

re: **Geotechnical Considerations - Directional Drilling for
Proposed Service Connections
Expansion to Chateau Laurier Hotel**
1 Rideau Street - Ottawa

to: Momentum Planning - Mr. Dennis Jacobs - djacobs@momentumplancom.ca

date: April 24, 2019

file: PG4895-MEMO.01

Further to your request, Paterson Group (Paterson) has reviewed the subsoil conditions along the proposed alignments for the service connections required for the proposed expansion of the Chateau Laurier Hotel.

1.0 Background Information

It is understood that a directional drilling operation is being proposed to connect a manhole in Major's Hill Park, as well as, for a watermain connection under MacKenzie Avenue. The locations of the alignments are presented on the attached servicing plan and profile drawings.

Based on our available soils information, a grey limestone bedrock is anticipated at the design service alignment levels. Relevant borehole logs are attached to the present memorandum report.

2.0 Geotechnical Considerations

Based on the available information, the subject servicing alignments and anticipated bedrock are suitable to complete a directional drilling operation. No disturbance to adjacent buildings due to vibration during the drilling operation is anticipated. Also, the proposed method of installation will limit disturbance to surface features for both required alignments. The directional drilling method is considered to be the recommended approach for installation of the proposed service alignments.

We trust that this information satisfies your requirements.

