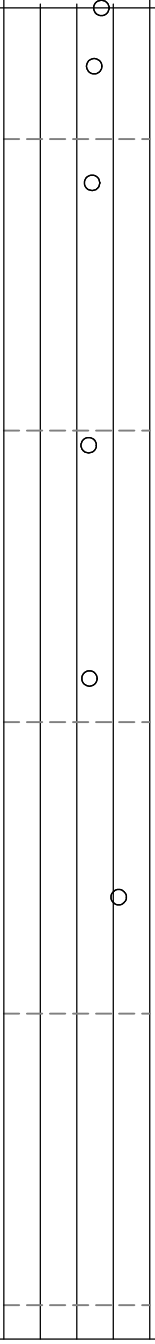
| SAMP ID | TYPE | N-VALUE |
|---|---|---|
| 0.0 | SPT | 13 |
| 2.0 | SPT | 7 |
| 5.0 | SPT | 12 |
| 7.5 | SPT | 14 |
| 10.0 | SPT | 13 |

SHEAR STR.(kPa)
DILATOMETER: Su● M(bars)▼
FIELD VANE: Peak × Rem. ⊗
LAB TEST: Unc. ■ P.P. □
PENETR. RESISTANCE DMT Phi(◆) ◆
STANDARD ● DYN.CONE ○




BULK UNIT WGHT (kN/m3)

WATER CONTENT (%)
Wp W Wl



WELL: No Well DATA

| ELEV. (m) |
|---|
| 176 |
| 175 |
| 174 |
| 173 |
| 172 |

REMARKS & GRAIN SIZE DISTRIBUTION %
GR SA SI CL

Water level at 0.6 m 1h after completion

Water level at 1m upon completion

REVIEWING PROFESSIONAL:
**T. O'Dwyer, P.Eng., P.E.**
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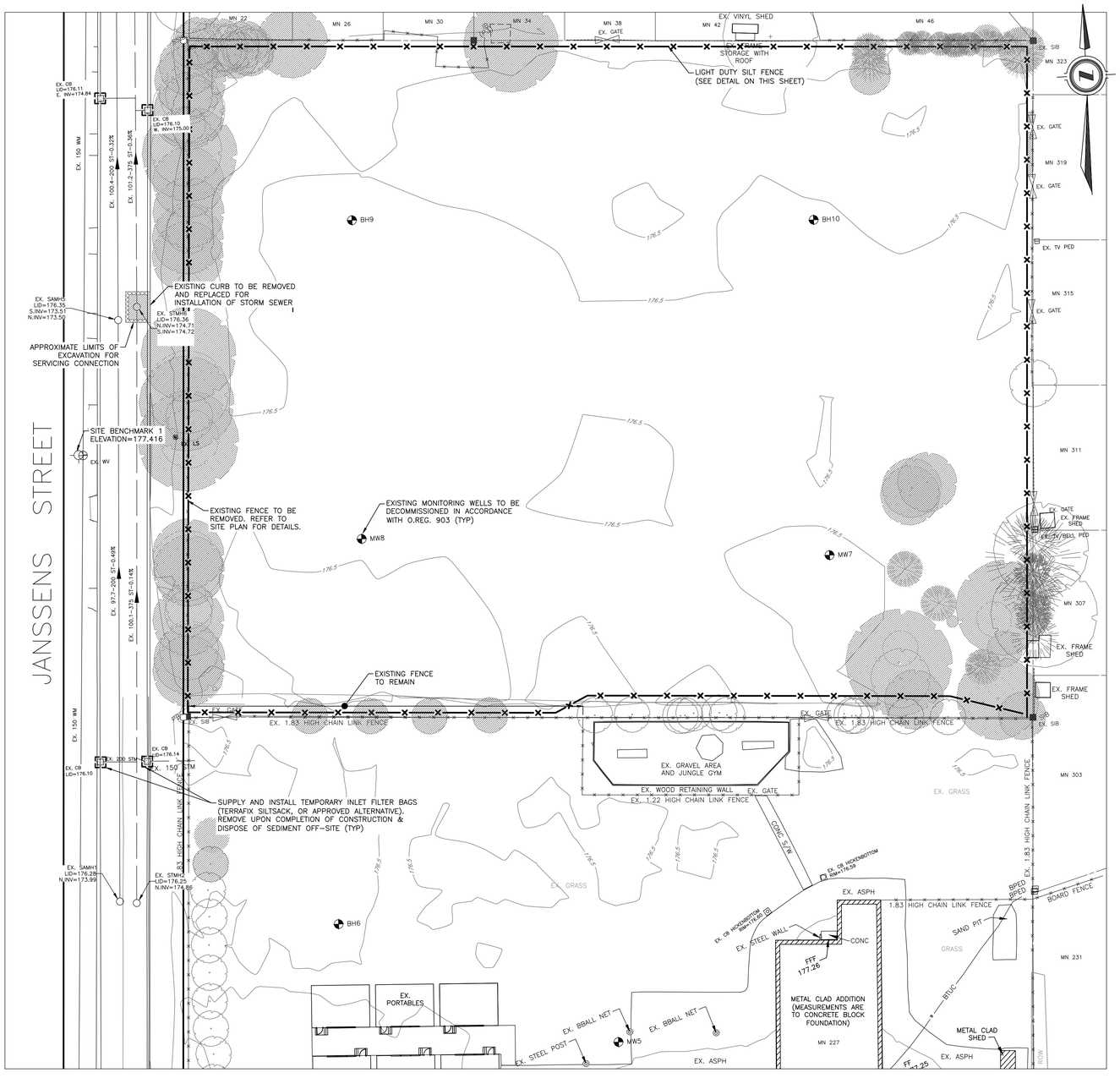



## LEGEND

- EX. STMH — EXISTING STORM MANHOLE
- EX. SANMH — EXISTING SANITARY MANHOLE
- EX. CBMH — EXISTING CATCHBASIN MANHOLE
- EX. CB — EXISTING CATCHBASIN
- EX. 50.0–200 SAN–1.0% — EXISTING SANITARY SEWER
- EX. 50.0–600 ST–0.5% — EXISTING STORM SEWER
- EX. FH — EXISTING HYDRANT
- EX. WV — EXISTING WATER VALVE
- EX. 150ø WM — EXISTING WATERMAIN
- EXISTING FENCE
- EX. TV PED — EXISTING TV PEDESTAL
- TV — TV — EXISTING TV CABLE
- EX. GM — EXISTING GAS METER
- EX. GV — EXISTING GAS VALVE
- G — G — EXISTING GAS MAIN
- EX. BP — EXISTING BELL POLE
- EX. B.PED — EXISTING BELL PEDESTAL
- EX. B.MH — EXISTING BELL MANHOLE
- B — B — EXISTING BELL CABLE
- EX. HMH — EXISTING HYDRO MANHOLE
- H — EXISTING HYDRO
- J.B. — EXISTING JUNCTION BOX
- EX. HP/LS — EXISTING HYDRO POLE/LIGHT STANDARD
- EX. HP — EXISTING HYDRO POLE

