



Our File: 100654

November 13, 2022

Mr. Sukhi Atwal

Email: realtorsukhiatwal@gmail.com

Dear Sir,

**Re: Preliminary Geotechnical Report Revision 1 - Proposed Residential Development
2690 Queensway, Prince George, BC**

1.0 Introduction

Evertek Engineering Ltd. (Evertek) was retained by Mr. Sukhi Atwal (Client) to conduct a preliminary geotechnical evaluation for the proposed residential development on a property located at 2690 Queensway in Prince George, BC (herein referred to as, "the property"). The purposes of this geotechnical evaluation were:

- To conduct a field review of the current site surface and subsurface conditions.
- To provide geotechnical comments on prefeasibility for the proposed residential development.

Preparation of this report is generally in accordance with the City of Prince George Bylaws and British Columbia Building Code 2018. Evertek has reviewed the environmental report titled "The Riparian Assessment for 2690 Queensway, Prince George (Version 2, November 2022)", prepared by LTN Environmental Consulting LP.

This report has been revised based on the City of Prince George's comments on November 7, 2022.

2.0 Site Location & Proposed Development

The legal description of the property is Block 28, District Lot 933, Plan 727, PID: 014-141-582. The size of the property is approximately 1.51 acres (6113.3 m²). The Property is currently zoned as C7: Transitional Commercial. Fraser River is located east, adjacent to the property. The property is generally flat except for the 15-20 m eastern section of the property that benches down to the Fraser River bank. There is a section 219 Covenant (PG9697) registered to the legal title of the property requiring a minimum 30 m building setback from the natural boundary of the Fraser River and a flood construction level (FCL) of at least 569.5 m. The site location plan is attached for reference (Figure 1).

Based on the preliminary site plan prepared by Bakerview Building Design and verbal communication with the client, it is Evertek's understanding that the proposed residential development includes two-storey apartment buildings with an internal road and parking areas. The preliminary site development plan is attached for reference (Figure 2).



3.0 Field Geotechnical Assessment

A field geotechnical investigation was conducted on August 24, 2022. An excavator was used to excavate six (6) test pits (TP22-01 to TP22-06) on the property to depths ranging from 1.5 m to 2.7 m below the existing grade. Approximate test pit locations are depicted on Figure 2, attached. Soil encountered in the test pits consisted of 0.15 m to 0.3 m thick surficial topsoil layer over loose to compact, moist, brown sand with trace to some silt. The sand layer thickness ranged from approximately 0.9 m to 1.8 m. Underlying the sand was compact to dense, moist, greyish brown sand and gravel with some cobbles. TP22-01 and TP22-02 were terminated in the sand layer at a depth of 1.5 m below existing grade while test pits TP22-03 to TP22-06 were terminated in the sand and gravel layer at a depth of 2.7 m below existing grade. No groundwater was observed upon completion of the test pit excavation. The detailed subsurface soil logs are attached for reference. It should be noted that the test pits indicate subsurface conditions encountered at the respective test pit locations only. The subsurface conditions may vary outside the test pit locations and below the depths explored.

Laboratory testing was completed by Metro Testing for selected soil samples in order to identify the moisture content and grain size distribution of the soil. The moisture content of the soil sample for the sand with some silt ranges from 5.1% to 19.0% while the sand and gravel have a moisture content ranging from 2.1% to 3.8%. The grain size distribution for soil samples were taken at test pits TP22-02 and TP22-04 at a depth of 1.5 m below the existing grade. The grain size distribution for test pit TP22-02 was 62.5% sand and 37.5% silt. The grain size distribution for test pit TP22-04 was 90.2% sand and 9.8% silt. The laboratory testing results are attached for reference.

4.0 Recommendations for the Proposed Development

Based on the desktop review and preliminary subsurface investigation, Evertek considered that the proposed residential development is feasible from a geotechnical perspective. Recommendation for the proposed development will be discussed in the following sections.

4.1 Site Preparation

In the proposed building and roadway areas the site must be cleared of any vegetation, fill, construction debris or any soft and wet soil to expose native competent sand subsoil. Evertek must review the sub-grade once the stripping is complete, in order to verify the conditions of soil found during the investigation and to provide additional recommendations, if required.

