



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

InTEC Project No. S232015-1
January 15, 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 15, 2024

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

Attention: Mr. Matt Anderson

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

InTEC Project #: S232015-1

Gentlemen:

Integrated Testing and Engineering Company of San Antonio, L.P. (InTEC) performed compaction evaluation at the above referenced project site between April 14, 2023 and April 17, 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

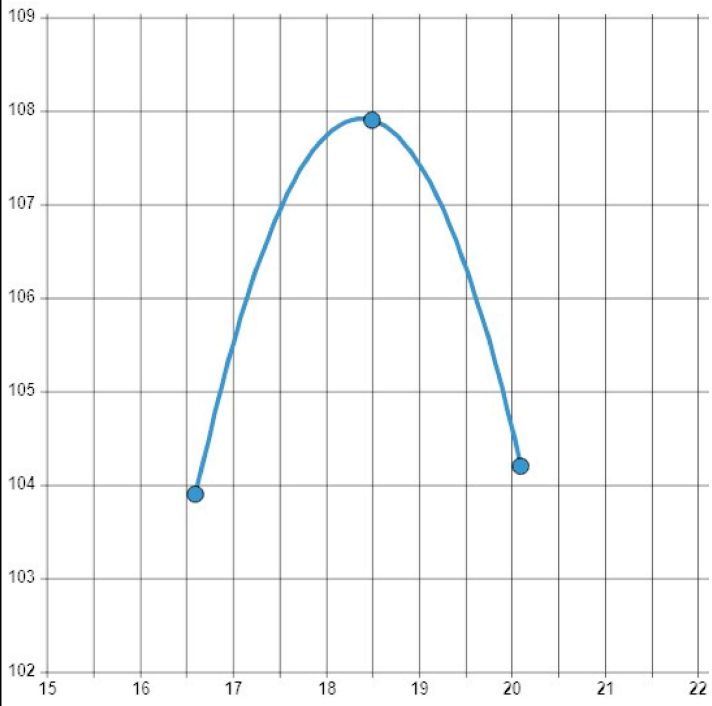
Sample Location: Stockpile

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



Moisture Density Relationship

04/11/2023

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

Client:
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311 Probandt
San Antonio, TX 78204

Project:
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SAMPLE DATA

Sample Number: 22249

Sample Date: 04/05/2023

Technician: Johnson, Thomas

Material Use: Utility Backfill

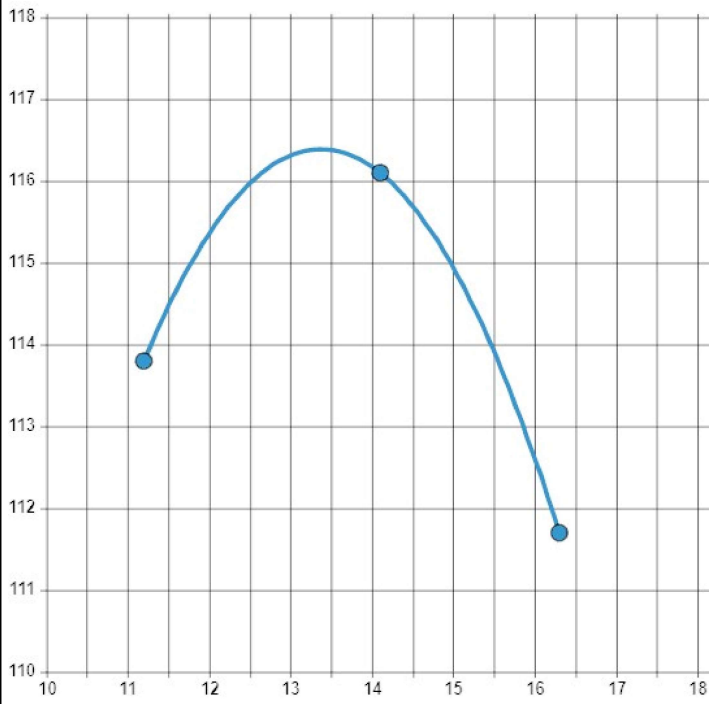
Sample Location: Stockpile

Material Description: Tan Clay with Gravel

LAB DATA

Test Method: Tex 113E

Proctor Curve:



