



ENTECH
ENGINEERING, INC.

505 ELKTON DRIVE
COLORADO SPRINGS, CO 80907
PHONE (719) 531-5599
FAX (719) 531-5238

August 27, 2020

FLRD #5
2138 Flying Horse Club Drive
Colorado Springs, CO 80921

Attn: Jim Boulton

Re: Density Testing – Storm Sewer
Forest Lakes Residential Development, Filing 5
Colorado Springs, Colorado
Report No. 4, Tests 35 – 75a

Dear Mr. Boulton,

As requested, personnel of Entech Engineering, Inc. have performed density testing at the above referenced site.

Density testing on this site was performed on August 10 – 17, 2020. The density testing indicates that the materials have been adequately compacted at the depths and in the locations noted. Results of the density tests are enclosed with this letter.

We trust that this has provided you with the information you require. Should you have any questions or need further information, please do not hesitate to contact us.

Respectfully Submitted,

ENTECH ENGINEERING, INC.

MHH
Mark H. Hauschild, P.E.
Senior Engineer

MHH/bo

Enclosure



Entech Job No. 192273

F:\AA projects\2019\192273-FLRD #2-Forest Lakes Residential Development Filing #5-110-ConMat\192273_4cl4.doc


Client: FLRD #5	Entech Job #: 192273.4	Proctor Value Key: M = modified, ASTM D-1557
Project: Forest Lakes Residential Development, Filing 5	Tested By: S. Reardanz	S = standard, ASTM D-698
Subject: Storm Sewer	Report Date: 08-26-2020	T = AASHTO, T-180

Test #	Location	Testing Date	Percent Compaction	Percent Required	Percent Moisture	Soil Type	Proctor Type/Value	Pass/Fail
35	Base Storm Manhole C, Station 1 + 17, at grade.	8/10/20	95	95	7.0	SM	M - 126.9 @ 8.8	<input type="checkbox"/>
36	Main, Station 6 + 00, Forest Lakes Drive, at springline.	8/10/20	96	95	7.7	SM	M - 126.9 @ 8.8	<input type="checkbox"/>
37	Main, Station 5 + 75, Forest Lakes Drive, 2' below grade.	8/10/20	96	95	7.2	SM	M - 126.9 @ 8.8	<input type="checkbox"/>
38	Main, Station 5 + 50, Forest Lakes Drive, at grade.	8/10/20	97	95	7.5	SM	M - 126.9 @ 8.8	<input type="checkbox"/>
39	Base storm inlet, Main D, Station 1 + 50, at grade.	8/11/20	95	95	7.2	SM	M - 126.9 @ 8.8	<input type="checkbox"/>
40	Manhole, Main F, Station 4 + 14, 4' below grade.	8/11/20	98	95	7.9	SM	M - 130.4 @ 8.1	<input type="checkbox"/>
41	Manhole, Main F, Station 4 + 14, 2' below grade.	8/11/20	96	95	8.0	SM	M - 130.4 @ 8.1	<input type="checkbox"/>
42	Manhole, Main F, Station 4 + 14, at grade.	8/11/20	97	95	7.6	SM	M - 130.4 @ 8.1	<input type="checkbox"/>
43	Main, Station 2 + 75, Forest Lakes Drive, at springline.	8/11/20	97	95	7.7	SM	M - 126.9 @ 8.8	<input type="checkbox"/>
44	Main, Station 2 + 60, Forest Lakes Drive, 2' below grade.	8/11/20	97	95	7.3	SM	M - 126.9 @ 8.8	<input type="checkbox"/>

Comments:

Scope of Observation: PERIODIC; CONTRACTOR'S OR CLIENT'S REPRESENTATIVE ADVISED

All dimensions are approximate. Cl. = Centerline

 <p>ENTECH ENGINEERING, INC. 505 Elkton Drive Colorado Springs, CO 80907 (719) 531-5599 • (719) 531-5238 (fax)</p>	<p>FIELD DENSITY RESULTS</p>	<p><i>Marcel H. Haaschild, P.E.</i></p>
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45	Main, Station 2 + 45, Forest Lakes Drive, at grade.	8/11/20	98	95	8.1	SM	M - 126.9 @ 8.8	<input type="checkbox"/>
46	Manhole, Main B, Station 2 + 05, 4' below grade.	8/11/20	97	95	7.4	SM	M - 126.9 @ 8.8	<input type="checkbox"/>
47	Manhole, Main B, Station 2 + 05, 2' below grade.	8/11/20	97	95	7.7	SM	M - 126.9 @ 8.8	<input type="checkbox"/>
48	Manhole, Main B, Station 2 + 05, at grade.	8/11/20	96	95	7.3	SM	M - 126.9 @ 8.8	<input type="checkbox"/>
49	Main, Station 9 + 30, Forest Lakes Drive, at springline.	8/12/20	98	95	8.3	SM	M - 130.4 @ 8.1	<input type="checkbox"/>
50	Main, Station 9 + 10, Forest Lakes Drive, 8' below grade.	8/12/20	97	95	7.7	SM	M - 130.4 @ 8.1	<input type="checkbox"/>
51	Main, Station 8 + 75, Forest Lakes Drive, 6' below grade.	8/12/20	97	95	8.2	SM	M - 130.4 @ 8.1	<input type="checkbox"/>
52	Main, Station 8 + 50, Forest Lakes Drive, 4' below grade.	8/12/20	96	95	8.6	SM	M - 130.4 @ 8.1	<input type="checkbox"/>
53	Main, Station 9 + 50, Forest Lakes Drive, 2' below grade.	8/12/20	98	95	8.5	SM	M - 130.4 @ 8.1	<input type="checkbox"/>
54	Main, Station 9 + 25, Forest Lakes Drive, at grade.	8/12/20	97	95	7.3	SM	M - 130.4 @ 8.1	<input type="checkbox"/>