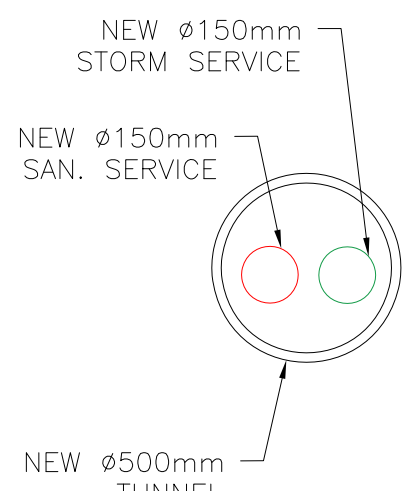
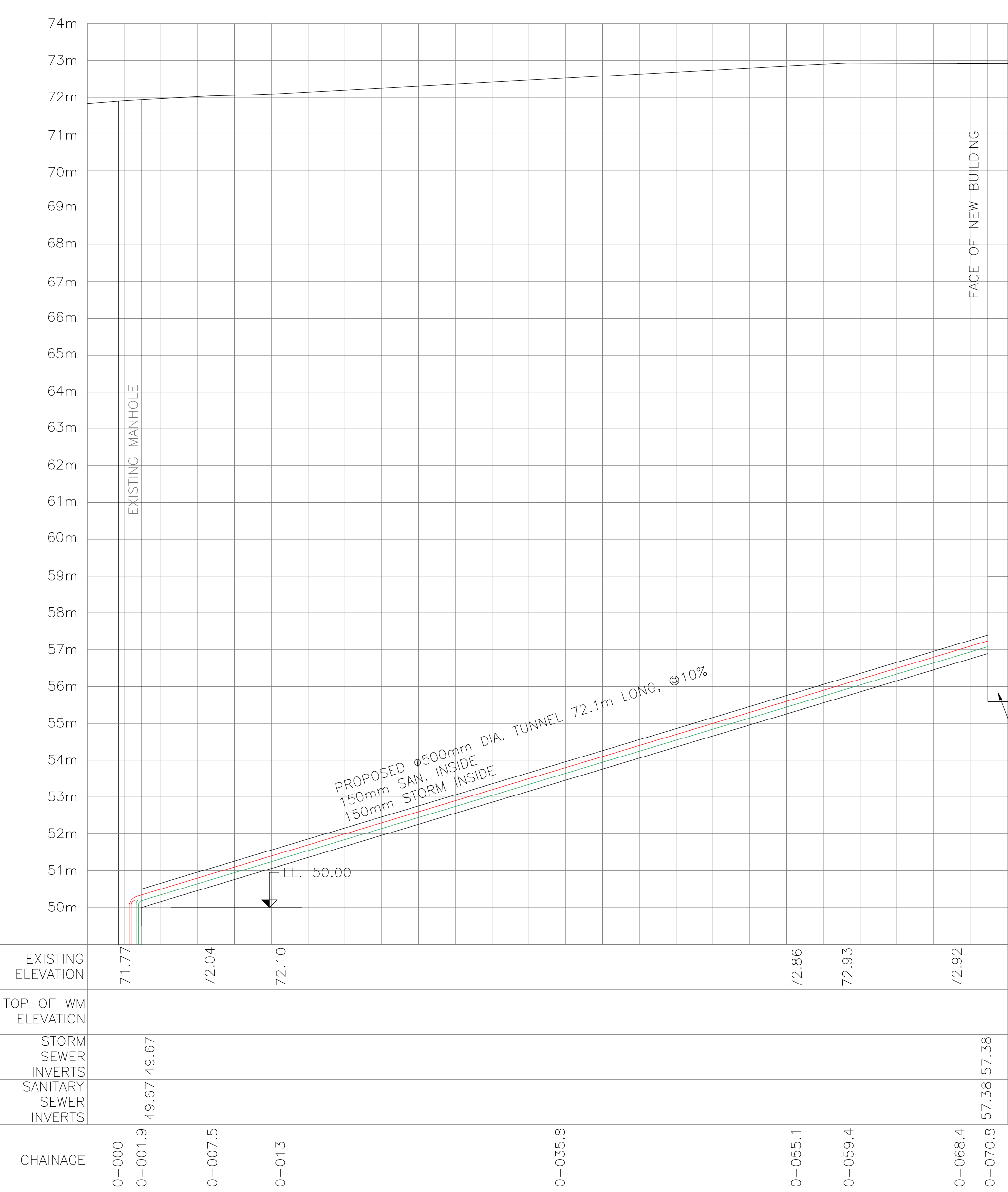
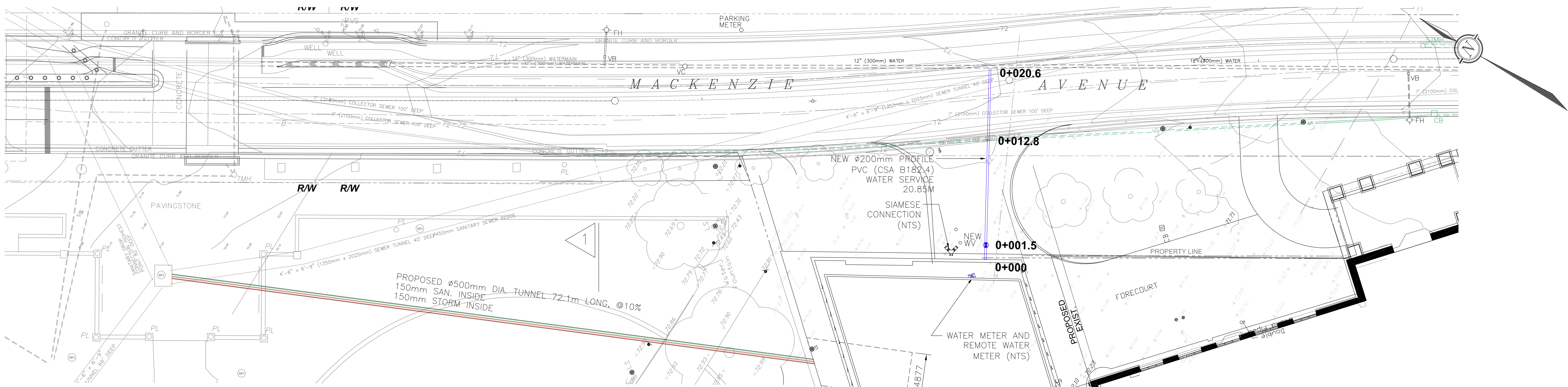
Best Regards,

Paterson Group Inc.



David J. Gilbert, P.Eng.