Maximum Dry Density (pcf): 116.4

Optimum Moisture (%): 13.4

Soil Classification: CH Clay with gravel

Test Completed Date: 04/10/2023

Test Completed By: Agare, Ovie



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: 22250

Sample Date: 04/05/2023

Technician: Johnson, Thomas

Material Use: Utility Backfill

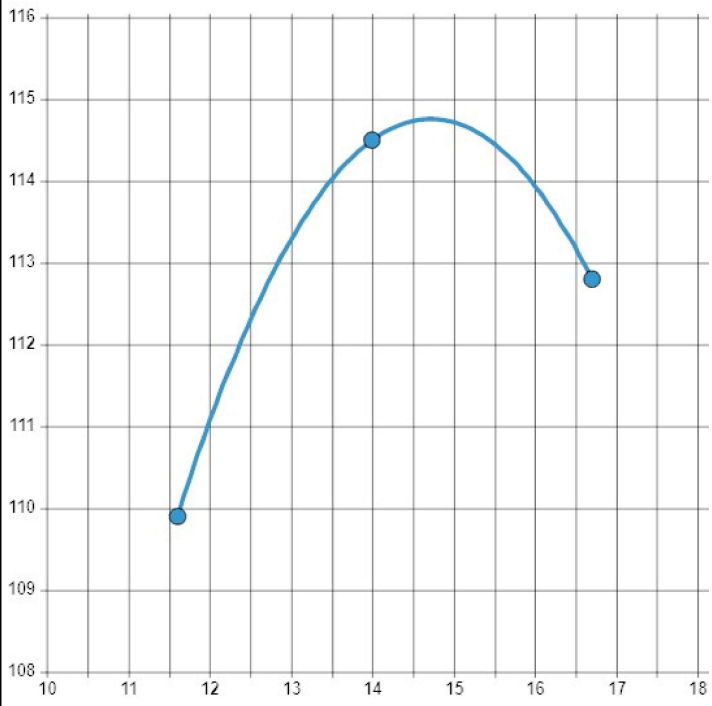
Sample Location: Stockpile

Material Description: Tan to Brown Clay with Gravel

LAB DATA

Test Method: Tex 113E

Proctor Curve:



Maximum Dry Density (pcf): 114.8

Optimum Moisture (%): 14.7

Soil Classification: CH Clay with gravel

Test Completed Date: 04/10/2023

Test Completed By: Agare, Ovie



InTEC of San Antonio
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
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San Antonio, TX

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 (%)	Remark
20		04/14/23	U22250		CH	14.7	114.8	13.5	113.7	129.0	6	99.0	98	-2 / 2	C
21		04/14/23	U22250		CH	14.7	114.8	14.1	112.9	128.8	6	98.3	98	-2 / 2	C
22		04/14/23	U22250		CH	14.7	114.8	13.6	114.2	129.7	6	99.5	98	-2 / 2	C
23		04/14/23	U22250		CH	14.7	114.8	13.1	113.9	128.8	6	99.2	98	-2 / 2	C
24		04/14/23	U22250		CH	14.7	114.8	13.5	115.3	130.9	6	100.4	98	-2 / 2	C
25		04/14/23	U22250		CH	14.7	114.8	15.2	113.9	131.2	6	99.2	98	-2 / 2	C
26		04/14/23	U22250		CH	14.7	114.8	13.7	114.2	129.8	6	99.5	98	-2 / 2	C
27		04/14/23	U22250		CH	14.7	114.8	12.9	115.0	129.8	6	100.2	98	-2 / 2	C
Test Information															
Test #	Test Location							Elevation	Reference		Gauge Make / Model / SN / Calibrated			Field Technician	
20	Sewer Main: Line E STA 6+50								1st Lift		Troxler / 3430 / 62183 / 08/29/2022			Cisneros, Ramiro	
21	Sewer Laterals: Line E STA 5+98								1st Lift		Troxler / 3430 / 62183 / 08/29/2022			Cisneros, Ramiro	
22	Sewer Laterals: Line E STA 6+48								1st Lift		Troxler / 3430 / 62183 / 08/29/2022			Cisneros, Ramiro	
23	Sewer Laterals: Line E STA 6+98								1st Lift		Troxler / 3430 / 62183 / 08/29/2022			Cisneros, Ramiro	
24	Sewer Main: Line E STA 9+50								1st Lift		Troxler / 3430 / 62183 / 08/29/2022			Cisneros, Ramiro	
25	Sewer Laterals: Line E STA 8+11								1st Lift		Troxler / 3430 / 62183 / 08/29/2022			Cisneros, Ramiro	
26	Sewer Laterals: Line E STA 8+61								1st Lift		Troxler / 3430 / 62183 / 08/29/2022			Cisneros, Ramiro	
27	Sewer Laterals: Line E STA 9+11								1st 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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Compaction Evaluation

