



SOIL-MAT ENGINEERS & CONSULTANTS LTD.

401 Grays Road · Hamilton, ON · L8E 2Z3

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PROJECT No.: SM 240155-K

MARCH 27, 2024

REPORT No. 1

LANMAR ENVIRONMENTAL
1621 CLAYBAR ROAD
JERSEYVILLE, ONTARIO
L0R 1R0

ATTENTION: MR. KYLE BOUMA

COMPACTION TESTING
PROPOSED FUTURE PARKING LOT
416 MOHAWK ROAD EAST
HAMILTON, ONTARIO

Dear Mr. Bouma,

Please find attached our compaction test results, conducted on a part-time basis between March 12 and 21, 2024, at the above noted site. The results were found to range between 96 and 100+ percent Standard Proctor Maximum Dry Density.

Two Standard Proctor Density Tests were performed on samples of material obtained from the site with the results presented below.

Sample Description	Max. Dry Density (kg/m ³)	Optimum Moisture Content (per cent)
Brown Silty Clay and Gravel	1880	14.9
Granular "A" Recycled	1965	12.0

One Grain Size Analysis was performed and compared to the gradation requirements of an Ontario Provincial Standard Specification (OPSS) Granular "A" material. The results are presented on Drawing No. 1, attached.

The compaction testing and reporting are undertaken to inform the Owner of the Contractor's performance at the time and locations of the testing and shall in no way augment the contractor's quality control or relieve him of contractual responsibility.

We trust that this information meets with your approval. Should you have any further queries, please do not hesitate to contact the undersigned.

Yours very truly,

SOIL-MAT ENGINEERS & CONSULTANTS LTD.

Kyle Fletcher, Dipl. Civil Technologist
KF/ns

PROJECT No.: SM 240155-K

**COMPACTION TESTING – REPORT No. 1
PROPOSED FUTURE PARKING LOT
416 MOHAWK ROAD EAST
HAMILTON, ONTARIO**



Encl.: Density Measurement Table Nos. 1 to 5
Drawing No. 1

Dist.: Lanmar Environmental
Attn: Mr. Kyle Bouma (via email)

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SUMMARY OF IN-PLACE DENSITY MEASUREMENTS

PROJECT DESCRIPTION:	Proposed Future Parking Lot	PROJECT NO.:	SM 240155-K	DATE:	March 12, 2024	
416 Mohawk Road East, Hamilton, Ontario						
AREA TESTED:	Subgrade Fill for Parking Lot				TABLE NO.:	1

TEST NO.	TEST LOCATION	BACKFILL DESCRIPTION	Wet Density (kg/m ³)	Dry Density (kg/m ³)	Water Content (%)	Max. Dry Density (kg/m ³)	Water Content (%)	Compact. %	MEET REQ.
1	12m South, 10m East of centreline of entrance to parking lot, 2.5m below sub-grade level.	Brown Silty Clay and Gravel	2126	1870	13.7	1880	14.9	99	Yes
2	17m South, 15m East of centreline of entrance to parking lot, 2.5m below sub-grade level.	Brown Silty Clay and Gravel	2103	1846	13.9	1880	14.9	98	Yes
3	20m South, 8m East of centreline of entrance to parking lot, 2.5m below sub-grade level.	Brown Silty Clay and Gravel	2057	1814	13.4	1880	14.9	96	(b)
4	27m South, 23m East of centreline of entrance to parking lot, 2.5m below sub-grade level.	Brown Silty Clay and Gravel	2052	1800	14.0	1880	14.9	96	(b)

COMPACTION REQUIREMENTS: 98 Percent Standard

OBSERVATIONS / COMMENTS:

(b) Test results below specified compaction requirements. The Contractor was advised to apply additional compactive effort.