The proposed development is relatively flat. Therefore site grading for the proposed development is expected to be minimal. Where grades need to be raised using structural fill material, the fill should comprise of granular material approved by the geotechnical engineer. The structural fill should be well graded, with a maximum particle size of 75 mm, and contain no more than 5% passing the No 200 sieve. The structural fill materials should be placed horizontally in maximum 300 mm (12 inch) thick lifts within 2 percent of its optimum moisture content. Each lift should be uniformly compacted to 100% of the Standard Proctor Maximum Dry Density (SPMDD) in accordance with ASTM D698 in the building area, and 95% Modified Proctor dry density in the roadway area. In-situ density testing must be carried out during the structural fill placement to verify that the specified compaction is achieved. Subject to field review during construction and approval by the geotechnical engineer onsite excavated sand and gravel may be suitable for reuse as structural soil.



4.2 Floods, Site Slopes, and Setbacks

Fraser River is located east, adjacent to the property. The property is generally flat except for the 15-20 m eastern section of the property that benches down to the Fraser River bank. There is a section 219 Covenant (PG9697) registered to the legal title of the property requiring a minimum 30 m building setback from the natural boundary of the Fraser River and a flood construction level (FCL) of at least 569.5 m.

LTN Environmental Consulting LP recently conducted an environmental study, and specified an environmental setback of 20 m between the proposed development and the river. Based on the architectural site plan by Bakerview Building Design, the setback for the proposed parking area is a minimum of 20 m while the setback of the proposed building is a minimum of 30 m.

The majority of the site is relatively flat. However, there is a slope near the Fraser River channel. The site slopes down towards Fraser River at the southeast side of the property which is approximately 12-15 m wide. The section slopes (3H:1V to 2.5H:1V) to a lower bench which then declines steeply (1.5H:1V to 1.3H:1V) down to the Fraser River channel. The lower bench transition to the steep slope is classified at the watercourse top of bank. Based on the site visit, there was no evidence of slope instability such as tension cracks, scarps, soil slumping and debris tracks. The slope is considered to be stable. Evertek concurs that the minimum of 20 m setback line from the watercourse top of bank as specified by LTN Environmental Consulting LP) is considered geotechnically adequate in terms of slope stability.

The topographic surveying plan prepared by McElhanney Associates Land Surveying Ltd. dated October 14, 2022 indicates that the current ground elevation in the proposed building area ranges from approximately 570 to 571 m, which is higher than the FCL (569.5 m) outlined in the existing land covenant (PG9697).

4.3 Site Drainage, Erosion Control, and Stormwater Management

A temporary onsite surface drainage system (ditches or swales) may be implemented during site grading and construction. The surface water collected and conveyed by the temporary surface drainage system should be discharged to the existing natural drainage system or the municipal stormwater system, if permitted. These recommendations should be incorporated into the civil design.

During and after construction, it is important that care be taken to prevent uncontrolled water runoff and saturation of any exposed natural soil surface. Site grading should be designed to prevent the ponding of surface water near foundation walls and paved areas. Sidewalks, pavement areas or landscaping within a zone of approximately 2 m of the exterior perimeter of the buildings should be graded to drain water away from the buildings at a minimum gradient of 2%.

Drainage established during design and construction should be maintained for the life of the development.

Should the municipal stormwater system be unavailable to the site, an onsite stormwater infiltration system for the roof water and foundation drainage may be considered. Based on the soil and groundwater conditions, onsite stormwater infiltration system is considered feasible from



the geotechnical perspective. Evertex can assist in the proposed storm-water management plan design upon request.

4.4 Bearing Capacity Estimation and Site Classification

Based on the existing soil conditions, a conventional shallow foundation system atop of compacted structural fill or the native soil may be considered suitable for the proposed buildings. Footings founded on the competent native sand soil or structural fill can be designed with a factored Ultimate Limit State (ULS) bearing pressure of 150 kPa (3,000 psf), for a resistance factor $\phi = 0.5$ in accordance with the Canadian Foundation Engineering Manual (CFEM). The Serviceability Limit State (SLS) pressure is 100 kPa (2,000 psf). For footings founded on the natural sand and gravel, soil bearing capacities of 225 kPa (ULS) and 150 kPa (SLS) may be used. The estimated total settlement of the building should not exceed 25 mm and the corresponding differential settlement should not exceed 20 mm over a 6 m span.

The minimum width of continuous footings should not be less than 0.45m (18 inches), and the minimum dimension of column pads should not be less than 0.9 m (36 inches). A minimum embedment depth of 1.2 m (48 inches) must be provided for frost protection.

In terms of seismic design, the Site Classification for this property is D – stiff soil (in accordance with the BC Building Code 2018, Table 4.1.8.4.A). The Peak Ground Acceleration (PGA) for this site is 0.049g for a probability of occurrence of 2% in 50 years (0.000404 per annum), which obtained from 2015 National Building Code Seismic Hazard from the web-site <http://www.earthquakescanada.nrcan.gc.ca> of National Resources Canada.