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28		04/14/23	U22250		CH	14.7	114.8	13.4	116.1	131.7	6	101.1	98	-2 / 2	C
29		04/14/23	U22250		CH	14.7	114.8	15.2	114.3	131.7	6	99.6	98	-2 / 2	C
30		04/14/23	U22250		CH	14.7	114.8	12.8	115.7	130.5	6	100.8	98	-2 / 2	C
31		04/14/23	U22250		CH	14.7	114.8	15.3	113.7	131.1	6	99.0	98	-2 / 2	C
32		04/14/23	U22250		CH	14.7	114.8	13.1	115.5	130.6	6	100.6	98	-2 / 2	C
33		04/14/23	U22250		CH	14.7	114.8	14.8	113.5	130.3	6	98.9	98	-2 / 2	C
34		04/14/23	U22250		CH	14.7	114.8	13.6	115.6	131.3	6	100.7	98	-2 / 2	C
35		04/14/23	U22250		CH	14.7	114.8	14.1	113.8	129.8	6	99.1	98	-2 / 2	C
Test Information															
Test #	Test Location							Elevation	Reference		Gauge Make / Model / SN / Calibrated			Field Technician	
28	Sewer Laterals: Line E STA 9+61								1st Lift		Troxler / 3430 / 62183 / 08/29/2022			Cisneros, Ramiro	
29	Sewer Laterals: Line E STA 10+61								1st Lift		Troxler / 3430 / 62183 / 08/29/2022			Cisneros, Ramiro	
30	Sewer Main: Line E STA 6+50								2nd Lift		Troxler / 3430 / 62183 / 08/29/2022			Cisneros, Ramiro	
31	Sewer Laterals: Line E STA 5+98								2nd Lift		Troxler / 3430 / 62183 / 08/29/2022			Cisneros, Ramiro	
32	Sewer Laterals: Line E STA 6+48								2nd Lift		Troxler / 3430 / 62183 / 08/29/2022			Cisneros, Ramiro	
33	Sewer Laterals: Line E STA 6+98								2nd Lift		Troxler / 3430 / 62183 / 08/29/2022			Cisneros, Ramiro	
34	Sewer Main: Line E STA 6+50								3rd Lift		Troxler / 3430 / 62183 / 08/29/2022			Cisneros, Ramiro	
35	Sewer Laterals: Line E STA 5+98								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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36		04/14/23	U22250		CH	14.7	114.8	15.3	113.8	131.2	6	99.1	98	-2 / 2	C
37		04/14/23	U22250		CH	14.7	114.8	16.2	114.4	132.9	6	99.7	98	-2 / 2	C
38		04/14/23	U22250		CH	14.7	114.8	13.6	115.1	130.8	6	100.3	98	-2 / 2	C
39		04/14/23	U22250		CH	14.7	114.8	15.4	112.9	130.3	6	98.3	98	-2 / 2	C
40		04/14/23	U22250		CH	14.7	114.8	13.8	114.9	130.8	6	100.1	98	-2 / 2	C
41		04/14/23	U22250		CH	14.7	114.8	15.2	115.5	133.1	6	100.6	98	-2 / 2	C
42		04/14/23	U22250		CH	14.7	114.8	13.4	116.3	131.9	6	101.3	98	-2 / 2	C
43		04/14/23	U22250		CH	14.7	114.8	15.5	113.2	130.7	6	98.6	98	-2 / 2	C
Test Information															
Test #	Test Location							Elevation	Reference		Gauge Make / Model / SN / Calibrated			Field Technician	
36	Sewer Laterals: Line E STA 6+48								3rd Lift		Troxler / 3430 / 62183 / 08/29/2022			Cisneros, Ramiro	
37	Sewer Laterals: Line E STA 6+98								3rd Lift		Troxler / 3430 / 62183 / 08/29/2022			Cisneros, Ramiro	
38	Sewer Main: Line E STA 9+50								2nd Lift		Troxler / 3430 / 62183 / 08/29/2022			Cisneros, Ramiro	
39	Sewer Laterals: Line E STA 8+11								2nd Lift		Troxler / 3430 / 62183 / 08/29/2022			Cisneros, Ramiro	
40	Sewer Laterals: Line E STA 8+61								2nd Lift		Troxler / 3430 / 62183 / 08/29/2022			Cisneros, Ramiro	
41	Sewer Laterals: Line E STA 9+11								2nd Lift		Troxler / 3430 / 62183 / 08/29/2022			Cisneros, Ramiro	
42	Sewer Laterals: Line E STA 9+61								2nd Lift		Troxler / 3430 / 62183 / 08/29/2022			Cisneros, Ramiro	
43	Sewer Laterals: Line E STA 10+11								2nd 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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44		04/14/23	U22250		CH	14.7	114.8	13.9	114.9	130.9	6	100.1	98	-2 / 2	C
