



Construction Materials Testing  
**Waterline Installation—Backfill Compaction**  
**Rancho Carlota Unit 5**  
**San Antonio, Texas**

**InTEC Project No. S232015-2**  
January 16, 2024

**V. K. Knowlton Construction & Utilities, Ltd.**  
18225 FM 2252  
San Antonio, Texas 78266



**Integrated Testing and Engineering Company of San Antonio, L.P.**  
Geotechnical & Environmental Engineering • Construction Services • Geologic Assessment

January 16, 2024

V. K. Knowlton Construction & Utilities, Ltd.  
18225 FM 2252  
San Antonio, Texas 78266

**Attention: Mr. Matt Anderson**

Re: Construction Materials Testing  
**Waterline Installation – Backfill Compaction**  
**Rancho Carlota Unit 5**  
San Antonio, Texas

**InTEC Project #: S232015-2**

Gentlemen:

Integrated Testing and Engineering Company of San Antonio, L.P. (InTEC) performed compaction evaluation at the above referenced project site between April 28, 2023 and April 29, 2023.

Field density tests were performed on an “on call” basis by the contractor. Full time observation of fill placement was not performed. 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.

Sincerely,

**InTEC of San Antonio**

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



01/16/2024



# Moisture Density Relationship

04/11/2023

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

**Client:**  
Habitat for Humanity of San Antonio  
311 Probandt  
San Antonio, TX 78204

**Project:**  
S232015  
Rancho Carlota Unit 5  
29.282096881646286, -98.59626795506253  
San Antonio, TX

## SAMPLE DATA

**Sample Number:** 22248

**Sample Date:** 04/05/2023

**Technician:** Johnson, Thomas

**Material Use:** Utility Backfill

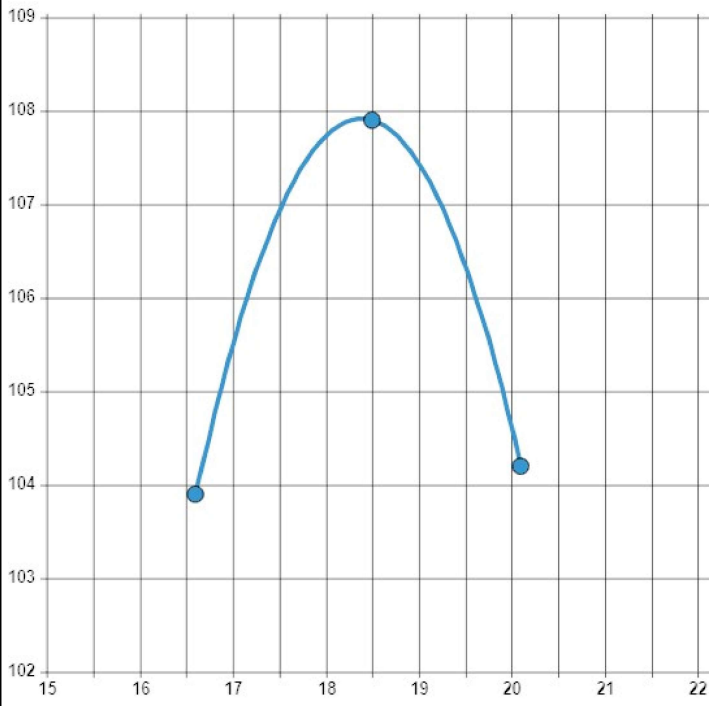
**Sample Location:** Stockpile

**Material Description:** Dark Brown Clay with Gravel

## LAB DATA

**Test Method:** Tex 113E

**Proctor Curve:**



**Maximum Dry Density (pcf):** 107.9

**Optimum Moisture (%):** 18.4

**Soil Classification:** CH Clay with gravel

**Test Completed Date:** 04/10/2023

**Test Completed By:** Agare, Ovie



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

## Compaction Evaluation

Report Date: 01/16/2024  
Test Method: ASTM D6938, Tex 115E

### Client:

Habitat for Humanity of San Antonio  
311 Probandt  
San Antonio, TX 78204

### Project:

S232015  
Rancho Carlota Unit 5  
29.282096881646286, -98.59626795506253  
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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. (%)	Optimum Moisture Tolerance (%)	Remarks
66		04/28/23	U22248		CH	18.4	107.9	17.9	106.7	125.8	6	98.9	98	-2 / 2	C
67		04/28/23	U22248		CH	18.4	107.9	17.3	107.5	126.1	6	99.6	98	-2 / 2	C