- EXISTING CONIFEROUS TREE
- EXISTING DECIDUOUS TREE
- EXISTING HEDGE
- EXISTING SHRUB
- EXISTING TREE STUMP
- EXISTING CONIFEROUS TREE, DECIDUOUS TREE, HEDGE, OR SHRUB IDENTIFIED FOR POSSIBLE REMOVAL. REFER TO SITE PLAN BY WILSON DIAZ ARCHITECTS INC. FOR REMOVALS AND DETAILS
- LIGHT DUTY SILT FENCING
- EXISTING ASPHALT OR CONCRETE SIDEWALK TO BE REMOVED
- ASPHALT MILLING
- EXISTING CONCRETE CURB TO BE REMOVED
- PROPOSED CONSTRUCTION MUD MAT
- DENOTES TERRAFIX SILTSACK (OR APPROVED ALTERNATE)

## SITE PREPARATION NOTES

1. The Owner's Contractor shall take precautions to avoid damage to existing servicing and surfaces not designated for removal. Any damage shall be repaired and restoration completed at the expense of the Owner's Contractor.
2. Topographical information, existing utility and service locations shown on the plan are derived (in part) from the field survey information collected by others and record information provided by the Owner, the Municipality, and Utility companies. The Owner's Contractor shall field locate all services prior to construction.
3. Prior to initiating site works, the Owner's Contractor shall obtain locates for all existing underground utilities within the area of construction. The Owner's Contractor shall be responsible for the cost of repair or replacement of any utilities damaged or disturbed during construction, and shall immediately contact the appropriate utility owner upon such occurrence.
4. Where utility crossings are required, the Owner's Contractor shall undertake appropriate measures for the temporary support of such utilities in accordance with the requirements of the utility owner until such time as backfilling and compaction are complete.
5. Prior to construction, the Owner's Contractor shall check and verify all site benchmarks, elevations, service inverts, grades, and dimensions and immediately report any discrepancies to the Engineer.
6. Prior to construction, an approved set of plans and specifications shall be available on the job site and shall remain on–site for the duration of construction. The Owner's Contractor shall verify with the Contract Administrator that the most current drawings are in circulation.
7. The Owner's Contractor shall be responsible for protection of all survey markers and monuments during construction. Any legal survey monuments which are disturbed during construction shall be replaced at the expense of the Owner's Contractor.
8. All works shall be undertaken in accordance with current Occupational Health and Safety Act requirements.
9. Prior to undertaking on–site earth works, the Owner's Contractor shall install all sediment controls relevant to the area of site disturbance.
10. The Owner's Contractor shall be responsible for regular monitoring and cleanup of tracked mud/debris on adjacent lands and public roads to the satisfaction of the Engineer and Municipality.
11. All excavations shall be backfilled to the surrounding subgrade elevation with suitable select mineral soil or compacted granulars, of suitable moisture content, as approved by the Geotechnical Engineer. Such backfill material shall be placed in lifts not exceeding 300mm thickness and compacted to 98% SPMDD as engineered fill to the satisfaction of the Geotechnical Engineer.
12. Existing surfaces within the Road Allowance that are disturbed during construction shall be restored to a condition at least as good as conditions prior to construction, to the satisfaction of the Municipality, all at no cost to the Owner.
13. The Owner's Contractor shall take all reasonable measures to avoid mixing topsoil with subsoil where required for reuse on–site.
14. All substitutions are subject to review by the Engineer.

## SEDIMENT AND EROSION CONTROL NOTES

1. Protect all exposed surfaces and control all runoff during construction.
2. All erosion control measures to be in place before starting construction and remain in place until restoration is complete.
3. Maintain erosion control measures during construction.
4. All collected sediment to be disposed of at an approved location.
5. Minimize area disturbed during construction. All dewatering to be disposed of in an approved sedimentation basin.
6. Protect all catchbasins, manholes and pipe ends from sediment intrusion with geotextile (Terrafix 270R or approved equivalent).
7. Keep all sumps clean during construction.
8. Prevent wind–blown dust.
9. Straw bales to be used in localized areas as shown and as directed by the Engineer during construction.
10. Straw bales to be terminated by rounding bales to contain and filter runoff.
11. Obtain approval from LTVCA before construction for works which are in, or adjacent to floodlines, fill lines and hazardous slopes.
12. All silt fencing and details are at the minimum to be constructed in accordance with the Ministry of Natural Resources Guidelines on Erosion and Sediment Control for Urban Construction Sites.
13. All of the above notes and any sediment and erosion control measures are at a minimum to be in accordance the Ministry of Natural Resources Guidelines on Erosion and Sediment Control for Urban Construction Sites.

## SITE BENCHMARKS:

BENCHMARK #1 – TOP OF SPINDLE HYDRANT ON WEST SIDE OF JANSSENS STREET AT MN. 229.
**ELEVATION=177.416m**

BENCHMARK #2 – TOP OF SPINDLE HYDRANT ON NORTH SIDE OF THOMAS AVENUE ACROSS FROM MN. 208 IN FRONT OF SCHOOL.
**ELEVATION=177.340m (NOT SHOWN ON PLAN)**

BOULEVARD AREAS SHALL BE RESTORED WITH 150mm TOPSOIL AND SOD.

REF. GEOTECHNICAL REPORT REF.:18G085 REV:00 BY SOIL & MATERIALS ENGINEERING INC, DATED APRIL 15, 2020

TOPOGRAPHICAL INFORMATION AND SITE BENCHMARK AS PROVIDED BY DEVELOPMENT ENGINEERING (LONDON) LIMITED

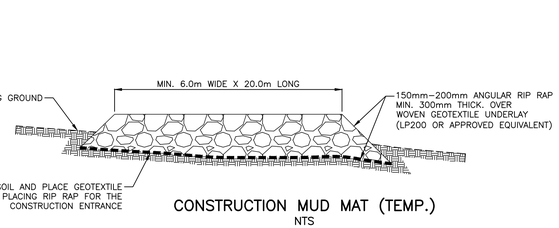
THIS SITE PREPARATION PLAN HAS BEEN PREPARED TO IDENTIFY REMOVALS, EROSION & SEDIMENT CONTROL MEASURES & TEMPORARY CONSTRUCTION WORKS FOR THE BENEFIT OF THE OWNER'S CONTRACTOR IN ADVANCE OF SERVICING WORKS. IT IS NOT INTENDED TO IDENTIFY PERMANENT GRADING PATTERNS.

PRIOR TO CONSTRUCTION THE OWNER'S CONTRACTOR SHALL OBTAIN LOCATES FOR, EXPOSE AND CONFIRM LOCATION OF ALL EXISTING UNDERGROUND UTILITIES WITHIN THE LIMIT OF CONSTRUCTION. OWNER'S CONTRACTOR SHALL SUPPORT EXISTING UNDERGROUND UTILITIES AS REQUIRED.