45		04/17/23	U22250		CH	14.7	114.8	15.4	113.6	131.1	6	99.0	98	-2 / 2	C
46		04/17/23	U22250		CH	14.7	114.8	13.6	115.2	130.9	6	100.3	98	-2 / 2	C
47		04/17/23	U22250		CH	14.7	114.8	14.1	113.3	129.3	6	98.7	98	-2 / 2	C
48		04/17/23	U22250		CH	14.7	114.8	12.8	115.1	129.8	6	100.3	98	-2 / 2	C
49		04/17/23	U22250		CH	14.7	114.8	13.2	116.2	131.5	6	101.2	98	-2 / 2	C
50		04/17/23	U22250		CH	14.7	114.8	15.3	115.4	133.1	6	100.5	98	-2 / 2	C
51		04/17/23	U22250		CH	14.7	114.8	12.9	114.2	128.9	6	99.5	98	-2 / 2	C
Test Information															
Test #	Test Location							Elevation	Reference		Gauge Make / Model / SN / Calibrated			Field Technician	
44	Sewer Laterals: Line E STA 11+11								2nd Lift		Troxler / 3430 / 62183 / 08/29/2022			Cisneros, Ramiro	
45	Sewer Main: Line E STA 6+50								4th Lift		Troxler / 3430 / 62183 / 08/29/2022			Cisneros, Ramiro	
46	Sewer Laterals: Line E STA 5+98								4th Lift		Troxler / 3430 / 62183 / 08/29/2022			Cisneros, Ramiro	
47	Sewer Laterals: Line E STA 6+48								4th Lift		Troxler / 3430 / 62183 / 08/29/2022			Cisneros, Ramiro	
48	Sewer Laterals: Line E STA 6+98								4th Lift		Troxler / 3430 / 62183 / 08/29/2022			Cisneros, Ramiro	
49	Sewer Main: Line E STA 9+50								3rd Lift		Troxler / 3430 / 62183 / 08/29/2022			Cisneros, Ramiro	
50	Sewer Laterals: Line E STA 8+11								3rd Lift		Troxler / 3430 / 62183 / 08/29/2022			Cisneros, Ramiro	
51	Sewer Laterals: Line E STA 8+61								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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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 (%)	Remark
52		04/17/23	U22250		CH	14.7	114.8	13.2	116.5	131.9	6	101.5	98	-2 / 2	C
53		04/17/23	U22250		CH	14.7	114.8	15.4	113.8	131.3	6	99.1	98	-2 / 2	C
54		04/17/23	U22250		CH	14.7	114.8	13.5	113.7	129.0	6	99.0	98	-2 / 2	C
55		04/17/23	U22250		CH	14.7	114.8	16.2	114.2	132.7	6	99.5	98	-2 / 2	C
56		04/17/23	U22250		CH	14.7	114.8	13.4	113.8	129.0	6	99.1	98	-2 / 2	C
57		04/17/23	U22250		CH	14.7	114.8	13.2	115.1	130.3	6	100.3	98	-2 / 2	C
58		04/17/23	U22250		CH	14.7	114.8	12.7	115.6	130.3	6	100.7	98	-2 / 2	C
59		04/17/23	U22250		CH	14.7	114.8	13.3	115.7	131.1	6	100.8	98	-2 / 2	C
Test Information															
Test #	Test Location							Elevation	Reference		Gauge Make / Model / SN / Calibrated			Field Technician	
52	Sewer Laterals: Line E STA 9+11								3rd Lift		Troxler / 3430 / 62183 / 08/29/2022			Cisneros, Ramiro	
53	Sewer Laterals: Line E STA 9+61								3rd Lift		Troxler / 3430 / 62183 / 08/29/2022			Cisneros, Ramiro	
54	Sewer Laterals: Line E STA 10+11								3rd Lift		Troxler / 3430 / 62183 / 08/29/2022			Cisneros, Ramiro	
55	Sewer Laterals: Line E STA 11+11								3rd Lift		Troxler / 3430 / 62183 / 08/29/2022			Cisneros, Ramiro	
56	Sewer Main: Line E STA 9+50								4th Lift		Troxler / 3430 / 62183 / 08/29/2022			Cisneros, Ramiro	
57	Sewer Laterals: Line E STA 8+11								4th Lift		Troxler / 3430 / 62183 / 08/29/2022			Cisneros, Ramiro	
58	Sewer Laterals: Line E STA 8+61								4th Lift		Troxler / 3430 / 62183 / 08/29/2022			Cisneros, Ramiro	
59	Sewer Laterals: Line E STA 9+11								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.										