4.5 Floor Slab-On-Grade

Concrete floor slab-on-grade must be underlain by a 100 mm minimum layer of coarse, free draining granular material. A vapour barrier membrane consisting of minimum 0.15 mm thick polyethylene sheeting should be placed between the slab and the bedding layer. A thin layer of sand may be placed on top of the vapour barrier to protect the polyethylene sheeting from tearing during construction of footing forms and concrete pouring.

5.0 Further Work and Construction Inspections

Evertex should review the final design to ensure that our recommendations have been incorporated into the design. We recommend that Evertex be retained in the detailed design and construction phases of the project for the following purposes:

- Review of final proposed layout and grading plan;
- Review of structural design for proposed buildings;
- Subgrade field review during the building, underground utility and road construction;
- Monitoring of excavation side slope stability and review of the temporary shoring installation if required; and
- Monitoring of field densities of structural fill during placement and compaction.



6.0 Closure

This report is based on the findings at six test pit locations. Should different subsoil and groundwater conditions be encountered during construction, this office should be notified and recommendations submitted herein will be reviewed and revised as required. This report should be applied only to the presently proposed development.

This report has been prepared for the exclusive use of the client for the specified application to the project described in this report. The City of Prince George may also rely on the findings of this report. It has been prepared in accordance with generally accepted geotechnical engineering practices. No other warranty, expressed or implied, is made.

We trust that the information provided in this letter meets your requirements. Should you have any questions please do not hesitate to contact this office.

Yours truly,

Evertek Engineering Limited

(EGBC Permit to Practice No. 1000729)

Reviewed by:

Derek Emslie, EIT, M.A.Sc.
Junior Geotechnical Engineer

Larry Deng, M.Sc, P.Eng.
Senior Geotechnical Engineer, Principal

Attachments: Preliminary Site Plan by Bakerview Building Design
Figure 1 – Site Location Plan
Figure 2 – Test Pit Location Plan
Soil Logs
Metro Testing Laboratory Results

Total : 49 Parking Stalls needed - 49 Parking Stalls provided

INLANDER STREET

124

85

3M

4.5M

1	2	3	4	5	6	7	8	9	10	11	12
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GRB ENC
MECH RM

36' DRIVE AISLE

13	14	15	16	17	18
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MECH
RM

PHASE 2

A diagram of a stack data structure. It consists of a vertical container divided into five cells, each labeled "VISITOR".

20

21

Site plan of the proposed 11-unit residential development at 1100 West 10th Avenue. The plan shows a green-roofed area at the top, a parking lot with 11 units (labeled 11 and 12), a green-roofed area, and a row of 10 residential units. A north arrow is located in the bottom left corner.

LANDSCAPING AND TREES



APPLICANT/AGENT:

SUKHI ATWAL
EMAIL: realtorsukhiatwal@gmail.com

ENGINEER:



EVERTEK ENGINEERING
202-2692 CLEARBROOK ROAD,
ABBOTSFORD, B.C. V2T 2Y8
TELEPHONE (604) 776-0222

NO.	DATE	BY	REVISIONS	TECH	ENG.

PROJECT NO: 100654

DATE: 2022-08-24

DWN BY: DE

DESIGN: LD

SCALE HORZ: NTS

SCALE VERT: NTS

FIGURE NO: 1

City of Prince George

SITE LOCATION PLAN
2690 QUEENSWAY, PRINCE GEORGE



— APPROXIMATE TEST PIT LOCATION

TEST PIT LOCATION PLAN
2690 QUEENSWAY, PRINCE GEORGE



SOIL LOG TP22-01

PROJECT NUMBER: 100654

CLIENT NAME: Sukhi Atwal

PROJECT: Proposed Residential Development

SITE ADDRESS: 2690 Queensway, Prince
George, BC

DATE: August 24, 2022

EQUIPMENT: Mini Excavator

SURFACE ELEVATION:

DEPTH OF TEST PIT: 1.5 m

DEPTH OF GROUNDWATER:

COMMENTS

LOGGED BY DE

Depth (m)	Graphic Log	Soils Description	Moisture (%)	DCPT Values	Depth (ft)
0.2		TOPSOIL, roots.			1
0.4		SAND, some silt, fine to medium grained sand, moist, brown, loose to compact.			2
0.6					3
0.8					4
1					5
1.2					6
1.4					7
1.6		Termination of test pit at 1.5 m below existing grade. No groundwater observed upon completion of test pit excavation.			8
1.8					9
2					10
2.2					11
2.4					12
2.6					13
2.8					14
3					15
3.2					16
3.4					17
3.6					18
3.8					19