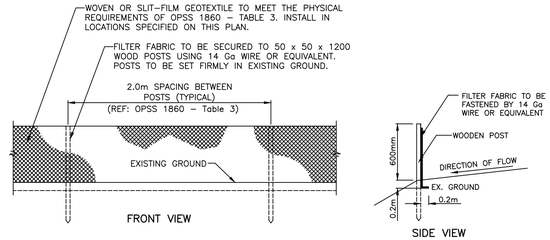
SEDIMENT AND EROSION CONTROL MEASURES MAY ONLY BE REMOVED UPON STABILIZATION OF CONTRIBUTING CATCHMENT AREA AND SUBJECT TO APPROVAL OF ENGINEER AND MUNICIPALITY OF CHATHAM–KENT.

OWNER'S CONTRACTOR SHALL BE RESPONSIBLE FOR REGULAR MONITORING AND CLEANUP OF TRACKED MUD/DEBRIS ON ADJACENT LANDS AND PUBLIC ROADS TO THE SATISFACTION OF THE ENGINEER AND MUNICIPALITY.

THE OWNER'S CONTRACTOR SHALL CONSTRUCT A TEMPORARY MUD MAT FOR CONSTRUCTION ACCESS. LOCATION TO BE DETERMINED BY OWNER'S CONTRACTOR AS REQUIRED FOR CONSTRUCTION. OWNER'S CONTRACTOR SHALL MAINTAIN MUD MAT THROUGHOUT CONSTRUCTION AND REMOVE CONSTRUCTION ACCESS AND MUDMAT WHEN TEMPORARY CONSTRUCTION ACCESS IS NO LONGER REQUIRED. REFER TO DETAIL ON THIS SHEET.




CONSTRUCTION MUD MAT (TEMP.)
NTS




LIGHT–DUTY SILT FENCE
(REF: OPSD 219.11)
NTS

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Paris Office
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(519) 442-1441

development engineering (London) Limited
CONSULTING CIVIL ENGINEERS

| DATE MM/DD/YYYY | DESCRIPTION | No. |
|---|---|---|
| 09/03/2020 | ISSUED FOR ADDENDUM #1 | 2 |
| 08/20/2020 | ISSUED FOR TENDER | 1 |

LICENSED PROFESSIONAL ENGINEER
P. J. BAKKER
100224635
Sep. 03/20
PROVINCE OF ONTARIO

PROJECT TITLE:
CHRIST THE KING CATHOLIC SCHOOL SITE IMPROVEMENTS

DRAWING TITLE:
EXISTING CONDITIONS AND SITE PREPARATION PLAN

| DATE PLOTTED: | DRAWN: | DRAWING No. |
|---|---|---|
| 08/20/2020 | RP | SE1 |
| SCALE: 1:400 | CHECKED: PJB | |
| PROJECT No. DEL19-061 | | |

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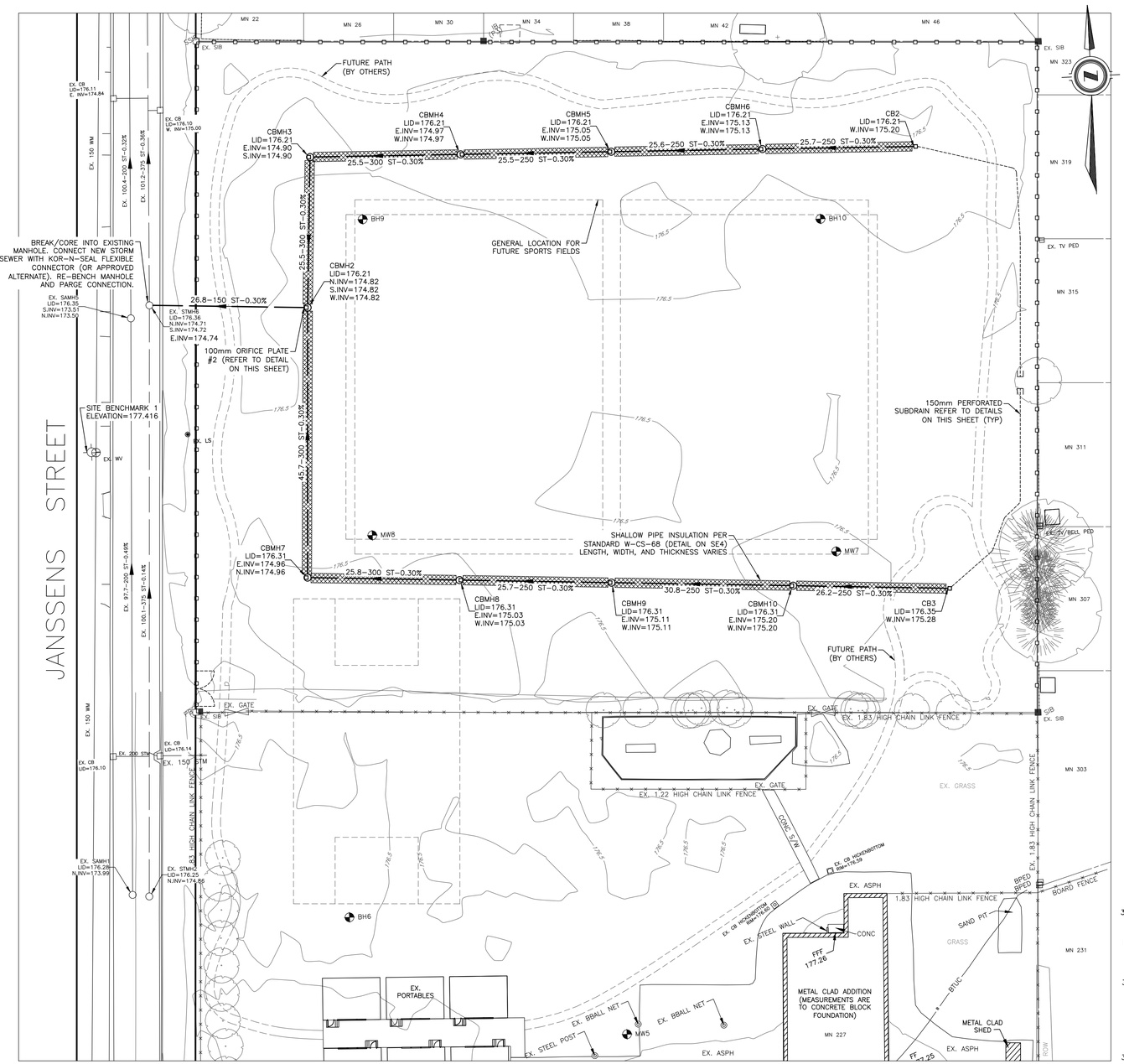