EL. 58.97
EL. 56.90
PIT 4.9m x 9.1m x 3.4m DEEP INTO ROCK

PROFILE
1:300 HORIZONTAL
1:100 VERTICAL



THE LOCATION OF UTILITIES IS APPROXIMATE ONLY, AND THE EXACT LOCATION SHOULD BE DETERMINED BY CONSULTING THE MUNICIPAL AUTHORITIES AND UTILITY COMPANIES CONCERNED. THE CONTRACTOR SHALL PROVE THE LOCATION OF UTILITIES AND SHALL BE RESPONSIBLE FOR ADEQUATE PROTECTION FROM DAMAGE DURING CONSTRUCTION.

- GENERAL NOTES:
1. DIMENSIONS ARE SHOWN IN METRIC.
 2. CONTRACTOR IS RESPONSIBLE FOR LOCATING AND PROTECTING EXISTING UTILITIES.

200mm WATER SERVICE TABLE:

CHAINAGE	EXISTING ELEVATION	TOP OF WS TOP OF WM	DESCRIPTION
0+000	72.28	WS 69.78	New 200mm Water Service Connection to the Building
0+001.5	72.23	WS 69.71	New 200mm Water Valve
0+012.8	71.90	WS 69.66	Curb
0+020.6	72.00	WS 69.60 WM 69.48	New 200mm Water Service Connection to the 300mm Water Main

WS - WATER SERVICE
WM - WATER MAIN



6	11/04/19	AS PER CITY REVIEW	BU
5	14/02/19	GENERAL REVISION	BU
4	18/07/18	AS PER CITY REVIEW	BU
3	19/01/18	AS PER CITY REVIEW	BU
2	20/07/17	AS PER DESIGNER REVISION	BU
1	08/06/17	AS PER CITY REVIEW	BU
No.	Date	Revision	By:

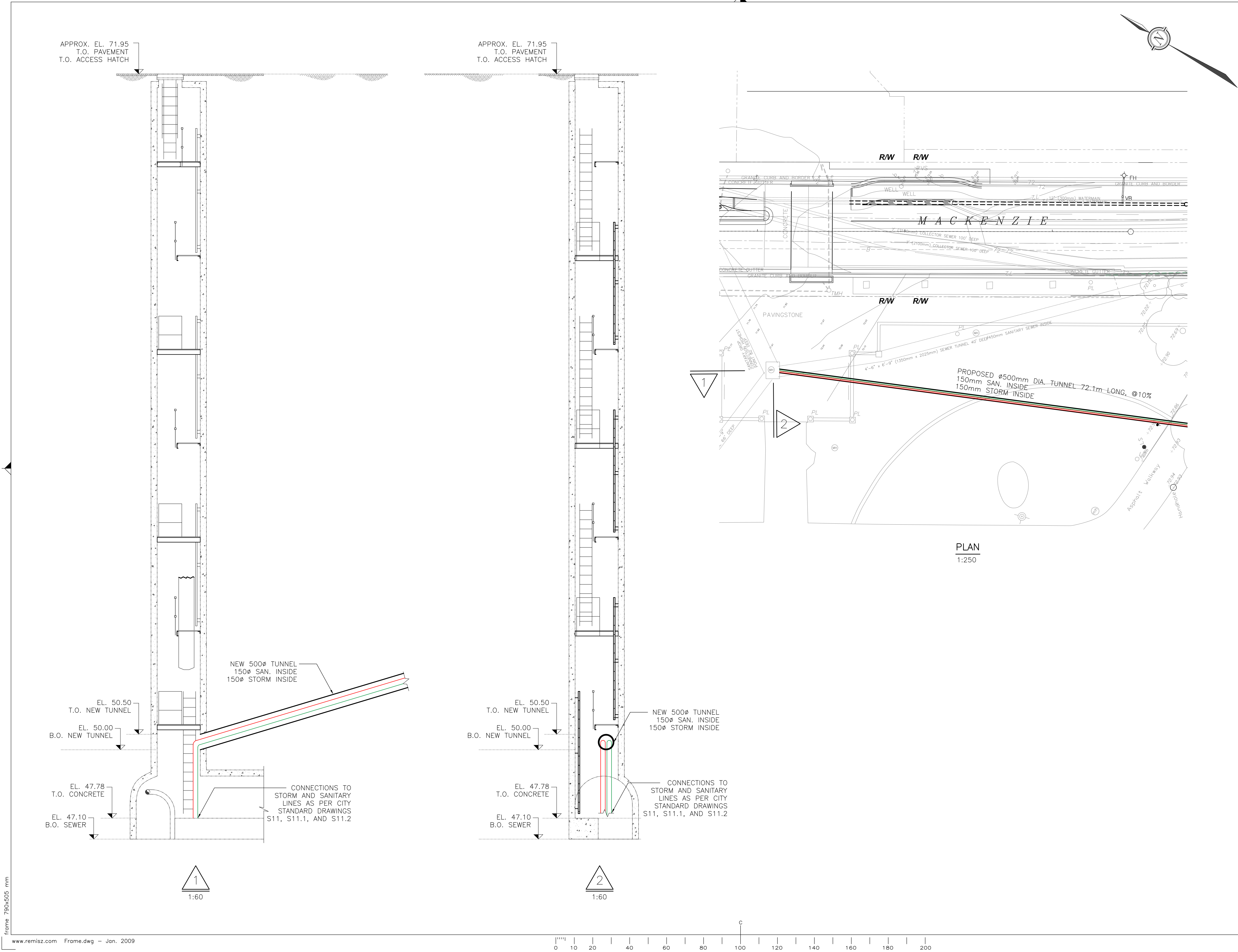
REMISZ
Consulting Engineers Ltd.
57 Auriga Dr. Suite 102
Ottawa, ON, K2E 8B2
tel.: (613) 225-1162
fax: (613) 225-4529