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SOIL LOG TP22-02

PROJECT NUMBER: 100654

CLIENT NAME: Sukhi Atwal

PROJECT: Proposed Residential Development

SITE ADDRESS: 2690 Queensway, Prince
George, BC

DATE: August 24, 2022

EQUIPMENT: Mini Excavator

SURFACE ELEVATION:

DEPTH OF TEST PIT: 1.5 m

DEPTH OF GROUNDWATER:

COMMENTS

LOGGED BY DE

Depth (m)	Graphic Log	Soils Description	Moisture (%)	DCPT Values	Depth (ft)
0.2		TOPSOIL, roots.			1
0.4		SAND, some silt, fine to medium grained sand, moist, brown, loose to compact.			2
0.6					3
0.8					4
1					5
1.2					6
1.4					7
1.6		Termination of test pit at 1.5 m below existing grade. No groundwater observed upon completion of test pit excavation.			8
1.8					9
2					10
2.2					11
2.4					12
2.6					13
2.8					14
3					15
3.2					16
3.4					17
3.6					18
3.8					19

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SOIL LOG TP22-03

PROJECT NUMBER: 100654 CLIENT NAME: Sukhi Atwal PROJECT: Proposed Residential Development SITE ADDRESS: 2690 Queensway, Prince George, BC	DATE: August 24, 2022 EQUIPMENT: Mini Excavator SURFACE ELEVATION: DEPTH OF TEST PIT: 2.7 m DEPTH OF GROUNDWATER:
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COMMENTS	LOGGED BY DE
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Depth (m)	Graphic Log	Soils Description	Moisture (%)	DCPT Values	Depth (ft)
0.2		TOPSOIL, roots.			1
0.4		SAND, trace silt, trace gravel, fine to medium grained sand, moist, brown, compact.			2
0.6					3
0.8					4
1					5
1.2					6
1.4					7
1.6					8
1.8		SAND and GRAVEL, some cobbles, coarse grained sand, sub-rounded to rounded gravel, moist, greyish brown, compact to dense.			9
2					10
2.2					11
2.4					12
2.6					13
2.8		Termination of test pit at 2.7 m below existing grade. No groundwater observed upon completion of test pit excavation.			
3					
3.2					
3.4					
3.6					
3.8					



SOIL LOG TP22-04

PROJECT NUMBER: 100654

CLIENT NAME: Sukhi Atwal

PROJECT: Proposed Residential Development

SITE ADDRESS: 2690 Queensway, Prince
George, BC

DATE: August 24, 2022

EQUIPMENT: Mini Excavator

SURFACE ELEVATION:

DEPTH OF TEST PIT: 2.7 m

DEPTH OF GROUNDWATER:

COMMENTS

LOGGED BY DE

Depth (m)	Graphic Log	Soils Description	Moisture (%)	DCPT Values	Depth (ft)
0.2		TOPSOIL, roots.			
0.4		SAND, trace silt, fine to medium grained sand, moist, brown, compact.			1
0.6					2
0.8					3
1					4
1.2					5
1.4					6
1.6					7
1.8					8
2					9
2.2		SAND and GRAVEL, some cobbles, coarse grained sand, sub-rounded to rounded gravel, moist, greyish brown, compact to dense.			10
2.4					11
2.6					12
2.8		Termination of test pit at 2.7 m below existing grade. No groundwater observed upon completion of test pit excavation.			13
3					
3.2					
3.4					
3.6					
3.8					

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SOIL LOG TP22-05

PROJECT NUMBER: 100654 CLIENT NAME: Sukhi Atwal PROJECT: Proposed Residential Development SITE ADDRESS: 2690 Queensway, Prince George, BC	DATE: August 24, 2022 EQUIPMENT: Mini Excavator SURFACE ELEVATION: DEPTH OF TEST PIT: 2.7 m DEPTH OF GROUNDWATER:
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COMMENTS	LOGGED BY DE
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Depth (m)	Graphic Log	Soils Description	Moisture (%)	DCPT Values	Depth (ft)
0.2		TOPSOIL, roots.			1
0.4		SAND, trace silt, trace gravel, fine to medium grained sand, moist, brown, compact.			2
0.6					3
0.8		SAND and GRAVEL, some cobbles, coarse grained sand, sub-rounded to rounded gravel, moist, greyish brown, compact to dense.			4
1					5
1.2					6
1.4					7
1.6					8
1.8					9
2					10
2.2					11
2.4					12
2.6					13
2.8		Termination of test pit at 2.7 m below existing grade. No groundwater observed upon completion of test pit excavation.			
3					
3.2					
3.4					
3.6					
3.8					

