J.R. Paine & Associates Ltd.

CONSULTING AND TESTING ENGINEERS

EDMONTON – GRANDE PRAIRIE – PEACE RIVER

2304 – 119 Avenue NE
Edmonton, Alberta
T6S 1B3

April 10, 2025
File No. 4826 – 18

LANDREX HUNTER RIDGE INC.
C/O INVISTEC CONSULTING LTD.
Suite 1700, 10130 – 103 Street NW
Edmonton, Alberta
T2P 0R9

Attention: Evelyne Bucumi, P. Eng.

Re: Geotechnical Review Letter
Erin Ridge North School Site
Edgefield Way & Highway 2
ST. ALBERT, Alberta

As requested, J. R. PAINE & ASSOCIATES LTD. (JRP) has reviewed the available geotechnical information for the subject school site. The purpose of the review was to provide additional preliminary comments on the feasibility to construct a school on the subject site. The following report that covered the subject site was reviewed:

1. *Revised Geotechnical Investigation, Proposed Hunter Ridge Subdivision, NW 21 – 54 – 25 – W4M, Highway 2 & Township Road 544, St. Albert, Alberta, dated March 2021, prepared by JRP, file # 4826 – 18*

A site plan of the subject school site was provided by Invistec Consulting Ltd. Several testholes presented in Report 1 were located within the subject site. The approximate locations of relevant testholes can be found in the attached site plan. The corresponding soil logs of the relevant testholes are also attached.

This review letter is intended as a limited summary of the above noted reports only. The above noted report should be reviewed for a complete set of geotechnical recommendations and discussion on residential subdivision development.

Preliminary Grading Comments

1. According to a preliminary grading plan provided by Invistec Consulting Ltd., the design grade along the perimeter of the site will be approximately between 684.0 m and 686.0 m. The ground elevations of Testholes 2020-10 and 2020-14 were at approximately 684.7 m and

684.5 m respectively. Therefore, up to 1.5 m of fill grading is expected within the site. Recommendations in Report 1 on stripping and engineered fill placement remain applicable. However, no 300 mm to 500 mm thick clay pad will be allowed as part of engineered fill placement within the school building footprint.

2. The measured watertable elevations at Testholes 2020-10 and 2020-14 were at approximately 683.9 m and 682.7 m respectively. Therefore, the watertable will likely be approximately 1 m to 3 m below the design grade, which is considered high.

Preliminary Building Foundation Comments

1. In general, the upper native clay encountered in Testholes 2020-10 and 2020-14 appears to be marginally feasible to support footing foundations from the strength and settlement view-points. The following draw backs should be considered when utilizing a footing foundation for a school building.
    a. The measured watertable levels measured at Testholes 2020-10 and 2020-14 were approximately 0.8 m to 1.8 m below the existing ground surface. Depending on the grading design, typical footing excavation depth of 1.5 m to 2.5 m may intercept the watertable. In such cases, dewatering and extra drainage measures may be required to employ footing foundations.
    b. The native clay encountered below approximately 2.1 m to 2.4 m in Testholes 2020-10 and 2020-14 was firm. Depending on the footing elevation, footing bearing capacities are expected to be low. It is emphasized that a building specific geotechnical investigation will be required for each building to determine the soil resistances.
    c. The upper native clay encountered in Testholes 2020-10 and 2020-14 was high plastic and exhibited a high swelling and shrinkage potential. As indicated in Report 1, the risk of swelling and shrinkage cannot be eliminated where high plastic clay is present at footing grade. A pile foundation should be considered if no movement can be tolerated.
2. Installation of a cast-in-place concrete pile foundation appears to be feasible at this site. Factored skin friction and end-bearing resistances should be determined by a lot specific geotechnical investigation. Immediate groundwater seepages were observed in both Testholes 2020-10 and 2020-14. Therefore, casing may be necessary to limit groundwater seepage during pile drilling. Continuous flight auger (CFA) pile installation is an option that would eliminate the need for casing, and is likely the preferred foundation option.
3. Screw (or helical) pile foundations should be feasible option at this site. The clay till encountered in Testholes 2020-10 and 2020-14 should be a suitable end-bearing material for screw pile.

However, the low soil strength near the surface may not provide sufficient lateral support against buckling, which should also be considered in the screw pile design.

