



Integrated Testing and Engineering Company of San Antonio, L.P.

Geotechnical & Environmental Engineering • Construction Services • Geologic Assessment

E.A. Palaniappan, Ph.D., P.E.
Murali Subramaniam, Ph.D., P.E.
Kausi Subramaniam, B.S.

November 6, 2023

Boerne Medical Center, LTD
C/o:
Barry Sanditen
500 N. Cap. of Tex. Hwy. Bldg. 7
Austin, TX 78746

Re: Construction Materials Testing
Waterline Installation – Backfill Compaction
Boerne Professional Center
Frontage Rd. IH 10 West to Switchback Trail Boerne
Kendall County, Texas 78006

InTEC Project #: S232861-1

Gentlemen:

The Laboratory Compaction and Field Density Tests results at the above referenced project site are presented for your review.

We appreciate and wish to thank you for the opportunity to be of service to you on this project. If we can be of additional assistance, or if you have any questions, please call us.

Respectfully Submitted,
InTEC of San Antonio, L.P.

Murali Subramaniam, Ph.D., P.E.

Copies Submitted: Above (1)



[Signature]
11/07/2023



Moisture Density Relationship

InTEC of San Antonio
12028 Radium
San Antonio, TX 78216
Phone: 210-525-9033

Client:
V.K. Knowlton Construction and Utilities, Inc.
18225 FM 2252
San Antonio, TX 78266

Project:
S232861
Boerne Professional Center
29.8139704, -98.7532319
Boerne, TX

SAMPLE DATA

Sample Number: 22717

Sample Date: 05/25/2023

Technician: Olson, James

Material Use: Utility Backfill

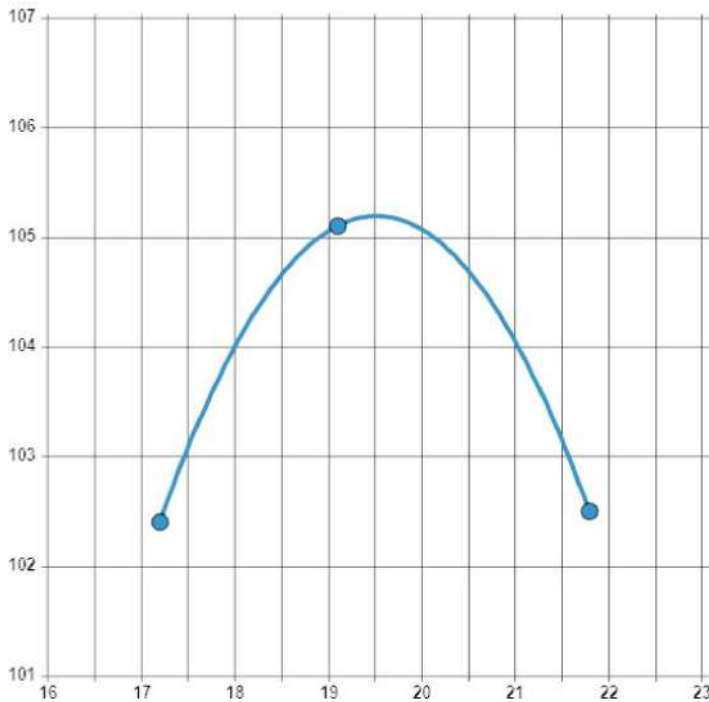
Sample Location: On site backfill

Material Description: Dark Brown Clay with Gravel

LAB DATA

Test Method: ASTM D1557 - Method C

Proctor Curve:



Maximum Dry Density (pcf): 105.2

Optimum Moisture (%): 19.5

Soil Classification: CH Clay with gravel

Test Completed Date: 05/30/2023

Test Completed By: Efediya, Eugene



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SAMPLE DATA

Sample Number: 22718

Sample Date: 05/25/2023

Technician: Olson, James

Material Use: Utility Backfill

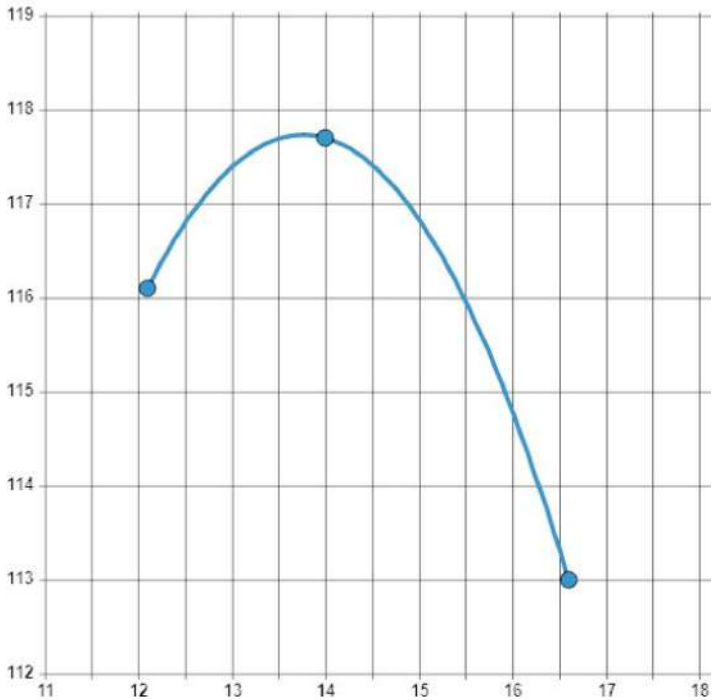
Sample Location: On site backfill

Material Description: Brown Clay with Gravel

LAB DATA

Test Method: ASTM D1557 - Method C

Proctor Curve:



Maximum Dry Density (pcf): 117.7

Optimum Moisture (%): 13.8

Soil Classification: CH Clay with gravel

Test Completed Date: 05/30/2023

Test Completed By: Efediya, Eugene



Moisture Density Relationship

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Boerne, TX

SAMPLE DATA

Sample Number: 22719 **Sample Date:** 05/25/2023

Technician: Olson, James **Material Use:** Utility Backfill

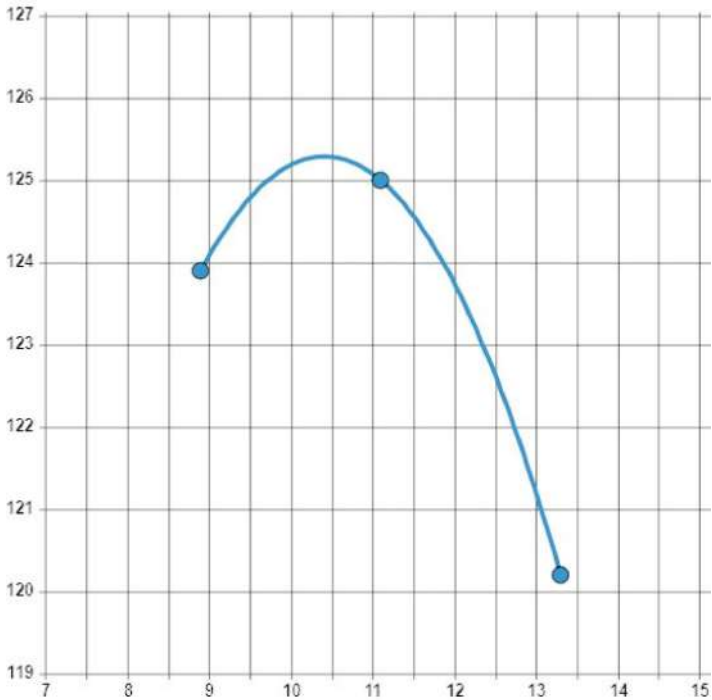
Sample Location: On site backfill

Material Description: Tan to Brown Gravelly Clay

LAB DATA

Test Method: ASTM D1557 - Method C

Proctor Curve:



Maximum Dry Density (pcf): 125.3

Optimum Moisture (%): 10.4

Soil Classification: GC Gravelly Clay

Test Completed Date: 05/30/2023

Test Completed By: Efediya, Eugene



InTEC of San Antonio
12028 Radium
San Antonio, TX 78216
Phone: 210-525-9033

Compaction Evaluation

Report Date: 07/27/2023
Test Method: ASTM D6938, Tex 115E

Client:

V.K. Knowlton Construction and Utilities, Inc.
18225 FM 2252
San Antonio, TX 78266

Project:

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Test Results														
Test #	Retest Of	Test Date	Proctor ID	Method	Soil Classification	Optimum Moisture (%)	Maximum Dry Density (pcf)	In Place Moisture (%)	In Place Dry Density (pcf)	In Place Wet Density (pcf)	Probe Depth (in)	Percent Compaction	Min Comp. (%)	Remark
60		07/11/23	22718		CH	13.8	117.7	13.5	114.7	130.2	6	97	95	C
61		07/11/23	22718		CH	13.8	117.7	13.7	113.5	129.0	6	96	95	C
62		07/11/23	22718		CH	13.8	117.7	13.2	114.8	130.0	6	98	95	C
63		07/11/23	22718		CH	13.8	117.7	13.6	113.7	129.2	6	97	95	C
64		07/12/23	22718		CH	13.8	117.7	14.2	115.8	132.2	6	98	95	C
65		07/12/23	22718		CH	13.8	117.7	13.5	116.4	132.1	6	99	95	C
66		07/12/23	22718		CH	13.8	117.7	13.8	119.2	135.6	6	101	95	C
67		07/12/23	22718		CH	13.8	117.7	13.5	118.2	134.2	6	100	95	C
Test Information														
Test #	Test Location						Elevation	Reference		Gauge Make / Model / SN / Calibrated			Field Technician	
60	Water Main: 12" Water Main South of Switchback Trail at 200' L.F.							1st Lift		Troxler / 3430 / 62183 / 08/29/2022			Cisneros, Ramiro	
61	Water Main: 12" Water Main South of Switchback Trail at 400' L.F.							1st Lift		Troxler / 3430 / 62183 / 08/29/2022			Cisneros, Ramiro	
62	Water Main: 12" Water Main South of Switchback Trail at 200' L.F.							2nd Lift		Troxler / 3430 / 62183 / 08/29/2022			Cisneros, Ramiro	
63	Water Main: 12" Water Main South of Switchback Trail at 400' L.F.							2nd Lift		Troxler / 3430 / 62183 / 08/29/2022			Cisneros, Ramiro	
64	Water Main: 12" Water Main South of Switchback Trail at 200' L.F.							3rd Lift		Troxler / 3430 / 62183 / 08/29/2022			Cisneros, Ramiro	
65	Water Main: 12" Water Main South of Switchback Trail at 400' L.F.							3rd Lift		Troxler / 3430 / 62183 / 08/29/2022			Cisneros, Ramiro	
66	Water Main: 12" Water Main South of Switchback Trail at 200' L.F.							4th Lift		Troxler / 3430 / 62183 / 08/29/2022			Cisneros, Ramiro	
67	Water Main: 12" Water Main South of Switchback Trail at 400' L.F.							4th Lift		Troxler / 3430 / 62183 / 08/29/2022			Cisneros, Ramiro	
Remarks				Comments										
C: Compliant				Tests are "Direct Transmission" (Method A) unless probe depth is noted as "Backscatter". Gauge calibration data on file with the testing agency.										

Testing performed when called in.
InTEC did not observe the installation of the material.
Testing directed by the City Inspector when present.
Test results apply only to the specific locations and materials noted and may not represent any other locations or elevations.



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68		07/13/23	22718		CH	13.8	117.7	13.7	118.5	134.7	6	101	95	C
70		07/13/23	22718		CH	13.8	117.7	13.3	115.8	131.2	6	98	95	C
73		07/14/23	22718		CH	13.8	117.7	13.3	116.8	132.3	6	99	95	C
74		07/14/23	22718		CH	13.8	117.7	13.5	115.9	131.5	6	98	95	C
76		07/14/23	22718		CH	13.8	117.7	14.1	116.3	132.7	6	99	95	C
77		07/17/23	22718		CH	13.8	117.7	14.2	116.8	133.4	6	99	95	C
Test Information														
Test #	Test Location						Elevation	Reference		Gauge Make / Model / SN / Calibrated			Field Technician	
68	Water Main: 12" Water Main North of Switchback Trail Cul-de-sac at 100' L.F.							1st Lift		Troxler / 3430 / 62183 / 08/29/2022			Cisneros, Ramiro	
70	Water Main: 12" Water Main North of Switchback Trail Cul-de-sac at 100' L.F.							2nd Lift		Troxler / 3430 / 62183 / 08/29/2022			Cisneros, Ramiro	
73	Water Main: 12" Water Main North of Switchback Trail Cul-de-sac at 100' L.F.							3rd Lift		Troxler / 3430 / 62183 / 08/29/2022			Cisneros, Ramiro	
74	Water Main: 12" Water Main North of Switchback Trail Cul-de-sac at 400' L.F.							1st Lift		Troxler / 3430 / 62183 / 08/29/2022			Cisneros, Ramiro	
76	Water Main: 12" Water Main North of Switchback Trail Cul-de-sac at 400' L.F							2nd Lift		Troxler / 3430 / 62183 / 08/29/2022			Cisneros, Ramiro	
77	Water Main: 12" Water Main North of Switchback Trail Cul-de-sac at 400' L.F							3rd Lift		Troxler / 3430 / 62183 / 08/29/2022			Cisneros, Ramiro	
Remarks				Comments										
C: Compliant				Tests are "Direct Transmission" (Method A) unless probe depth is noted as "Backscatter". Gauge calibration data on file with the testing agency.										

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