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SOIL LOG TP22-06

PROJECT NUMBER: 100654 CLIENT NAME: Sukhi Atwal PROJECT: Proposed Residential Development SITE ADDRESS: 2690 Queensway, Prince George, BC	DATE: August 24, 2022 EQUIPMENT: Mini Excavator SURFACE ELEVATION: DEPTH OF TEST PIT: 2.7 m DEPTH OF GROUNDWATER:
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COMMENTS	LOGGED BY DE
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Depth (m)	Graphic Log	Soils Description	Moisture (%)	DCPT Values	Depth (ft)
			0 100	0 100	
0.2		TOPSOIL, roots.			
0.4		SAND, trace silt, trace gravel, fine to medium grained sand, moist, brown, compact.			1
0.6					2
0.8					3
1					4
1.2					5
1.4					6
1.6					7
1.8		SAND and GRAVEL, some cobbles, coarse grained sand, sub-rounded to rounded gravel, moist, greyish brown, compact to dense.			8
2					9
2.2					10
2.4					11
2.6					12
2.8		Termination of test pit at 2.7 m below existing grade. No groundwater observed upon completion of test pit excavation.			13
3					
3.2					
3.4					
3.6					
3.8					

TO: **EVERTEK ENGINEERING LTD.**
 202-2692 Clearbrook Road.
 Abbotsford, B.C., V2T 2Y8

REPORT DATE: 31-Aug-22
 PROJECT NO: VE41747

ATTN: **DEREK EMSLIE**

PROJECT: 2690 QUEENSWAY, PRINCE GEORGE
SCOPE: Moisture & Sieve Test

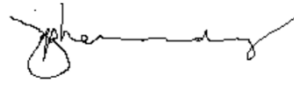
ASTM D2974
 STANDARD TEST METHOD FOR MOISTURE, AND ORGANIC MATTER OF PEAT AND OTHER
 ORGANIC SOILS

SAMPLE DATA

SUPPLIER	Evertex Eng'ng Ltd	DATE SAMPLED:	24-Aug-22
SOURCE:	2690 Queensway, Prince George	DATE RECEIVED:	26-Aug-22
SAMPLE TYPE:	Various	DATE TESTED:	29-Aug-22
		TESTED BY:	JR

BH #	DEPTH	Moisture Content, %	Remarks
TP22-01	5 FT	11.3	
TP22-02	5 FT	19.0	see sieve report
TP22-03	5 FT	6.3	
TP22-03	8 FT	3.8	
TP22-04	5 FT	5.1	see sieve report
TP22-04	9 FT	2.7	
TP22-05	9 FT	2.8	
TP22-06	9 FT	2.1	

Per: 
Jaime Rivero
 Laboratory Supervisor

Reviewed By: 
Jim Hernandez
 Laboratory Manager

TO

EVERTEK ENGINEERING LTD
202-2692 CLEARBROOK RD
ABBOTSFORD, BC
V2T 2Y8

PROJECT NO. VE41747

CLIENT EVERTEK ENGINEERING LTD
C.C.

