



## REPORT OF IN-PLACE DENSITY

**CLIENT:** GRIFFIN RILEY INVESTMENTS, LLC  
ATTN: JAKE LOVELESS  
120 SE 30TH STREET  
LEE'S SUMMIT MO 64082

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**PROJECT:** THE RESIDENCES @ ECHELON  
MO 291 & 50  
LEE'S SUMMIT, MO

**PROJECT NO.:** R20-17-261  
**REPORT NO.:** K21804  
**DATE OF SERVICE:** 12/22/2018  
**AUTHORIZATION:** JAKE LOVELESS  
**REPORT DATE:** 01/03/2018

**SERVICES:** Perform in-place density and moisture content tests to determine the degree of field compaction.

### PROJECT DATA

**CONTRACTOR:** LUKE DRAILY CONST

**GAUGE:** Troxler 3450

**GAUGE SERIAL NO.:** 521

	DENSITY	MOISTURE
<b>METHOD OF TEST:</b>	ASTM D6938	ASTM D3017
<b>SPECIFICATION:</b>	95% Min	-2 to +3% of Opt

STANDARD COUNTS		PREVIOUS:
<b>MOISTURE - CURRENT:</b>	1065	1048
<b>DENSITY - CURRENT:</b>	5717	5701
<b>TEST MODE:</b> Direct Transmission		
<b>PROBE DEPTH:</b> 6		

M/D #	TEST OF	MATERIALS	MOISTURE/DENSITY RELATIONS		REFERENCE REPORT
			OPTIMUM MOISTURE %	MAXIMUM DENSITY pcf	
1.	STANDARD PROCTOR	YELLOWISH BROWN SILTY CLAY	21.1	101.4	K21470
2.	STANDARD PROCTOR	BROWN-GRAY SILTY CLAY	22.1	99.9	K21467
3.	STANDARD PROCTOR	REDDISH BROWN SILTY CLAY	23.1	96.7	K21466

### REPORT OF TESTS

TEST NO	LOCATION	PROBE DEPTH	LIFT/ELEV	M/D NO	FIELD MOISTURE (%)	OPTIMUM MOISTURE (%)	FIELD DENSITY (pcf)		MAXIMUM DENSITY (pcf)	DENSITY (% max)
							WET	DRY		
1.	S basin of NW pond	6	996.5	1	21.4	21.1	117.3	96.6	101.4	95
2.	N basin of NW pond	6	1002.0	1	24.0	21.1	119.4	96.3	101.4	95
3.	979020.15, 2821765.00	6	1003.52	2	22.9	22.1	116.5	94.8	99.9	95
4.	9792083.90, 2821770.15	6	1002.3	2	21.3	22.1	115.5	95.2	99.9	95
5.	N basin 979046.00, 2821759.40	6	1002.6	1	16.3 *	21.1	112.2	96.5	101.4	95
6.	S basin 979076.70, 2821668.75	6	997.0	1	22.0	21.1	118.0	96.7	101.4	95

Report of Tests continued on page 2

PROJECT NO.: R20-17-261

GRIFFIN RILEY INVESTMENTS, LLC

DATE OF SERVICE: 12/22/2018

TEST NO	LOCATION	PROBE DEPTH	LIFT/ELEV	M/D NO	FIELD MOISTURE (%)	OPTIMUM MOISTURE (%)	FIELD DENSITY (pcf)		MAXIMUM DENSITY (pcf)	DENSITY (% max)
							WET	DRY		
7.	San line B, 4+50	6	1015.3	1	18.7 *	21.1	116.7	98.3	101.4	97
8.	San line B, 3+00	6	015.2	1	22.3	21.1	120.2	98.3	101.4	97
9.	San line B, 5+10	6	1015.5	1	21.1	21.1	116.7	96.4	101.4	95
10.	San line B, 6+00	6	1015.7	3	24.7	23.1	115.5	92.6	96.7	96
11.	San line B, 3+50	6	1016.2	1	21.1	21.1	121.1	100.0	101.4	99
12.	San line B, 4+00	6	1016.3	1	17.0 *	21.1	120.4	102.9	101.4	101
13.	San line B, 5+00	6	1016.4	1	20.0	21.1	118.0	98.3	101.4	97
14.	San line B, 5+50	6	1016.5	1	21.2	21.1	119.6	98.7	101.4	97
15.	San line B, 6+00	6	1016.7	1	22.0	21.1	117.4	96.2	101.4	95
16.	979062.058, 2821662.30	6	997.5	2	21.3	22.1	115.8	95.5	99.9	96
17.	979068.1, 2821665.	6	997.5	2	19.1 *	22.1	115.5	97.0	99.9	97
18.	979067.40, 2821731.10	6	999.9	1	23.0	21.1	119.9	97.5	101.4	96

An asterisk (\*) appears next to test results which do NOT meet the project specifications as noted on page 1.