## LEGEND

- EX. STMH — EXISTING STORM MANHOLE
- EX. SANMH — EXISTING SANITARY MANHOLE
- EX. CBMH — EXISTING CATCHBASIN MANHOLE
- EX. CB — EXISTING CATCHBASIN
- EX. 50.0-200 SAN -1.0% — EXISTING SANITARY SEWER
- EX. 50.0-600 ST-0.5% — EXISTING STORM SEWER
- EX. FH — EXISTING HYDRANT
- EX. WV — EXISTING WATER VALVE
- EX. 150ø WM — EXISTING WATERMAIN
- EXISTING FENCE
- EX. TV PED — EXISTING TV PEDESTAL
- TV — EXISTING TV CABLE
- EX. GM — EXISTING GAS METER
- EX. GV — EXISTING GAS VALVE
- G — EXISTING GAS MAIN
- EX. BP — EXISTING BELL POLE
- EX. B.PED — EXISTING BELL PEDESTAL
- EX. B.MH — EXISTING BELL MANHOLE
- B — EXISTING BELL CABLE
- EX. HMH — EXISTING HYDRO MANHOLE
- H — EXISTING HYDRO
- J.B. — EXISTING JUNCTION BOX
- EX. HP/LS — EXISTING HYDRO POLE/LIGHT STANDARD
- EX. HP — EXISTING HYDRO POLE
- CBMH1 — PROPOSED CATCHBASIN MANHOLE
- CB1 — PROPOSED STANDARD CATCHBASIN
- 50.0-600 ST-0.5% — PROPOSED STORM SEWER
- PROPOSED SHALLOW PIPE INSULATION
- FUTURE ASPHALT PATH (BY OTHERS)

## SITE BENCHMARKS:

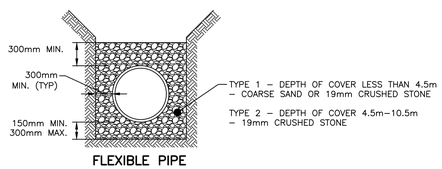
BENCHMARK #1 – TOP OF SPINDLE HYDRANT ON WEST SIDE OF JANSSENS STREET AT MN. 229.
**ELEVATION=177.416m**

BENCHMARK #2 – TOP OF SPINDLE HYDRANT ON NORTH SIDE OF THOMAS AVENUE ACROSS FROM MN. 208 IN FRONT OF SCHOOL.
**ELEVATION=177.340m (NOT SHOWN ON PLAN)**

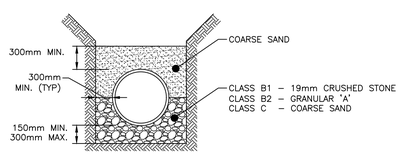
BOULEVARD AREAS SHALL BE RESTORED WITH 150mm TOPSOIL AND SOD.

REF. GEOTECHNICAL REPORT REF.:18G085 REV:00 BY SOIL & MATERIALS ENGINEERING INC, DATED APRIL 15, 2020

TOPOGRAPHICAL INFORMATION AND SITE BENCHMARK AS PROVIDED BY DEVELOPMENT ENGINEERING (LONDON) LIMITED



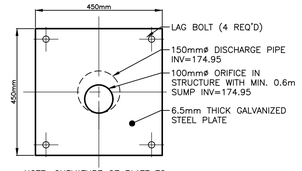

FLEXIBLE PIPE




RIGID PIPE

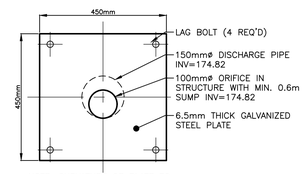
NOTES:
- PROPERLY CONSOLIDATED AND COMPACTED 19mm CRUSHED STONE BEDDING TO BE EXCLUSIVELY UTILIZED AS BEDDING MATERIAL WITHIN 5.0m OF ALL MANHOLES.
- FOR SERVICES BEDDED IN LOOSE, WET OR DILATANT SILTY/SANDY SUBSOILS, CRUSHED STONE BEDDING TO BE WRAPPED IN A GEOTEXTILE (TERRAFIX 270R OR APPROVED EQUIVALENT WITH MIN. 0.45m OVERLAP) AS DIRECTED BY THE GEOTECHNICAL ENGINEER.

**BEDDING STANDARD FOR GRAVITY AND PRESSURE PIPE**
NTS



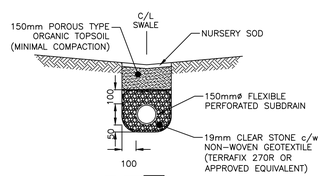

NOTE: CURVATURE OF PLATE TO MATCH CURVATURE OF MANHOLE

**ORIFICE PLATE #1**
1:10




NOTE: CURVATURE OF PLATE TO MATCH CURVATURE OF MANHOLE

**ORIFICE PLATE #2**
1:10




**TYPICAL PRIVATE SUBDRAIN INSTALLATION**
NTS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|---|---|---|
| 09/03/2020 | ISSUED FOR ADDENDUM #1 | 2 |
| 08/20/2020 | ISSUED FOR TENDER | 1 |

LICENSED PROFESSIONAL ENGINEER
P. J. BAKKER
100224635
SEP. 03/20
PROVINCE OF ONTARIO

PROJECT TITLE:
CHRIST THE KING CATHOLIC SCHOOL SITE IMPROVEMENTS

DRAWING TITLE:
SITE SERVICING PLAN

| DATE PLOTTED: | DRAWN: | DRAWING No. |
|---|---|---|
| 08/20/2020 | RP | SE2 |
| SCALE: 1:400 | CHECKED: PJB/JRS | |
| PROJECT No. DEL19-061 | | |