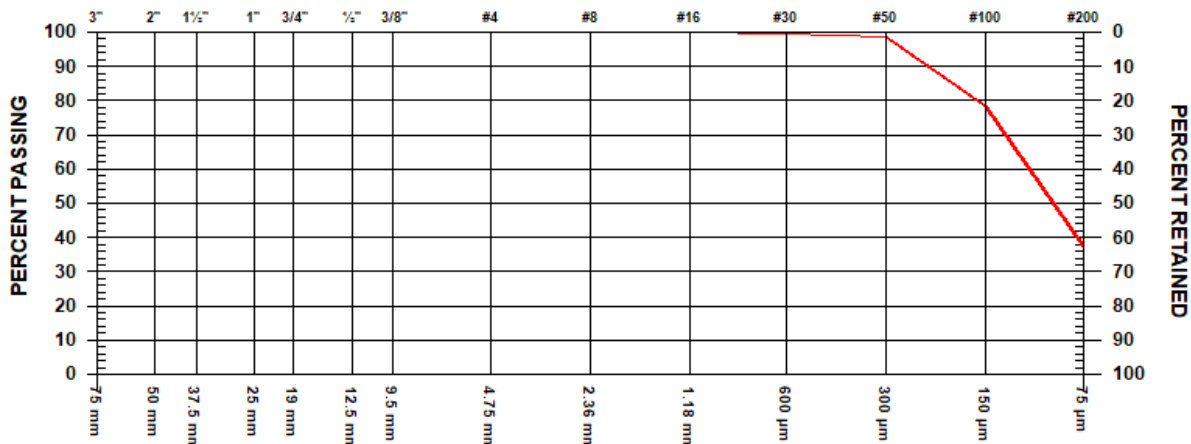
ATTN: DEREK EMSLIE

PROJECT 2690 QUEENSWAY, PRINCE GEORGE
MATERIALS TESTING
CONTRACTOR EVERTEK ENGINEERING

2690 QUEENSWAY PRINCE GEORGE
PRINCE GEORGE

SIEVE TEST NO. 1 DATE RECEIVED 2022.Aug.26 DATE TESTED 2022.Aug.30 DATE SAMPLED 2022.Aug.24

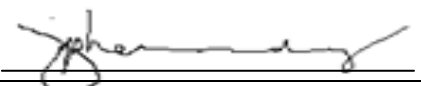
SUPPLIER EVERTEK
SOURCE 2690 QUENSWAY, PRINCE GEORGE
SPECIFICATION
MATERIAL TYPE TP22-02, 5FT

SAMPLED BY CLIENT
TESTED BY JR
TEST METHOD ASTM C-136


GRAVEL SIZES	PERCENT PASSING	GRADATION LIMITS
3"	75 mm	
2"	50 mm	
1 1/2"	37.5 mm	
1"	25 mm	
3/4"	19 mm	
1/2"	12.5 mm	
3/8"	9.5 mm	

SAND SIZES AND FINES	PERCENT PASSING	GRADATION LIMITS
No. 4 4.75 mm		
No. 8 2.36 mm	100.0	
No. 16 1.18 mm	100.0	
No. 30 600 µm	99.6	
No. 50 300 µm	98.5	
No. 100 150 µm	78.2	
No. 200 75 µm	37.5	

COMMENTS



TO

EVERTEK ENGINEERING LTD
202-2692 CLEARBROOK RD
ABBOTSFORD, BC
V2T 2Y8

PROJECT NO. VE41747

CLIENT EVERTEK ENGINEERING LTD
C.C.

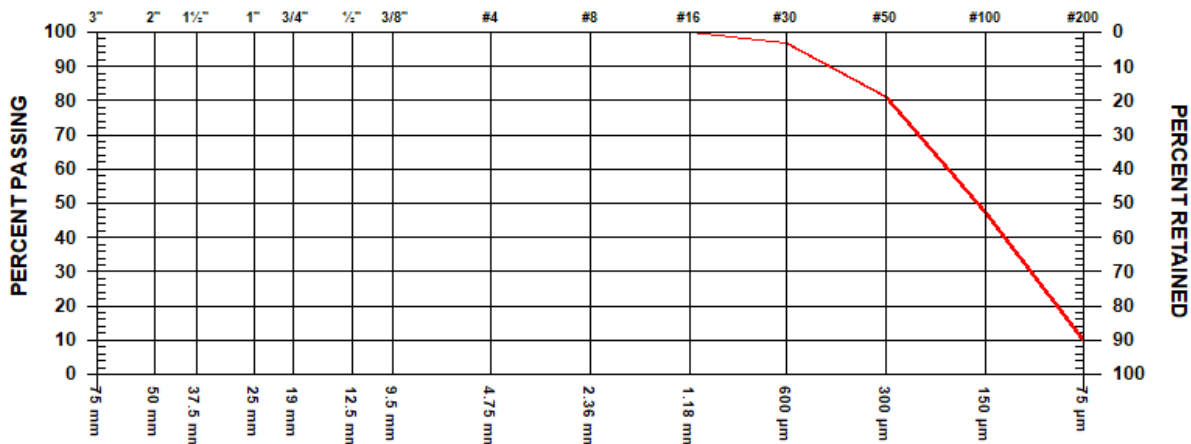
ATTN: DEREK EMSLIE

PROJECT 2690 QUEENSWAY, PRINCE GEORGE
MATERIALS TESTING
CONTRACTOR EVERTEK ENGINEERING

2690 QUEENSWAY PRINCE GEORGE
PRINCE GEORGE

SIEVE TEST NO. 2 DATE RECEIVED 2022.Aug.26 DATE TESTED 2022.Aug.30 DATE SAMPLED 2022.Aug.24

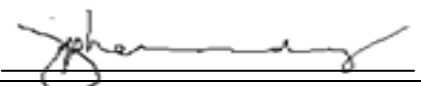
SUPPLIER EVERTEK ENG. LTD
SOURCE 2690 QUEENSWAY, PRINCE GEORGE
SPECIFICATION
MATERIAL TYPE TP22-04, 5 FT