FIELD TECHNICIAN:
David Guillermo

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SUMMARY OF IN-PLACE DENSITY MEASUREMENTS

PROJECT DESCRIPTION:	Proposed Future Parking Lot	PROJECT NO.:	SM 240155-K	DATE:	March 13, 2024	
416 Mohawk Road East, Hamilton, Ontario						
AREA TESTED:	Subgrade Fill for Parking Lot				TABLE NO.:	2

TEST NO.	TEST LOCATION	BACKFILL DESCRIPTION	Wet Density (kg/m ³)	Dry Density (kg/m ³)	Water Content (%)	Max. Dry Density (kg/m ³)	Water Content (%)	Compact. %	MEET REQ.
1	55m North, 22m East of Southwest corner of parking lot, 2.1m below sub-grade level.	Brown Silty Clay and Gravel	2072	1851	12.0	1880	14.9	98	Yes
2	55m North, 22m East of Southwest corner of parking lot, 1.8m below sub-grade level.	Brown Silty Clay and Gravel	2086	1840	13.4	1880	14.9	98	Yes
3	55m North, 22m East of Southwest corner of parking lot, 1.5m below sub-grade level.	Brown Silty Clay and Gravel	2121	1873	13.2	1880	14.9	100	Yes
4	65m North, 22m East of Southwest corner of parking lot, 1.5m below sub-grade level.	Brown Silty Clay and Gravel	2077	1846	12.5	1880	14.9	98	Yes
5	55m North, 22m East of Southwest corner of parking lot, 1.2m below sub-grade level.	Brown Silty Clay and Gravel	2104	1847	13.9	1880	14.9	98	Yes
6	65m North, 22m East of Southwest corner of parking lot, 1.2m below sub-grade level.	Brown Silty Clay and Gravel	2088	1863	12.1	1880	14.9	99	Yes

COMPACTION REQUIREMENTS: 98 Percent Standard

OBSERVATIONS / COMMENTS:

FIELD TECHNICIAN:
Ryan Fuller

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SUMMARY OF IN-PLACE DENSITY MEASUREMENTS

PROJECT DESCRIPTION:	Proposed Future Parking Lot	PROJECT NO.:	SM 240155-K	DATE:	March 13, 2024	
416 Mohawk Road East, Hamilton, Ontario						
AREA TESTED:	Subgrade Fill for Parking Lot				TABLE NO.:	2A

TEST NO.	TEST LOCATION	BACKFILL DESCRIPTION	Wet Density (kg/m ³)	Dry Density (kg/m ³)	Water Content (%)	Max. Dry Density (kg/m ³)	Water Content (%)	Compact. %	MEET REQ.
7	55m North, 22m East of Southwest corner of parking lot, 0.9m below sub-grade level.	Brown Silty Clay and Gravel	2104	1864	12.9	1880	14.9	99	Yes
8	65m North, 22m East of Southwest corner of parking lot, 0.9m below sub-grade level.	Brown Silty Clay and Gravel	2129	1895	12.3	1880	14.9	100+	Yes

COMPACTION REQUIREMENTS: 98 Percent Standard

OBSERVATIONS / COMMENTS:

FIELD TECHNICIAN:
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SUMMARY OF IN-PLACE DENSITY MEASUREMENTS

PROJECT DESCRIPTION:	Proposed Future Parking Lot	PROJECT NO.:	SM 240155-K	DATE:	March 14, 2024	
416 Mohawk Road East, Hamilton, Ontario						
AREA TESTED:	Subgrade Fill for Parking Lot				TABLE NO.:	3