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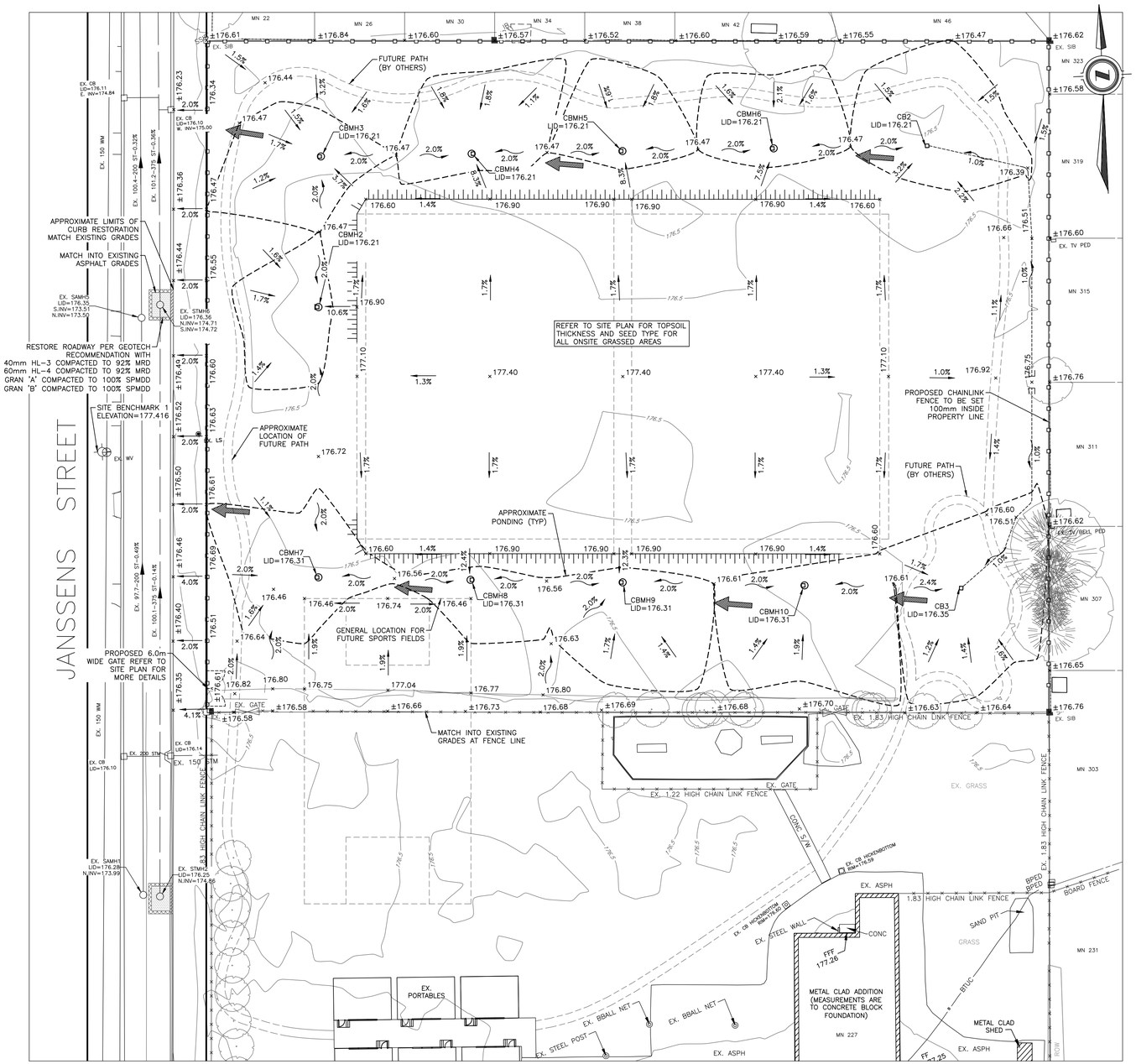
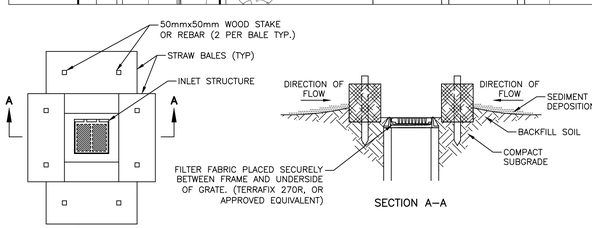
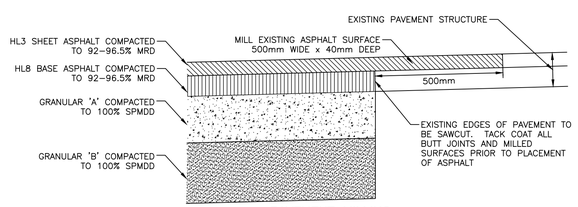



## CATCHBASIN STRAW BALE FILTER (TEMP.)
NTS




## PAVEMENT MILLING
N.T.S.

## LEGEND

- EX. STMH — EXISTING STORM MANHOLE
- EX. SANMH — EXISTING SANITARY MANHOLE
- EX. CBMH — EXISTING CATCHBASIN MANHOLE
- EX. CB — EXISTING CATCHBASIN
- EX. 50.0–200 SAN–1.0% — EXISTING SANITARY SEWER
- EX. 50.0–600 ST–0.5% — EXISTING STORM SEWER
- EX. FH — EXISTING HYDRANT
- EX. WV — EXISTING WATER VALVE
- EX. 150ø WM — EXISTING WATERMAIN
- EXISTING FENCE
- EX. TV PED — EXISTING TV PEDESTAL
- TV — EXISTING TV CABLE
- EX. GM — EXISTING GAS METER
- EX. GV — EXISTING GAS VALVE
- G — EXISTING GAS MAIN
- EX. BP — EXISTING BELL POLE
- EX. B-PED — EXISTING BELL PEDESTAL
- EX. B.MH — EXISTING BELL MANHOLE
- B — EXISTING BELL CABLE
- EX. HMH — EXISTING HYDRO MANHOLE
- H — EXISTING HYDRO
- EX. JB — EXISTING JUNCTION BOX
- EX. HP/LS — EXISTING HYDRO POLE/LIGHT STANDARD
- EX. HP — EXISTING HYDRO POLE
- CBMH1 — PROPOSED CATCHBASIN MANHOLE
- 255 — EXISTING GROUND CONTOUR
- 78.65× — EXISTING GROUND GRADE
- 78.65× — PROPOSED GRADE
- ±78.65× — EXISTING GRADE TO BE MATCHED
- PROPOSED SWALE
- OVERLAND FLOW DIRECTION
- 150mm PERFORATED SUBDRAIN
- PROPOSED CONCRETE SIDEWALK TO BE PLACED
- PROPOSED ASPHALT TO BE PLACED
- ASPHALT MILLING
- PROPOSED CHAINLINK FENCE (REFER TO SITE PLAN FOR DETAILS)

## SITE BENCHMARKS:

BENCHMARK #1 – TOP OF SPINDLE HYDRANT ON WEST SIDE OF JANSSENS STREET AT MN. 229.
**ELEVATION=177.416m**

BENCHMARK #2 – TOP OF SPINDLE HYDRANT ON NORTH SIDE OF THOMAS AVENUE ACROSS FROM MN. 208 IN FRONT OF SCHOOL.
**ELEVATION=177.340m (NOT SHOWN ON PLAN)**

BOULEVARD AREAS SHALL BE RESTORED WITH 150mm TOPSOIL AND SOD.

REF. GEOTECHNICAL REPORT REF.:18G085 REV:00 BY SOIL & MATERIALS ENGINEERING INC, DATED APRIL 15, 2020

TOPOGRAPHICAL INFORMATION AND SITE BENCHMARK AS PROVIDED BY DEVELOPMENT ENGINEERING (LONDON) LIMITED

PRIOR TO CONSTRUCTION THE OWNER'S CONTRACTOR SHALL OBTAIN LOCATES FOR, EXPOSE AND CONFIRM LOCATION OF ALL EXISTING UNDERGROUND UTILITIES WITHIN THE LIMIT OF CONSTRUCTION. OWNER'S CONTRACTOR SHALL SUPPORT EXISTING UNDERGROUND UTILITIES AS REQUIRED.

I HEREBY CERTIFY THAT THE PROPOSED GRADING AND APPURTENANT DRAINAGE WORKS COMPLY WITH SOUND ENGINEERING DESIGN AND THAT THE PROPOSED GRADING IS COMPATIBLE WITH APPLICABLE CITY BYLAWS AND THE EXISTING DRAINAGE PATTERNS ON AND ACROSS THESE LANDS.