SAMPLED BY CL
TESTED BY JR
TEST METHOD ASTM C-136


GRAVEL SIZES	PERCENT PASSING	GRADATION LIMITS
3"	75 mm	
2"	50 mm	
1 1/2"	37.5 mm	
1"	25 mm	
3/4"	19 mm	
1/2"	12.5 mm	
3/8"	9.5 mm	

SAND SIZES AND FINES	PERCENT PASSING	GRADATION LIMITS
No. 4 4.75 mm		
No. 8 2.36 mm	100.0	
No. 16 1.18 mm	99.8	
No. 30 600 µm	96.8	
No. 50 300 µm	81.2	
No. 100 150 µm	47.5	
No. 200 75 µm	9.8	

COMMENTS



Rev.	Date	Description	VS	VS2	VS3	VS4	VS5	VS6	VS7	VS8	VS9	VS10	VS11	VS12	VS13	VS14	VS15	VS16	VS17	VS18	VS19	VS20	VS21	VS22	VS23	VS24	VS25	VS26	VS27	VS28	VS29	VS30	VS31	VS32	VS33	VS34	VS35	VS36	VS37	VS38	VS39	VS40	VS41	VS42	VS43	VS44	VS45	VS46	VS47	VS48	VS49	VS50	VS51	VS52	VS53	VS54	VS55	VS56	VS57	VS58	VS59	VS60	VS61	VS62	VS63	VS64	VS65	VS66	VS67	VS68	VS69	VS70	VS71	VS72	VS73	VS74	VS75	VS76	VS77	VS78	VS79	VS80	VS81	VS82	VS83	VS84	VS85	VS86	VS87	VS88	VS89	VS90	VS91	VS92	VS93	VS94	VS95	VS96	VS97	VS98	VS99	VS100	VS101	VS102	VS103	VS104	VS105	VS106	VS107	VS108	VS109	VS110	VS111	VS112	VS113	VS114	VS115	VS116	VS117	VS118	VS119	VS120	VS121	VS122	VS123	VS124	VS125	VS126	VS127	VS128	VS129	VS130	VS131	VS132	VS133	VS134	VS135	VS136	VS137	VS138	VS139	VS140	VS141	VS142	VS143	VS144	VS145	VS146	VS147	VS148	VS149	VS150	VS151	VS152	VS153	VS154	VS155	VS156	VS157	VS158	VS159	VS160	VS161	VS162	VS163	VS164	VS165	VS166	VS167	VS168	VS169	VS170	VS171	VS172	VS173	VS174	VS175	VS176	VS177	VS178	VS179	VS180	VS181	VS182	VS183	VS184	VS185	VS186	VS187	VS188	VS189	VS190	VS191	VS192	VS193	VS194	VS195	VS196	VS197	VS198	VS199	VS200	VS201	VS202	VS203	VS204	VS205	VS206	VS207	VS208	VS209	VS210	VS211	VS212	VS213	VS214	VS215	VS216	VS217	VS218	VS219	VS220	VS221	VS222	VS223	VS224	VS225	VS226	VS227	VS228	VS229	VS230	VS231	VS232	VS233	VS234	VS235	VS236	VS237	VS238	VS239	VS240	VS241	VS242	VS243	VS244	VS245	VS246	VS247	VS248	VS249	VS250	VS251	VS252	VS253	VS254	VS255	VS256	VS257	VS258	VS259	VS260	VS261	VS262	VS263	VS264	VS265	VS266	VS267	VS268	VS269	VS270	VS271	VS272	VS273	VS274	VS275	VS276	VS277	VS278	VS279	VS280	VS281	VS282	VS283	VS284	VS285	VS286	VS287	VS288	VS289	VS290	VS291	VS292	VS293	VS294	VS295	VS296	VS297	VS298	VS299	VS300	VS301	VS302	VS303	VS304	VS305	VS306	VS307	VS308	VS309	VS310	VS311	VS312	VS313	VS314	VS315	VS316	VS317	VS318	VS319	VS320	VS321	VS322	VS323	VS324	VS325	VS326	VS327	VS328	VS329	VS330	VS331	VS332	VS333	VS334	VS335	VS336	VS337	VS338	VS339	VS340	VS341	VS342	VS343	VS344	VS345	VS346	VS347	VS348	VS349	VS350	VS351	VS352	VS353	VS354	VS355	VS356	VS357	VS358	VS359	VS360	VS361	VS362	VS363	VS364	VS365	VS366	VS367	VS368	VS369	VS370	VS371	VS372	VS373	VS374	VS375	VS376	VS377	VS378	VS379	VS380	VS381	VS382	VS383	VS384	VS385	VS386	VS387	VS388	VS389	VS390	VS391	VS392	VS393	VS394	VS395	VS396	VS397	VS398	VS399	VS400	VS401	VS402	VS403	VS404	