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60		04/17/23	U22250		CH	14.7	114.8	12.8	116.2	131.1	6	101.2	98	-2 / 2	C
61		04/17/23	U22250		CH	14.7	114.8	12.9	114.4	129.2	6	99.7	98	-2 / 2	C
62		04/17/23	U22250		CH	14.7	114.8	12.8	116.3	131.2	6	101.3	98	-2 / 2	C
63		04/17/23	U22250		CH	14.7	114.8	13.6	116.3	132.1	6	101.3	98	-2 / 2	C
64		04/17/23	U22250		CH	14.7	114.8	15.2	113.9	131.2	6	99.2	98	-2 / 2	C
Test Information															
Test #	Test Location							Elevation	Reference		Gauge Make / Model / SN / Calibrated			Field Technician	
60	Sewer Laterals: Line E STA 9+61								4th Lift		Troxler / 3430 / 62183 / 08/29/2022			Cisneros, Ramiro	
61	Sewer Laterals: Line E STA 10+11								4th Lift		Troxler / 3430 / 62183 / 08/29/2022			Cisneros, Ramiro	
62	Sewer Laterals: Line E STA 10+61								4th Lift		Troxler / 3430 / 62183 / 08/29/2022			Cisneros, Ramiro	
63	Sewer Main: Line E STA 6+50								5th Lift		Troxler / 3430 / 62183 / 08/29/2022			Cisneros, Ramiro	
64	Sewer Main: Line E STA 9+50								5th 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.