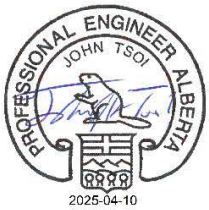
Preliminary Slab-On-Grade Comments

1. Future engineered fill and the near surface native clay encountered in Testholes 2020-10 and 2020-14 should be considered suitable for slab support from the strength and settlement viewpoints. A building specific geotechnical investigation will be required to determine the vertical modulus of subgrade reaction for slab design.
2. The upper native clay exhibited a high swelling and shrinkage potential for slab support. The risk of movement must be accepted by all parties for slabs placed on high plastic clay. The risk of swelling and shrinkage can be significantly lowered by replacing of the native soil below the slab with an approved low to medium plastic clay that has a suitably low swelling and shrinkage potential. The details of this soil replacement method should be determined by future engineer of record for the school building.
3. Since fill grading is planned at this site, imported low to medium plastic clay can be utilized as future engineered fill material to help lower the swelling and shrinkage potential. However, if low plastic clay will be placed within the building footprint, such low plastic clay is considered highly frost susceptible. As previously mentioned, the watertable is expected to within or near the frost zone. Therefore, an increased risk of frost heave should be expected where the low plastic clay will be subjected to freezing (including the interior perimeter of a heated building). Therefore, the need for exterior insulation should be determined by future engineer of record for the school building.

We trust this information is satisfactory. If you have any questions, please contact our office.

Yours truly,

J.R. PAINE & ASSOCIATES LTD.



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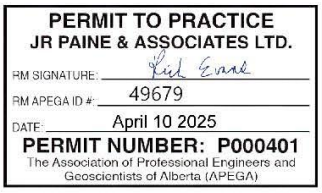
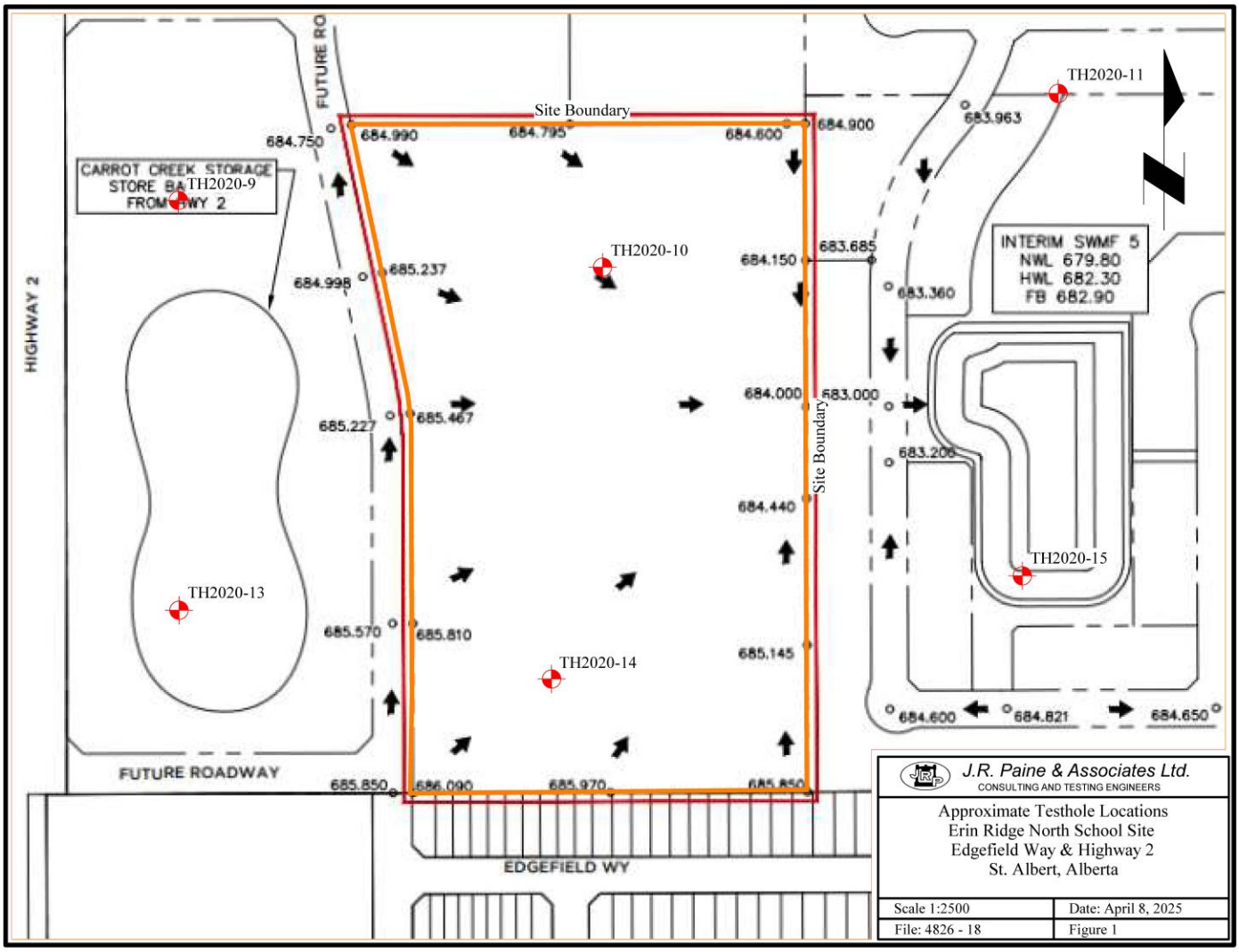