TEST NO.	TEST LOCATION	BACKFILL DESCRIPTION	Wet Density (kg/m ³)	Dry Density (kg/m ³)	Water Content (%)	Max. Dry Density (kg/m ³)	Water Content (%)	Compact. %	MEET REQ.
1	25m South, 22m East of entrance to parking lot, 1.2m below sub-grade level.	Brown Silty Clay and Gravel	2121	1844	15.0	1880	14.9	98	Yes
2	21m South, 20m East of entrance to parking lot, 1.2m below sub-grade level.	Brown Silty Clay and Gravel	2125	1864	14.0	1880	14.9	99	Yes
3	17m South, 15m East of entrance to parking lot, 1.2m below sub-grade level.	Brown Silty Clay and Gravel	2139	1868	14.5	1880	14.9	99	Yes
4	25m South, 12m East of entrance to parking lot, 1.2m below sub-grade level.	Brown Silty Clay and Gravel	2121	1865	13.7	1880	14.9	99	Yes
5	19m South, 18m East of entrance to parking lot, 1.2m below sub-grade level.	Brown Silty Clay and Gravel	2131	1866	14.2	1880	14.9	99	Yes
6	12m South, 20m East of entrance to parking lot, 1.2m below sub-grade level.	Brown Silty Clay and Gravel	2120	1860	14.0	1880	14.9	99	Yes

COMPACTION REQUIREMENTS: 98 Percent Standard

OBSERVATIONS / COMMENTS:

FIELD TECHNICIAN:
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SUMMARY OF IN-PLACE DENSITY MEASUREMENTS

PROJECT DESCRIPTION:	Proposed Future Parking Lot	PROJECT NO.:	SM 240155-K	DATE:	March 14, 2024	
416 Mohawk Road East, Hamilton, Ontario						
AREA TESTED:	Subgrade Fill for Parking Lot				TABLE NO.:	3A

TEST NO.	TEST LOCATION	BACKFILL DESCRIPTION	Wet Density (kg/m ³)	Dry Density (kg/m ³)	Water Content (%)	Max. Dry Density (kg/m ³)	Water Content (%)	Compact. %	MEET REQ.
7	12m South, 25m East of centreline of entrance to main parking lot, 0.9m below sub-grade level.	Brown Silty Clay and Gravel	2106	1839	14.5	1880	14.9	98	Yes
8	16m South, 20m East of centreline of entrance to main parking lot, 0.9m below sub-grade level.	Brown Silty Clay and Gravel	2143	1870	14.6	1880	14.9	99	Yes
9	22m South, 23m East of centreline of entrance to main parking lot, 0.9m below sub-grade level.	Brown Silty Clay and Gravel	2121	1857	14.2	1880	14.9	99	Yes
10	10m South, 12m East of centreline of entrance to main parking lot, 0.9m below sub-grade level.	Brown Silty Clay and Gravel	2139	1876	14.0	1880	14.9	100	Yes
11	16m South, 10m East of centreline of entrance to main parking lot, 0.9m below sub-grade level.	Brown Silty Clay and Gravel	2141	1880	13.9	1880	14.9	100	Yes
12	24m South, 12m East of centreline of entrance to main parking lot, 0.9m below sub-grade level.	Brown Silty Clay and Gravel	2135	1865	14.5	1880	14.9	99	Yes

COMPACTION REQUIREMENTS: 98 Percent Standard

OBSERVATIONS / COMMENTS:

FIELD TECHNICIAN:
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SUMMARY OF IN-PLACE DENSITY MEASUREMENTS

PROJECT DESCRIPTION:	Proposed Future Parking Lot	PROJECT NO.:	SM 240155-K	DATE:	March 19, 2024	
416 Mohawk Road East, Hamilton, Ontario						
AREA TESTED:	Subgrade Fill for Parking Lot				TABLE NO.:	4

TEST NO.	TEST LOCATION	BACKFILL DESCRIPTION	Wet Density (kg/m ³)	Dry Density (kg/m ³)	Water Content (%)	Max. Dry Density (kg/m ³)	Water Content (%)	Compact. %	MEET REQ.
1	27m South, 25m East of centreline of entrance to parking lot, at sub-grade level.	Brown Silty Clay and Gravel	2154	1878	14.7	1880	14.9	100	Yes
2	25m South, 12m East of centreline of entrance to parking lot, at sub-grade level.	Brown Silty Clay and Gravel	2141	1867	14.7	1880	14.9	99	Yes
3	23m South, 23m East of centreline of entrance to parking lot, at sub-grade level.	Brown Silty Clay and Gravel	2155	1877	14.8	1880	14.9	100	Yes
4	20m South, 10m East of centreline of entrance to parking lot, at sub-grade level.	Brown Silty Clay and Gravel	2145	1865	15.0	1880	14.9	99	Yes
5	17m South, 19m East of centreline of entrance to parking lot, at sub-grade level.	Brown Silty Clay and Gravel	2142	1869	14.6	1880	14.9	99	Yes
6	15m South, 13m East of centreline of entrance to parking lot, at sub-grade level.	Brown Silty Clay and Gravel	2137	1863	14.7	1880	14.9	99	Yes