## HARDSCAPE SURFACING (ROADS, CURBS, SIDEWALKS) NOTES

1. Material Conformance: Prior to import of materials to the work site, the Owner's Contractor shall make arrangements for the geotechnical analysis of Granular A and B materials to prove conformance with OPSS 1010. Asphalt mix designs shall be submitted to indicate conformance with OPSS 1150 and placement should be undertaken in accordance with OPSS 310. Concrete shall be placed in accordance with OPSS 353 and OPSS 1350.
2. All organic, unstable or unsuitable materials beneath the road allowances or paved areas must be removed and these areas backfilled with an approved fill material or OPSS Granular 'B' compacted to 98% SPMDD, all to the satisfaction of a Geotechnical Engineer.
3. All existing boulevards and road surfaces disturbed during construction shall be restored to a condition at least as good as original, all to the satisfaction of the Municipal Engineer.
4. All concrete to be OPS mix 30 MPa at 28 days unless otherwise noted.
5. Sidewalks shall be founded upon competent subgrade compacted to 98% SPMDD and minimum 100mm Granular 'A' compacted to 98% SPMDD.
6. All public right of way curb & gutter shall be constructed to match existing conditions unless otherwise specified.
7. Any proposed substitutions subject to approval by the Engineer.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| DATE MM/DD/YYYY | DESCRIPTION | No. |
|---|---|---|
| 09/03/2020 | ISSUED FOR ADDENDUM #1 | 2 |
| 08/20/2020 | ISSUED FOR TENDER | 1 |

LICENSED PROFESSIONAL ENGINEER
P. J. BAKKER
100224635
Sep. 03/20
PROVINCE OF ONTARIO

PROJECT TITLE:
# CHRIST THE KING CATHOLIC SCHOOL SITE IMPROVEMENTS

DRAWING TITLE:
## SITE GRADING PLAN

| DATE PLOTTED: | DRAWN: | DRAWING No. |
|---|---|---|
| 09/03/2020 | RP | SE3 |
| SCALE: 1:400 | CHECKED: PJB/JRS | |
| PROJECT No. DEL19-061 | | |

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## GENERAL CONSTRUCTION NOTES

1. All existing underground utilities, either shown or not shown, are to be located and marked prior to commencing construction within the site and on existing abutting road allowance. Any utilities damaged or disturbed during construction shall be repaired or replaced to the satisfaction of the governing body at the sole expense of the Owner's Contractor.
2. The Owner's Contractor is to meet all the requirements of the owners of the utilities on this plan, and must make satisfactory arrangements with the utility companies for crossing their installations and for providing adequate protection during construction. All existing underground plant (ie. telephone duct, gas mains, sewer, watermains) that will be crossed under during the installation of services for this development shall be supported by a support beam or by other methods as may be required by the Owners of the plant being crossed under. All temporary support measures required during the construction phase shall be the responsibility of the Owner's Contractor and independent engineering review/certifications shall be undertaken where necessary at no extra cost to the contract.
3. All existing boulevards and road surfaces disturbed during construction shall be restored to a condition at least as good as original (pre-construction condition), all to the satisfaction of the Municipal Engineer.
4. Prior to commencing ANY construction, the Owner's Contractor must verify all outlet information, benchmarks, elevations and dimensions and report any discrepancies immediately to the Engineer.
5. Prior to commencing any work on the installation of services, an approved set of plans must be available on the job site and shall remain there until work is completed.
6. The Owner's Contractor is responsible for the control of surface and subsurface water.
7. The Developer's Consulting Engineer shall provide full-time inspection and a Certificate of Compliance upon completion for all works to be constructed on existing Municipal streets.
8. The Developer shall have its Professional Engineer provide adequate inspection during construction on the site and a Certificate of Completion of works upon completion of all works which are to be assumed by the owner.
9. The Owner's Contractor shall take all necessary precautions to prevent the spilling or dumping of hazardous materials while fueling and maintaining vehicles and equipment.
10. If in the opinion of the Engineer a zone is contaminated through neglect and/or deliberate mishandling of toxic materials by the Owner's Contractor, the Owner's Contractor shall at no expense to the Owner excavate and dispose of all contaminated materials to an approved disposal site and provide soil remediation.
11. Existing servicing and topographic information was obtained by Development Engineering Dated May 14, 2020.
12. For geotechnical information and recommendations respecting construction, refer to geotechnical report by Soil & Materials Engineering INC.

## CONSTRUCTION NOTES FOR THE SERVICING CONTRACTOR

1. The Contractor shall take precautions to avoid damage to existing servicing and surfaces not designated for removal. Any damage shall be repaired and restoration completed at the expense of the Owner's Contractor.
2. Prior to initiating site works, the Owner's Contractor shall obtain locates for all existing underground utilities within the area of construction. The Owner's Contractor shall be responsible for the cost of repair or replacement of any utilities damaged or disturbed during construction, and shall immediately contact the appropriate utility owner upon such occurrence.
3. Where utility crossings are required, the Owner's Contractor shall undertake appropriate measures for the temporary support of such utilities in accordance with the requirements of the utility owner until such time as backfilling and compaction are complete.
4. Prior to construction, an approved set of plans and specifications shall be available on the job site and shall remain on-site for the duration of construction. The Owner's Contractor shall verify with the Contract Administrator that the most current drawings are in circulation.
5. The Owner's Contractor shall be responsible for protection of all survey markers and monuments during construction. Any legal survey monuments which are disturbed during construction shall be replaced at the expense of the Owner's Contractor.
6. All works shall be undertaken in accordance with current Occupational Health and Safety Act requirements.
7. Prior to undertaking on-site earth works, the Owner's Contractor shall install all sediment controls relevant to the area of site disturbance.
8. The Owner's Contractor shall be responsible for regular monitoring and cleanup of tracked mud/debris on adjacent lands and public roads to the satisfaction of the Engineer and Municipality.
9. The Owner's Contractor shall take all reasonable measures to avoid mixing topsoil with subsoil where required for reuse on-site.
10. On-site surface drainage shall be maintained by the Owner's Contractor at all times. Erosion and sediment controls shall be applied where necessary to prevent uncontrolled release of sediment off-site. Where excavation dewatering is necessary, pump discharge shall be directed to stable, vegetated areas or dedicated sediment traps (OPSD 219.24) to the satisfaction of the Engineer.
11. The Owner's Contractor shall maintain an operations log of erosion & sediment control structure inspections throughout the project, with particular emphasis on control measures after rainfall events of 12mm or greater. Periodic removal of accumulated sediment shall be undertaken as necessary or at the expressed direction of the Engineer. All collected sediment shall be disposed of at an approved location at no extra cost to the contract.
12. Unless otherwise noted on the plans, geotextile for erosion control measures shall be non-woven to meet class 1-OPSS 1860.07.02 (i.e. Terrafix 270R, or approved equivalent) with 300mm min. overlaps.
13. Topsoil windrows shall be constructed separately from subsoil stockpiles, and shall be located no closer than two (2) metres from any adjacent property boundary. Windrow Slopes shall generally be flatter than 3:1 (horizontal to vertical) and should generally not exceed 6 metres in height.
14. Sediment controls shall be implemented by the Owner's Contractor in localized areas, as warranted, during construction phases, upon the direction of the engineer. Control approaches should be adaptable to reflect variable site conditions and circumstances.
15. The Owner's Contractor shall prevent wind blown dust by periodic application of water.
16. All substitutions are subject to approval by the Engineer.