VS405	VS406	VS407	VS408	VS409	VS410	VS411	VS412	VS413	VS414	VS415	VS416	VS417	VS418	VS419	VS420	VS421	VS422	VS423	VS424	VS425	VS426	VS427	VS428	VS429	VS430	VS431	VS432	VS433	VS434	VS435	VS436	VS437	VS438	VS439	VS440	VS441	VS442	VS443	VS444	VS445	VS446	VS447	VS448	VS449	VS450	VS451	VS452	VS453	VS454	VS455	VS456	VS457	VS458	VS459	VS460	VS461	VS462	VS463	VS464	VS465	VS466	VS467	VS468	VS469	VS470	VS471	VS472	VS473	VS474	VS475	VS476	VS477	VS478	VS479	VS480	VS481	VS482	VS483	VS484	VS485	VS486	VS487	VS488	VS489	VS490	VS491	VS492	VS493	VS494	VS495	VS496	VS497	VS498	VS499	VS500	VS501	VS502	VS503	VS504	VS505	VS506	VS507	VS508	VS509	VS510	VS511	VS512	VS513	VS514	VS515	VS516	VS517	VS518	VS519	VS520	VS521	VS522	VS523	VS524	VS525	VS526	VS527	VS528	VS529	VS530	VS531	VS532	VS533	VS534	VS535	VS536	VS537	VS538	VS539	VS540	VS541	VS542	VS543	VS544	VS545	VS546	VS547	VS548	VS549	VS550	VS551	VS552	VS553	VS554	VS555	VS556	VS557	VS558	VS559	VS560	VS561	VS562	VS563	VS564	VS565	VS566	VS567	VS568	VS569	VS570	VS571	VS572	VS573	VS574	VS575	VS576	VS577	VS578	VS579	VS580	VS581	VS582	VS583	VS584	VS585	VS586	VS587	VS588	VS589	VS590	VS591	VS592	VS593	VS594	VS595	VS596	VS597	VS598	VS599	VS600	VS601	VS602	VS603	VS604	VS605	VS606	VS607	VS608	VS609	VS610	VS611	VS612	VS613	VS614	VS615	VS616	VS617	VS618	VS619	VS620	VS621	VS622	VS623	VS624	VS625	VS626	VS627	VS628	VS629	VS630	VS631	VS632	VS633	VS634	VS635	VS636	VS637	VS638	VS639	VS640	VS641	VS642	VS643	VS644	VS645	VS646	VS647	VS648	VS649	VS650	VS651	VS652	VS653	VS654	VS655	VS656	VS657	VS658	VS659	VS660	VS661	VS662	VS663	VS664	VS665	VS666	VS667	VS668	VS669	VS670	VS671	VS672	VS673	VS674	VS675	VS676	VS677	VS678	VS679	VS680	VS681	VS682	VS683	VS684	VS685	VS686	VS687	VS688	VS689	VS690	VS691	VS692	VS693	VS694	VS695	VS696	VS697	VS698	VS699	VS700	VS701	VS702	VS703	VS704	VS705	VS706	VS707	VS708	VS709	VS710	VS711	VS712	VS713	VS714	VS715	VS716	VS717	VS718	VS719	VS720	VS721	VS722	VS723	VS724	VS725	VS726	VS727	VS728	VS729	VS730	VS731	VS732	VS733	VS734	VS735	VS736	VS737	VS738	VS739	VS740	VS741	VS742	VS743	VS744	VS745	VS746	VS747	VS748	VS749	VS750	VS751	VS752	VS753	VS754	VS755	VS756	VS757	VS758	VS759	VS760	VS761	VS762	VS763	VS764	VS765	VS766	VS767	VS768	VS769	VS770	VS771	VS772	VS773	VS774	VS775	VS776	VS777	VS778	VS779	VS780	VS781	VS782	VS783	VS784	VS785	VS786	VS787	VS788	VS789	VS790	VS791	VS792	VS793	VS794	VS795	VS796	VS797	VS798	VS799	VS800	VS801	VS802	VS803	VS804	VS805	VS806	VS807	VS808	VS809	VS810	VS811	VS812	VS813	VS814	VS815	VS816	VS817	VS818	VS819	VS820	VS821	VS822	VS823	VS824	VS825	VS826	VS827	VS828	VS829	VS830	VS831	VS832	VS833	VS834	VS835	VS836	VS837	VS838	VS839	VS840	VS841	VS842	VS843	VS844	VS845	VS846	VS847	VS848	VS84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