Client
LARCO INVESTMENTS LTD.

Project
CHATEAU LAURIER EXPANSION
1 RIDEAU STREET
OTTAWA, ON

Drawing
SERVICING PLAN
AND PROFILE

Designed	BU	Date	08/06/17
Drawn	SL	Scale	1:250
Checked	BU	Sheet	2 OF 6
Project No.	2016-146	Dwg. No.	S-02



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- GENERAL NOTES:**
1. DIMENSIONS ARE SHOWN IN METRIC.
 2. CONTRACTOR IS RESPONSIBLE FOR LOCATING AND PROTECTING EXISTING UTILITIES.
 3. EXISTING MANHOLE DRAWINGS WERE PREPARED BY CIMA+.



5	14/02/19	GENERAL REVISION	BU
4	18/07/18	AS PER CITY REVIEW	BU
3	19/01/18	AS PER CITY REVIEW	BU
2	20/07/17	AS PER DESIGNER REVISION	BU
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No.	Date	Revision	By:

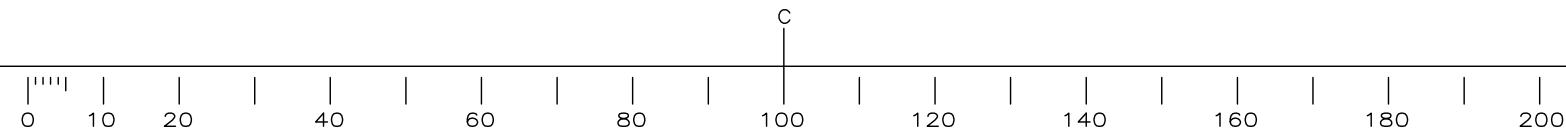
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LARCO INVESTMENTS LTD.