John Tsoi, P. Eng.

Reviewed by: Rick Evans, P. Eng.
President

Attachments: Site Plan
Soil Logs

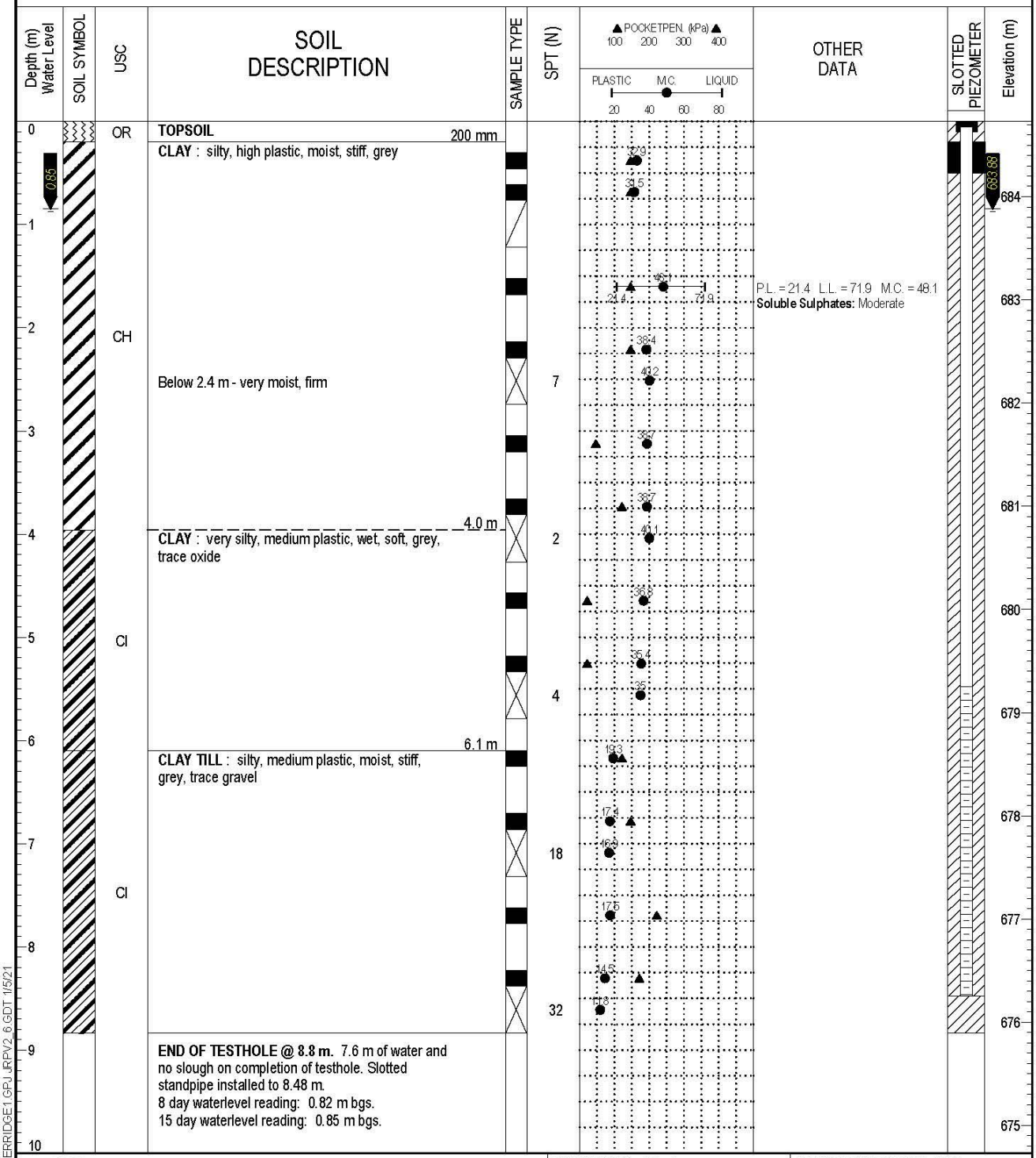
H:\DATA 2025\4826 Invistec Consulting Ltd\4826-18(Curr) Proposed Hunter Ridge\School\m13666inv.docx