## EARTHWORKS NOTES AND GEOTECHNICAL CONSIDERATIONS

1. For geotechnical information and recommendations respecting construction, refer to geotechnical report prepared by Soil & Materials Engineering INC.
2. Refer to Architectural drawing A010 for additional specifications. Refer to specification 31 11 00 for clearing and grubbing, 31 22 19 for topsoil and finish grading, and 32 92 00 for seeding.
3. Subgrade preparation: Prior to placing the granular subbase or trench bedding material, existing topsoil and unsuitable fill material shall be removed from the building envelope, servicing corridors and pavement areas. It is recommended that the subgrade be proof-rolled with a heavy roller to compress the loose surface material. The need for localized subgrade improvement will be assessed by the on-site Geotechnical Engineer based upon encountered conditions. The native sand and silty subsoils may be considered suitable for reuse as backfill material subject to appropriate moisture conditioning. Any soil proposed for reuse should be within 3% of the optimum moisture and subject to approval by the Geotechnical Engineer. The backfill material should not be placed in lifts exceeding 300mm. Subgrade fill material (if required) between competent native subgrade and granular base shall be imported granular or select/approved inorganic native material (except wet sandy silt) compacted to 98% SPMDD with acceptable moisture content control to the satisfaction of the Geotechnical Engineer.
4. The Owner's Contractor shall be responsible for the excavation of unsuitable fill material above pregrade elevation from within the work zone and the disposal of all such excess material at no extra cost to the contract. A licensed hauler may be required to transport subsoil fill and construction debris from the site to an approved facility in accordance with O.Reg. 511. Testing may be undertaken by the Owner, but all costs associated with offsite disposal shall be borne by the Owner's Contractor.
5. Excavation of subsoil and fill material shall be undertaken by the Owner's Contractor to remove cobbles where necessary prior to onsite reuse.
6. Excavation into select areas may encounter Type 3 and 4 soils, as classed by the Occupational Health and Safety Act. The Owner's Contractor shall be responsible to manage and control all water (subsurface and surface) during the contract duration, and the measures used to enact such control, including all required permits/approvals (ie. PTTW or EASR) based upon selected control methods, at no extra cost to the contract.
7. Where control of groundwater may warrant the need to pump in excess of 50,000 Litres per day based upon selected control methods, the Owner's Contractor shall, at no extra cost to the contract, engage qualified professionals and Subcontractors as necessary to obtain a Permit to Take Water (PTTW) or Environmental Activity and Sector Registry (EASR), where dewatering is less than 400,000 Litres per day under normal conditions from MECP pursuant to sections 34 and 98 of the Ontario Water Resources Act further to full scale pump tests. Construction sequencing and methods will be expected to be undertaken in accordance with the Owner's Contractor's Water Control Plan.
8. Suitability of soil for reuse of select clean fill and native subsoil for compaction shall remain subject to the approval of the Geotechnical Engineer. As noted by the geotechnical investigation, blending and moisture conditioning may be warranted to prepare soils to within 3% of optimum moisture content to the satisfaction of the Geotechnical Engineer.
9. Where encountered groundwater conditions warrant, select sewer trenches shall be constructed with anti-seepage collars of select suitable subsoil or lean concrete fill to the satisfaction of the Geotechnical Engineer, at no extra cost to the contract.
10. Any structural/engineered fill placement shall be constructed by the Owner's Contractor under the full time supervision of the Geotechnical Engineer.
11. The decommissioning of groundwater monitoring wells shall be completed by a licensed well Technician pursuant to O.Reg. 903 as amended.

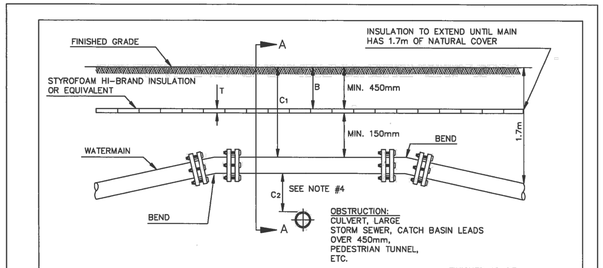
## SEWER (SERVICE) NOTES

1. All sewers and watermains are to be installed in accordance with the minimum requirements of the latest revision of the Ontario Provincial Standard Specifications, the Ontario Building Code and the Municipality of Chatham-Kent.
2. Unless labelled specifically on the plans, all sewer pipe shall be as follows:
   - Storm sewers 200mm to 450mm dia. with a depth of cover between 1.2m and 4.5m shall be PVC SDR 35 (CSA B182.2) or PVC ribbed (CSA B182.4)
   - Storm sewers 200mm to 450mm dia. with a depth of cover less than 1.2m or greater than 4.5m shall be PVC SDR 35 (CSA B182.2)
   - HDPE is not permissible for use unless specified otherwise

   The Owner's Contractor shall be responsible for protecting the pipe during construction in the event that protective cover depths are not met due to interim conditions.
3. Service bedding: Pipe bedding spec. per bedding detail. (Ref. sheet SE2).
   Localized base improvement may be required for services bedded in loose, wet or dilatant silty/sandy subsoils, subject to the recommendations of the Geotechnical Engineer. Such improvement could include overexcavation and recompaction or crushed stone bedding wrapped in a geotextile (terrafix 270R or approved equivalent with min. 0.45m overlap) as directed by the Geotechnical Engineer. Any trench water shall be removed when pipe laying is in progress.
   When B2 bedding is used for concrete pipe bedding, cover and bedding must be wrapped in a geotextile (Terrafix 270R or approved equivalent with min. 0.45m overlap).
4. Backfill for service trenches: Services shall be backfilled with select native material or reclaimed granulars that are, in the opinion of the Geotechnical Engineer, suitable as backfill material and compacted to 95% SPMDD. Select natural on-site excavated subsoil can be used as trench backfill, provided the material is within 3 percent of the optimum moisture content. Otherwise, backfill material shall be imported Granular "C" compacted to 95% SPMDD. Backfill must be clean and compactible and free from organics and other undesirable contaminants. Service trench backfill material shall be placed in uniform layers not exceeding 300 mm in thickness, loose measurement, for the full width of the trench, and each layer shall be compacted according to OPSS 501 before a subsequent layer is placed. Backfill material shall be placed to a minimum depth of 900 mm above the crown of the pipe before power operated tractors or rolling equipment shall be used for compacting.
5. All precast concrete structures shall be bedded and backfilled with OPSS granular 'A' material compacted to 98% SPMDD, unless geotechnical conditions warrant otherwise.
6. All precast storm and sanitary sewer manholes shall be constructed in accordance with the current Ontario Provincial Standards. Catchbasin manholes (CBMH) shall typically be 1200mm inside diameter precast concrete with 600mm square standard catchbasin frames and grates and 600mm sumps below the lowest invert unless otherwise noted on the plans. Catchbasins shall be 600mm square precast concrete with 600mm standard catchbasin frames and grates (OPSD) and 600mm sumps below the lowest invert.
7. Where adjacent manholes are located in close proximity to one another, the area between the adjacent manholes shall be backfilled in accordance with the specifications in the following table:

| Distance between Adjacent Manholes | Material |
|---|---|
| 0.60m or less | concrete or crushed stone |
| 0.60m to 2.4m | granular material |
| more than 2.4m | approved native material |