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Test #	Location	Testing Date	Percent Compaction	Percent Required	Percent Moisture	Soil Type	Proctor Type/Value	Pass/Fail
55	Trickle Channel Pond C, Station 1 + 75, at grade.	8/12/20	95	95	7.7	SM	M - 126.9 @ 8.8	<input type="checkbox"/>
56	Trickle Channel Pond C, Station 2 + 25, at grade.	8/12/20	95	95	7.2	SM	M - 126.9 @ 8.8	<input type="checkbox"/>
57	Base inlet, Main C, Station 5 + 67, at grade.	8/13/20	96	95	7.2	SM	M - 126.9 @ 8.8	<input type="checkbox"/>
58	Base inlet, Main E, Station 1 + 30, at grade.	8/13/20	95	95	6.9	SM	M - 126.9 @ 8.8	<input type="checkbox"/>
59	Manhole G, Station 9 + 80, 8' below grade.	8/13/20	98	95	7.7	SM	M - 130.4 @ 8.1	<input type="checkbox"/>
60	Manhole G, Station 9 + 80, 6' below grade.	8/13/20	96	95	8.3	SM	M - 130.4 @ 8.1	<input type="checkbox"/>
61	Manhole G, Station 9 + 80, 4' below grade.	8/13/20	97	95	7.9	SM	M - 130.4 @ 8.1	<input type="checkbox"/>
62	Manhole G, Station 9 + 80, 2' below grade.	8/13/20	96	95	7.9	SM	M - 130.4 @ 8.1	<input type="checkbox"/>
63	Manhole G, Station 9 + 80, at grade.	8/13/20	96	95	8.6	SM	M - 130.4 @ 8.1	<input type="checkbox"/>
64	Manhole M, Station 8 + 17, 8' below grade.	8/13/20	96	95	8.9	SM	M - 130.4 @ 8.1	<input type="checkbox"/>

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FIELD DENSITY RESULTS

Mark H. Hauschild, P.E.

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Test #	Location	Testing Date	Percent Compaction	Percent Required	Percent Moisture	Soil Type	Proctor Type/Value	Pass/Fail
65	Manhole M, Station 8 + 17, 6' below grade.	8/13/20	96	95	7.5	SM	M - 130.4 @ 8.1	<input type="checkbox"/>
66	Manhole M, Station 8 + 17, 4' below grade.	8/13/20	97	95	8.2	SM	M - 130.4 @ 8.1	<input type="checkbox"/>
67	Manhole M, Station 8 + 17, 2' below grade.	8/13/20	96	95	8.3	SM	M - 130.4 @ 8.1	<input type="checkbox"/>
68	Manhole M, Station 8 + 17, at grade.	8/13/20	97	95	7.9	SM	M - 130.4 @ 8.1	<input type="checkbox"/>
69	Base inlet, Main F, Station 1 + 20, at grade.	8/14/20	97	95	8.6	SM	M - 126.9 @ 8.8	<input type="checkbox"/>
70	Base inlet, Main C, Station 1 + 10, at grade.	8/14/20	98	95	9.1	SM	M - 126.9 @ 8.8	<input type="checkbox"/>
71	Base inlet, Main G, Station 1 + 79, at grade.	8/14/20	97	95	9.2	SM	M - 126.9 @ 8.8	<input type="checkbox"/>
72	Base inlet, Main F, Station 13 + 29, at grade.	8/14/20	96	95	8.1	SM	M - 127.9 @ 9.2	<input type="checkbox"/>
73	Base inlet, Main H, Station 1 + 10, at grade.	8/14/20	96	95	7.2	SM	M - 130.4 @ 8.1	<input type="checkbox"/>
74	Base inlet, Main H, Station 1 + 66, at grade.	8/14/20	96	95	6.9	SM	M - 130.4 @ 8.1	<input type="checkbox"/>

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Test #	Location	Testing Date	Percent Compaction	Percent Required	Percent Moisture	Soil Type	Proctor Type/Value	Pass/Fail
75	Base inlet, Main H, Station 1 + 27, at grade.	8/14/20	92	95	7.9	SM	M - 130.4 @ 8.1	<input checked="" type="checkbox"/>
75a	Retest for test #75.	8/17/20	98	95	7.5	SM	M - 130.4 @ 8.1	<input type="checkbox"/>

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