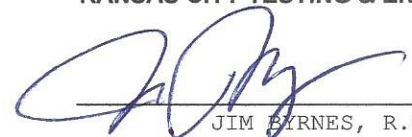
ADDITIONAL COMMENTS:

Technician: SAM COULSON, P.E., STAFF ENGINEER

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JIM BYRNES, R.G.  
PROJECT MANAGER

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## REPORT OF IN-PLACE DENSITY

**CLIENT:** GRIFFIN RILEY INVESTMENTS, LLC  
ATTN: JAKE LOVELESS  
120 SE 30TH STREET  
LEE'S SUMMIT MO 64082

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PROJECT NO.: R20-17-261  
REPORT NO.: K21806  
DATE OF SERVICE: 12/22/2017  
AUTHORIZATION: JAKE LOVELESS  
REPORT DATE: 12/26/2017

**PROJECT:** THE RESIDENCES @ ECHELON  
MO 291 & 50  
LEE'S SUMMIT, MO

**SERVICES:** Perform in-place density and moisture content tests to determine the degree of field compaction.

### PROJECT DATA

CONTRACTOR: LUKE DRAILY CONST

GAUGE: Troxler 3430  
GAUGE SERIAL NO.: 32397

	DENSITY	MOISTURE
METHOD OF TEST:	ASTM D6938	ASTM D3017
SPECIFICATION:	95% Min	-2 to +3% of Opt

STANDARD COUNTS		PREVIOUS:
MOISTURE - CURRENT:	670	661
DENSITY - CURRENT:	2070	2077
TEST MODE: Direct Transmission		
PROBE DEPTH: 12		

M/D #	TEST OF	MATERIALS	MOISTURE/DENSITY RELATIONS		REFERENCE REPORT
			OPTIMUM MOISTURE %	MAXIMUM DENSITY pcf	
1.	STANDARD PROCTOR	GRAY SILTY CLAY	21.0	100.4	K21465
2.	STANDARD PROCTOR	REDDISH BROWN SILTY CLAY	23.1	96.7	K21466
3.	STANDARD PROCTOR	BROWN-GRAY SILTY CLAY	22.1	99.9	K21467
4.	STANDARD PROCTOR	YELLOWISH BROWN SILTY CLAY	19.0	102.8	K21468
5.	STANDARD PROCTOR	GRAY-BROWN SILTY CLAY	19.4	105.4	K21469
6.	STANDARD PROCTOR	YELLOWISH BROWN SILTY CLAY	21.1	101.4	K21470

### REPORT OF TESTS

TEST NO	LOCATION	PROBE DEPTH	LIFT/ELEV	M/D NO	FIELD MOISTURE (%)	OPTIMUM MOISTURE (%)	FIELD DENSITY (pcf)		MAXIMUM DENSITY (pcf)	DENSITY (% max)
							WET	DRY		
1.	San sewer line B, 140' S of MH-B2	12	-5'	2	24.7	23.1	115.8	92.9	96.7	96
2.	San sewer line B, 90' S of MH-B2	12	-4'	4	21.8	19.0	120.6	99.0	102.8	96
3.	San sewer line B, 40' S of MH-B2	12	-4'	2	22.7	23.1	113.1	92.2	96.7	95
4.	San sewer line B, 50' N of MH B2	12	-4'	1	23.7	21.0	118.1	95.5	100.4	95
5.	Cheddington Dr, 10+00, west half	12	fg	2	26.7 *	23.1	119.0	93.9	96.7	97

Report of Tests continued on page 2

PROJECT NO.: R20-17-261

GRIFFIN RILEY INVESTMENTS, LLC

DATE OF SERVICE: 12/22/2017

TEST NO	LOCATION	PROBE DEPTH	LIFT/ELEV	M/D NO	FIELD MOISTURE (%)	OPTIMUM MOISTURE (%)	FIELD DENSITY (pcf)		MAXIMUM DENSITY (pcf)	DENSITY (% max)
							WET	DRY		
6.	Cheddington Dr, 9+75, east half	12	fg	3	24.8	22.1	121.1	97.0	99.9	97
7.	50' W of Cheddington Dr, 9+50	12	-3'	3	24.6	22.1	117.7	94.5	99.9	95
8.	San sewer line B, 100' S of MH B2	12	4'	2	23.6	23.1	113.6	91.9	96.7	95
9.	San sewer line B, 40' S of MH B2	12	-3.5'	1	21.4	21.0	117.0	96.4	100.4	96
10.	San sewer line B, 50' N of MH B2	12	-4'	1	21.8	21.0	116.4	95.6	100.4	95
11.	San sewer line B, 100'S of MH B2	12	-3'	6	21.6	21.1	119.2	98.0	101.4	97
12.	San sewer line B, 30' S of MH B2	12	-2.5'	4	21.0	19.0	121.4	100.3	102.8	98
13.	San sewer line B, 70' N of MH B2	12	-3'	3	21.9	22.1	115.4	94.7	99.9	95
14.	50' E of Cheddington Dr, 9+75	12	-1'	2	23.5	23.1	118.1	95.6	96.7	99
15.	100' E of Cheddington, 10+50	12	-2'	2	25.7	23.1	117.0	93.1	96.7	96
16.	San sewer line B, 150' S of MH B2	12	-2'	2	22.6	23.1	115.7	94.4	96.7	98
17.	San sewer line B, 40' S of MH B2	12	-1.5'	6	22.3	21.1	121.6	99.4	101.4	98
18.	San sewer line B, 50' N of MH B2	12	-2'	6	22.7	21.1	119.4	97.3	101.4	96
19.	San sewer line B, 50' N of MH B2	12	-0.5'	6	22.6	21.1	121.7	99.3	101.4	98
20.	San sewer line B, 50' S of MH B2	12	fg	6	22.5	21.1	118.5	96.7	101.4	95

An asterisk (\*) appears next to test results which do NOT meet the project specifications as noted above.

ADDITIONAL COMMENTS:

Contractor mixed fly ash for drying of soil.

Technician: DAN BRYANT, SR. ENGR TECHNICIAN

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