8. The above noted backfill shall be compacted to the standard Proctor density specified in the soils report, or as approved by the Municipal Engineer.
9. Perforated HDPE tubing (pressure class 210 kPa) with filter sock may be used for subdrains beneath landscaped areas. All exposed subdrain outlets (ie. not protected by precast structure) shall be protected with rodent grates, appropriately sized and grouted CSP outlet sleeves (OPSD 206.050) and rip rap protection (OPSD 810.010).
10. No connection of weeping tiles will be allowed to the sanitary sewer system. No gravity connection of weeping tiles to the storm sewer will be allowed unless the system has the capacity.
11. The Owner's Contractor is responsible for:
    (a) connecting any existing sewer or drain encountered during construction to a new sewer or into another existing sewer;
    (b) ensuring that there is no interruption of any surface or subsurface drainage flow that would adversely affect neighbouring properties or the safety of the construction site.
12. The Owner's Contractor shall construct temporary measures to control silt entering the storm drainage system. These measures are to remain in place until construction has been completed all to the specifications of the City Engineer. Geotextile and straw bale filters shall be installed around all existing and new CB's and CBMH's immediately upon installation in accordance with the detail. Straw bales are to remain in place until paving and/or sodding is complete.
13. The structural design of sewers is based upon the transition width unless otherwise noted.
14. All work shall be done in accordance with the minimum standards and specifications of the Municipality of Chatham-Kent including proper finishing off and parging of pipes in manholes and catchbasins and proper benching and manhole steps. Upon completion of sewer works, the Owner's Contractor is responsible for flushing and cleaning the sewers, manholes, catchbasin manholes and catchbasins and for successfully pulling a "PIG" mandrel through the flexible sewer pipes. The Owner's Contractor shall undertake suitable mandrel tests for installed flexible sewer pipes in accordance with OPSS 410, and full video inspection of all sewers per OPSS 409 to the satisfaction of the Engineer.
15. All sewers and watermains are to be installed in accordance with the minimum requirements of the latest revision of the Ontario Provincial Standard Specifications and the Municipality of Chatham-Kent Engineering Department. The Engineer will conduct periodic inspections to ensure that the proper standards are being met.
16. Any proposed substitutions are subject to approval by the Engineer.




ELEVATION OF JOINT DEFLECTION OFFSET

NOTES:

1. ALL DIMENSIONS ARE IN mm UNLESS SHOWN OTHERWISE.
2. MINIMUM COMPRESSIVE STRENGTH OF INSULATION TO BE 690kpa. INSULATION SHALL BE INSTALLED IN THICKNESS REQUIRED, IN STRICT ACCORDANCE WITH THE INSULATION MANUFACTURER'S DIRECTIONS. INSULATION SHALL BE INSTALLED OVER 150mm OF FINE GRANULAR FILL SCREEDED SMOOTH.

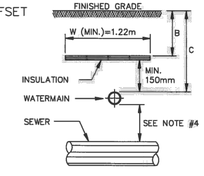
   BUTT INSULATION TIGHTLY TOGETHER WITHOUT GAPS, STAGGER END JOINTS IF MORE THAN ONE LAYER USED.

   TO HOLD IN PLACE, SKEWER INSULATION BOARD TO GROUND WITH 200mm HARDWOOD SKEWERS, MIN. 6mm DIA. AND 200mm LONG. 2 SKEWERS PER BOARD.

   IF 2 LAYERS OF INSULATION ARE USED, SKEWER ONLY THE TOP LAYER THROUGH THE FIRST LAYER USING A SKEWER 150mm LONGER THAN THE COMBINED THICKNESS OF THE 2 LAYERS OF INSULATION. INSERT SKEWERS AT APPROXIMATELY 30° ANGLE.

   PLACE AT LEAST 200mm OF FINE GRANULAR FILL OVER INSULATION BEFORE USING COMPACTION EQUIPMENT.
3. IF PIPE IS PVC, OFFSET MUST BE MADE USING W-CS-12 DETAIL.
4. MIN. CLEARANCE AS PER C OF L DESIGN SPECIFICATIONS 7.4.7.2. AND M.O.E. PROCEDURE F-6-1.
5. IT SHOULD BE NOTED THAT THIS DETAIL FOR INSULATION IS FOR PROTECTION FROM FREEZING. THIS DETAIL IS NOT TO BE USED FOR PROTECTION FROM HOT SOURCES SUCH AS LONDON DISTRICT ENERGY INFRASTRUCTURE.

SAME PROCEDURE WILL APPLY TO OFFSETS SHOWN ON DWG. W-CS-12




SECTION "A - A"

| INSULATION THICKNESS | | INSULATION WIDTH | |
|---|---|---|---|
| C(m) | T(mm) | B(m) | W(m) |
| 0.60 | 75 | 0.45 | 2.44 |
| 0.75 | 75 | 0.60 | 1.83 |
| 0.90 | 50 | 0.75 | 1.54 |
| 1.09 | 50 | 0.90 | 1.22 |
| 1.20 | 25 | | |
| 1.35 | 25 | | |
| 1.50 | 25 | | |

CITY OF LONDON STANDARD DRAWING

(PROTECTION FROM FREEZING)

INSULATION OF WATERMAINS AND OFFSETS

| DWG W-CS-68 | DATE 2015 10 29 | APPROVED BY CITY ENGINEER: for | NTS |
|---|---|---|---|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development engineering (London) Limited
CONSULTING CIVIL ENGINEERS


| DATE MM/DD/YYYY | DESCRIPTION | No. |
|---|---|---|
| 09/03/2020 | ISSUED FOR ADDENDUM #1 | 2 |
| 08/20/2020 | ISSUED FOR TENDER | 1 |

LICENSED PROFESSIONAL ENGINEER
P. J. BAKKER
100224635
Sep. 03/20
PROVINCE OF ONTARIO

PROJECT TITLE:
CHRIST THE KING CATHOLIC SCHOOL SITE IMPROVEMENTS

DRAWING TITLE:
NOTES AND DETAILS

| DATE PLOTTED: | DRAWN: | DRAWING No. |
|---|---|---|
| 08/20/2020 | RP | SE4 |
| SCALE: 1:400 | CHECKED: PJB/JRS | |
| PROJECT No. DEL19-061 | | |

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