68		04/28/23	U22248		CH	18.4	107.9	16.6	109.4	127.6	6	101.4	98	-2 / 2	C
69		04/28/23	U22248		CH	18.4	107.9	17.5	108.3	127.3	6	100.4	98	-2 / 2	C
70		04/29/23	U22248		CH	18.4	107.9	20.2	106.3	127.8	6	98.5	98	-2 / 2	C
71		04/29/23	U22248		CH	18.4	107.9	20.0	106.4	127.7	6	98.6	98	-2 / 2	C
72		04/29/23	U22248		CH	18.4	107.9	20.1	106.6	128.0	6	98.8	98	-2 / 2	C
73		04/29/23	U22248		CH	18.4	107.9	18.8	106.5	126.5	6	98.7	98	-2 / 2	C
Test Information															
Test #	Test Location						Elevation	Reference		Gauge Make / Model / SN / Calibrated			Field Technician		
66	Water Main: Rancho Carlota Drive, Block 9 Lot 43							1st Lift		Troxler / 3430P / 76814 / 08/18/2022			Martinez, Juan		
67	Water Main: Rancho Carlota Drive, Block 9 Lot 47							1st Lift		Troxler / 3430P / 76814 / 08/18/2022			Martinez, Juan		
68	Water Main: Rancho Carlota Drive, Block 9 Lot 50							1st Lift		Troxler / 3430P / 76814 / 08/18/2022			Martinez, Juan		
69	Water Main: Rancho Carlota Drive, Block 12 Lot 32							1st Lift		Troxler / 3430P / 76814 / 08/18/2022			Martinez, Juan		
70	Water Main: Rancho Carlota Drive, Block 9 Lot 32							2nd Lift		Troxler / 3430 / 30173 / 06/24/2022			Villarreal Sr., Robert		
71	Water Main: Rancho Carlota Drive, Block 9 Lot 47							2nd Lift		Troxler / 3430 / 30173 / 06/24/2022			Villarreal Sr., Robert		
72	Water Main: Rancho Carlota Drive, Block 9 Lot 42							2nd Lift		Troxler / 3430 / 30173 / 06/24/2022			Villarreal Sr., Robert		
73	Water Main: Rancho Carlota Block 9 Lot 32							3rd Lift		Troxler / 3430 / 30173 / 06/24/2022			Villarreal Sr., Robert		
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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74		04/29/23	U22248		CH	18.4	107.9	18.2	106.7	126.1	6	98.9	98	-2 / 2	C
75		04/29/23	U22248		CH	18.4	107.9	18.7	106.9	126.9	6	99.1	98	-2 / 2	C
76		04/29/23	U22248		CH	18.4	107.9	17.5	106.1	124.7	6	98.3	98	-2 / 2	C
77		04/29/23	U22248		CH	18.4	107.9	17.5	106.3	124.9	6	98.5	98	-2 / 2	C
Test Information															
Test #	Test Location							Elevation	Reference		Gauge Make / Model / SN / Calibrated			Field Technician	
74	Water Main: Rancho Carlota Drive, Block 9 Lot 49								3rd Lift		Troxler / 3430 / 30173 / 06/24/2022			Villarreal Sr., Robert	
75	Water Main: Rancho Carlota Drive, Block 9 Lot 43								3rd Lift		Troxler / 3430 / 30173 / 06/24/2022			Villarreal Sr., Robert	
76	Water Services: Rancho Carlota Drive, Block 12 Lot 31								1st Lift		Troxler / 3430 / 30173 / 06/24/2022			Villarreal Sr., Robert	
77	Water Services: Rancho Carlota Drive, Block 12 Lot 29								1st Lift		Troxler / 3430 / 30173 / 06/24/2022			Villarreal Sr., Robert	
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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