FUTURE RO
Site Boundary
684.750
684.990
684.795
684.600
684.900
683.963
TH2020-11
CARROT CREEK STORAGE
STORE BA
FROM
TH2020-9
HWY 2
HIGHWAY 2
TH2020-10
684.998
685.237
684.150
683.685
683.360
INTERIM SWMF 5
NWL 679.80
HWL 682.30
FB 682.90
684.000
683.000
685.227
685.467
683.206
Site Boundary
684.440
TH2020-15
TH2020-13
685.570
685.810
685.145
TH2020-14
684.600
684.821
684.650
FUTURE ROADWAY
685.850
686.090
685.970
685.850
EDGEFIELD WY
J.R. Paine & Associates Ltd.
CONSULTING AND TESTING ENGINEERS
Approximate Testhole Locations
Erin Ridge North School Site
Edgefield Way & Highway 2
St. Albert, Alberta
Scale 1:2500
Date: April 8, 2025
File: 4826 - 18
Figure 1

PROJECT: Hunter Ridge NW 21 - 54 - 25 - W4M		PROJECT NO: 4826 - 18	BOREHOLE NO: **2020 - 10**
CLIENT: Invistec Consulting Ltd.	DRILL METHOD: Solid Stem Auger		ELEVATION: 684.73 m
OWNER: Landrex Hunter Ridge Inc.	LOCATION: As per site plan		

SAMPLE TYPE: SHELBY TUBE | CORE SAMPLE | SPT SAMPLE | GRAB SAMPLE | NO RECOVERY

BACKFILL TYPE: BENTONITE | PEA GRAVEL | SLOUGH | GROUT | DRILL CUTTINGS | SAND



J.R. Paine & Associates Ltd.
CONSULTING & TESTING ENGINEERS
- GEOTECHNICAL - ENVIRONMENTAL - MATERIALS -
17505 - 106 Avenue
Edmonton, AB T5S 1E7
Phone: (780) 489-0700
Fax: (780) 489-0800

LOGGED BY: J Tsoi	COMPLETION DEPTH: 8.84 m
REVIEWED BY: R Evans	COMPLETION DATE: 10/13/20

PROJECT: Hunter Ridge NW 21 - 54 - 25 - W4M		PROJECT NO: 4826 - 18	BOREHOLE NO: **2020 - 14**
CLIENT: Invistec Consulting Ltd.	DRILL METHOD: Solid Stem Auger		ELEVATION: 684.49 m
OWNER: Landrex Hunter Ridge Inc.	LOCATION: As per site plan		

SAMPLE TYPE: SHELBY TUBE | CORE SAMPLE | SPT SAMPLE | GRAB SAMPLE | NO RECOVERY

BACKFILL TYPE: BENTONITE | PEA GRAVEL | SLOUGH | GROUT | DRILL CUTTINGS | SAND

Depth (m)	Water Level	USC	SOIL DESCRIPTION	SAMPLE TYPE	SPT (N)	POCKETPEN (kPa) 100 200 300 400 / PLASTIC M.C. LIQUID 20 40 60 80	OTHER DATA	SLOTTED PIEZOMETER	Elevation (m)
0		OR	**TOPSOIL** 300 mm						684
			CLAY : silty, high plastic, moist, stiff, grey			24.7 (23.6) (77.3) 34.8 26.3	P.L. = 23.6 L.L. = 77.3 M.C. = 34.2 **Soluble Sulphates:** Negligible Insufficient Shelby tube sample		
1	1.76	CH				58.3		682.73	683
2			2.1 m			44.5 43.8			
			CLAY : very silty, medium plastic, very moist, soft, grey		5	33.3			682
3						35.7			681
4		CI			4	35.1 28			680
5					4	35.4 32.6			679
6			Below 5.8 m - firm			19.3			678
			6.7 m						
7			**CLAY TILL** : silty, medium plastic, moist, stiff, grey, trace gravel		10	18.5 18.7			677
8		CI				21.4			676
					13	19.6 17.1			
9			**END OF TESTHOLE @ 8.8 m.** 0.7 m of water and no slough on completion of testhole. Slotted standpipe installed to 8.55 m. 8 day waterlevel reading: 3 m bgs. 15 day waterlevel reading: 1.76 m bgs.						675
10									

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