COMPACTION REQUIREMENTS: 98 Percent Standard

OBSERVATIONS / COMMENTS:

FIELD TECHNICIAN:
David Guillermo

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SUMMARY OF IN-PLACE DENSITY MEASUREMENTS

PROJECT DESCRIPTION:	Proposed Future Parking Lot	PROJECT NO.:	SM 240155-K	DATE:	March 21, 2024	
416 Mohawk Road East, Hamilton, Ontario						
AREA TESTED:	Subgrade Fill for Parking Lot				TABLE NO.:	5

TEST NO.	TEST LOCATION	BACKFILL DESCRIPTION	Wet Density (kg/m ³)	Dry Density (kg/m ³)	Water Content (%)	Max. Dry Density (kg/m ³)	Water Content (%)	Compact. %	MEET REQ.
1	60m North, 40m West of Northeast corner of parking lot, at base course level.	Granular "A" Recycled	1937	1793	8.0	1965	12.0	91	Re-Tested See Test #4
2	70m North, 20m West of Northeast corner of parking lot, at base course level.	Granular "A" Recycled	1964	1817	8.1	1965	12.0	92	Re-Tested See Test #5
3	80m North, 30m West of Northeast corner of parking lot, at base course level.	Granular "A" Recycled	1930	1795	7.5	1965	12.0	91	Re-Tested See Test #6
4	Retest of Test #1	Granular "A" Recycled	2092	1925	8.7	1965	12.0	98	Yes
5	Retest of Test #2	Granular "A" Recycled	2092	1939	7.9	1965	12.0	99	Yes
6	Retest of Test #3	Granular "A" Recycled	2013	1866	7.9	1965	12.0	95	Re-Tested See Test #7

COMPACTION REQUIREMENTS: 98 Percent Standard

OBSERVATIONS / COMMENTS:

FIELD TECHNICIAN:
Harshil Mehta

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SUMMARY OF IN-PLACE DENSITY MEASUREMENTS

PROJECT DESCRIPTION:	Proposed Future Parking Lot	PROJECT NO.:	SM 240155-K	DATE:	March 21, 2024	
416 Mohawk Road East, Hamilton, Ontario						
AREA TESTED:	Subgrade Fill for Parking Lot				TABLE NO.:	5A