Project
**CHATEAU LAURIER EXPANSION
1 RIDEAU STREET
OTTAWA, ON**

Drawing
**SERVICING CONNECTION TO
EXISTING MANHOLE**

Designed	BU	Date	08/06/17
Drawn	SL	Scale	AS SHOWN
Checked	BU	Sheet	3 OF 6
Project No.	2016-146	Dwg. No.	S-02.1



SOIL PROFILE AND TEST DATA

Geotechnical Investigation
1 Rideau Street
Ottawa, Ontario

FILE NO. PG4895

HOLE NO. **BH 1-19**

DATE April 15, 2019

SOIL PROFILE AND TEST DATA

Geotechnical Investigation
1 Rideau Street
Ottawa, Ontario

DATUM TBM - Mag nail - geodetic elevation 72.85m.

FILE NO. PG4895

REMARKS

HOLE NO. **BH 2-19**

BORINGS BY CME 55 Power Auger

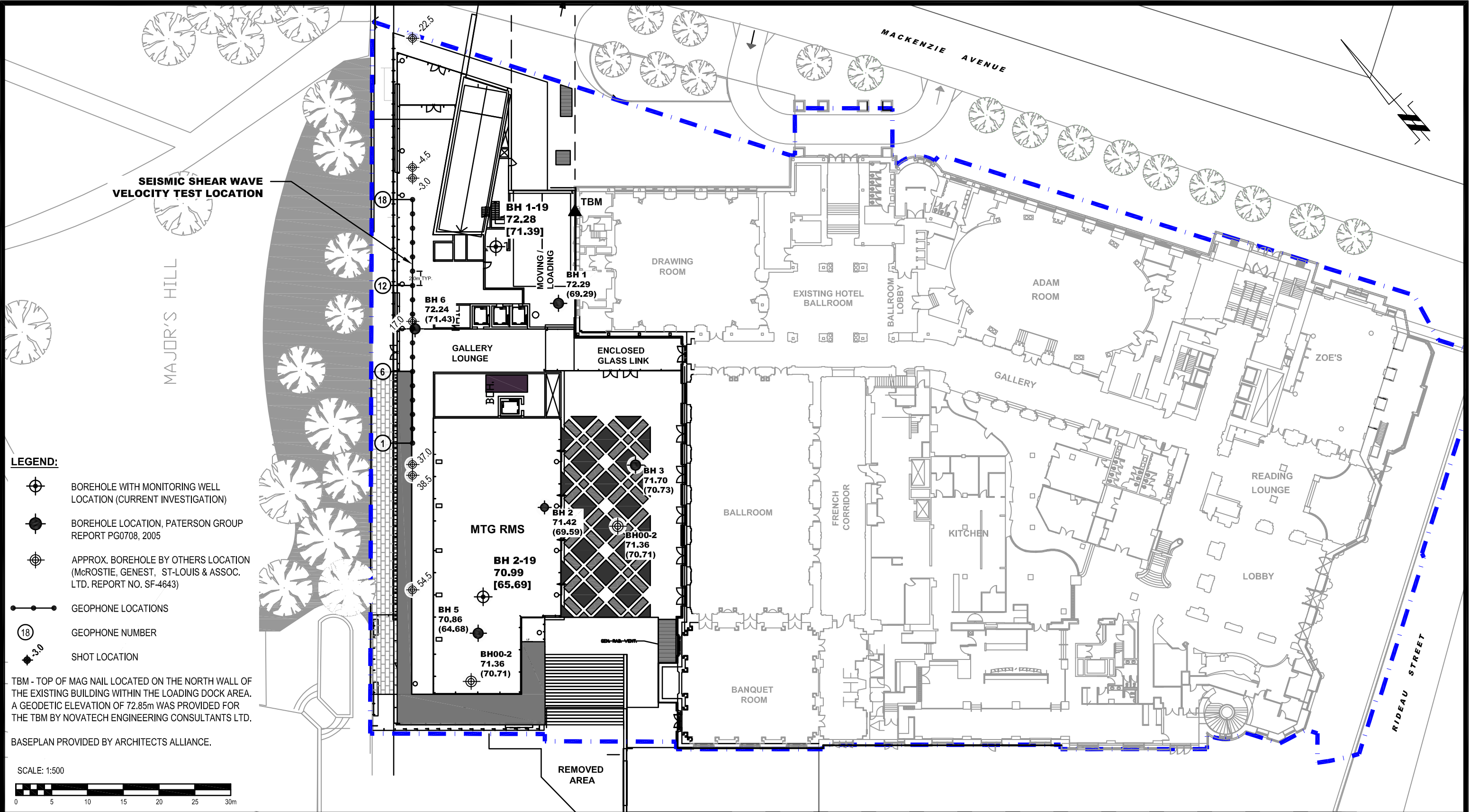
DATE April 16, 2019

SOIL DESCRIPTION	STRATA PLOT	SAMPLE				DEPTH (m)	ELEV. (m)	Pen. Resist. Blows/0.3m ● 50 mm Dia. Cone				Monitoring Well Construction
		TYPE	NUMBER	RECOVERY %	N VALUE or RQD			○ Water Content %				
								20	40	60	80	
GROUND SURFACE												
Asphaltic concrete	0.30	AU	1			0	70.99					
FILL: Brown silty sand with gravel	1.22	SS	2	25	2	1	69.99					
FILL: Brown silty sand with gravel and cobbles	2.13					2	68.99					
Concrete with asphalt	2.77	RC	1	70								
FILL: Compact, brown silty sand with gravel	3.81					3	67.99					
Concrete with gravel	4.40	RC	2	40		4	66.99					
FILL: Dense, brown silty sand and gravel	4.70	SS	5	60	50+							
	5.30	RC	3	100		5	65.99					
Concrete	5.70	RC	4	81	0							
Fractured BEDROCK		RC	5	100	0	6	64.99					
		RC	6	100	73	7	63.99					
		RC	7	100	89	8	62.99					
BEDROCK: Grey limestone with shale partings		RC	8	100	95	9	61.99					
- some clay seams in the upper 2m of rock		RC	9	100	100	10	60.99					
		RC	10	98	80	11	59.99					
		RC	11	100	100	12	58.99					
		RC	12	100	87	13	57.99					
		RC	13	100	100	14	56.99					
						15	55.99					
						16	54.99					
						17	53.99					
						18	52.99					
End of Borehole	18.29											

20 40 60 80 100

Shear Strength (kPa)

▲ Undisturbed △ Remoulded

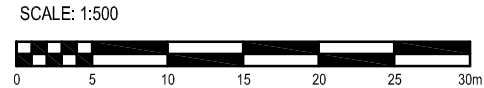


LEGEND:

- BOREHOLE WITH MONITORING WELL LOCATION (CURRENT INVESTIGATION)
- BOREHOLE LOCATION, PATERSON GROUP REPORT PG0708, 2005
- APPROX. BOREHOLE BY OTHERS LOCATION (McROSTIE, GENEST, ST-LOUIS & ASSOC. LTD. REPORT NO. SF-4643)
- GEOPHONE LOCATIONS
- GEOPHONE NUMBER
- SHOT LOCATION

TBM - TOP OF MAG NAIL LOCATED ON THE NORTH WALL OF THE EXISTING BUILDING WITHIN THE LOADING DOCK AREA. A GEODETIC ELEVATION OF 72.85m WAS PROVIDED FOR THE TBM BY NOVATECH ENGINEERING CONSULTANTS LTD.

BASEPLAN PROVIDED BY ARCHITECTS ALLIANCE.



patersongroup
consulting engineers

154 Colonnade Road South
Ottawa, Ontario K2E 7J5
Tel: (613) 226-7381 Fax: (613) 226-6344

NO.	REVISIONS	DATE	INITIAL

LARCO INVESTMENTS LIMITED

GEOTECHNICAL INVESTIGATION

PROP. CHATEAU LAURIER HOTEL EXPANSION - 1 RIDEAU STREET

OTTAWA, ONTARIO

Title:

TEST HOLE LOCATION PLAN

Scale:	1:500	Date:	04/2019
Drawn by:	RCG	Report No.:	PG4895-1
Checked by:	FA	PG4895-1	Revision No.:
Approved by:	DJG		