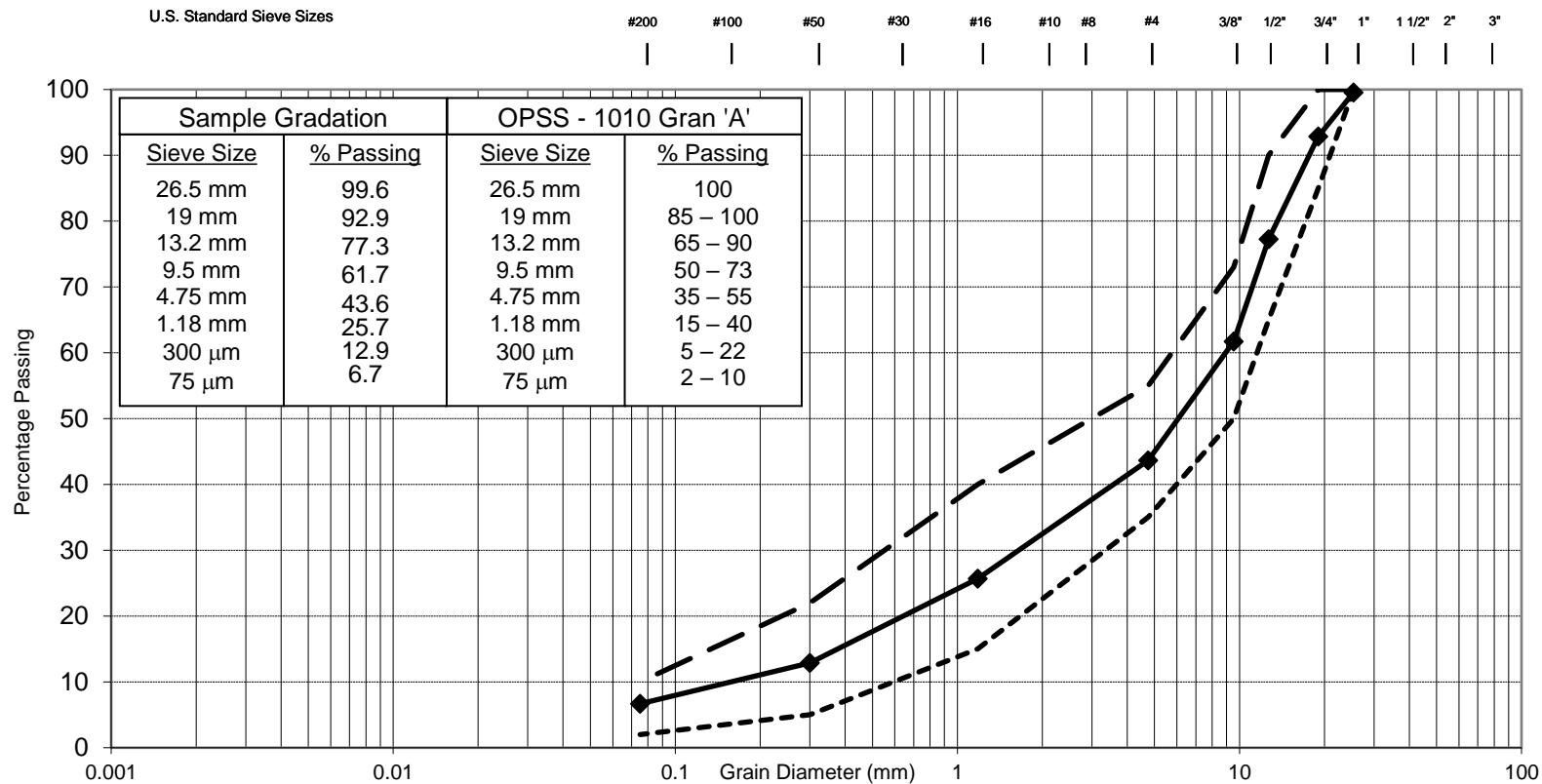
TEST NO.	TEST LOCATION	BACKFILL DESCRIPTION	Wet Density (kg/m ³)	Dry Density (kg/m ³)	Water Content (%)	Max. Dry Density (kg/m ³)	Water Content (%)	Compact. %	MEET REQ.
7	Retest of Test #6	Granular "A" Recycled	2087	1947	7.2	1965	12.0	99	Yes

COMPACTION REQUIREMENTS: 98 Percent Standard

OBSERVATIONS / COMMENTS:

FIELD TECHNICIAN:
Harshil Mehta

Mechanical Analysis



Clay	Fine	Medium	Coarse	Fine	Medium	Coarse	Fine	Medium	Coarse	
	Silt			Sand			Gravel			
MODIFIED M.I.T. CLASSIFICATION						SOIL-MAT ENGINEERS & CONSULTANTS LTD.				
						416 Mohawk Road East Hamilton, ON				
Drawing No.: 1						Project No.: SM 240155-K			Lab No.: 24-074	
Granular "A" Recycled										