Illinois Department of Transportation

Memorandum

To:	Kiley Gwaltney	Attn: Chad Morse
From:	Chris Isbell	By: Luke Murphy LTM
Subject:	630-442-057 RFI	
Date:	October 16, 2023	

Borrow materials sampled from the Stockpile Northwest of the new District 6 Headquarters have been tested by our Springfield laboratory.

Lab ID	Location in Stockpile	Classification	Max Dry Density	Optimum Moisture Content	Liquid Limit	Plasticity Index
49 A-1	North End	Silty Clay Loam	105.1	18.4	45	29
50 B-1	Center	Silty Loam	109.2	15.7	31	13
51 C-1	South End	Silty Clay Loam	106.8	17.1	37	19

The test results indicate that the soils encountered in the stockpile should be classified as **Suitable** per Article 1009.04 of the Standard Specifications. Suitable soils can be used for embankment construction without restriction.

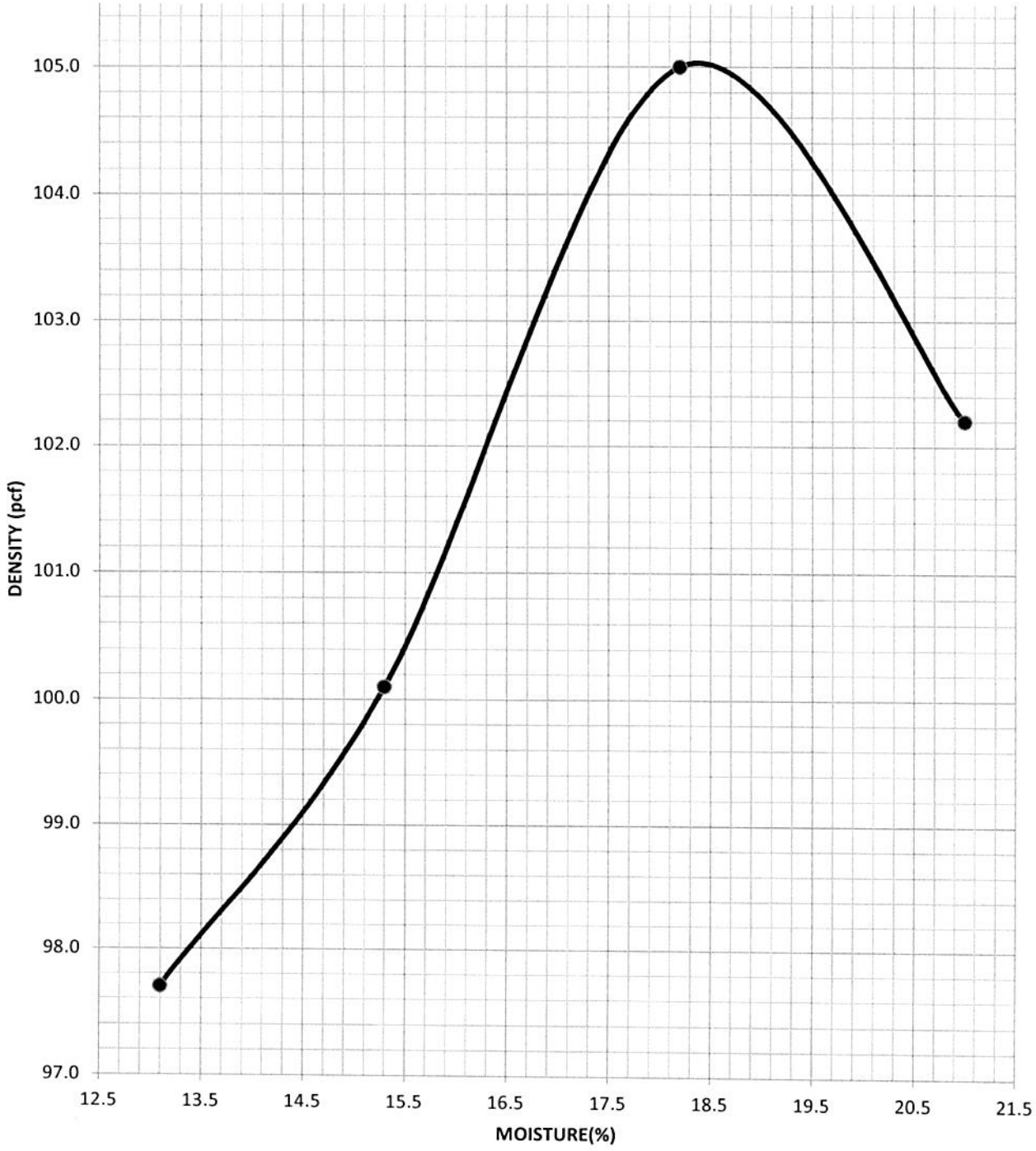
Moisture-Density curves and test results are attached. Please contact our Geotechnical Engineer, Luke Murphy, at 217-782-6709 if you have any questions or if additional sampling is required.

Route: D6 Headquarters
Section: (RFI) 630-442-057
County: Sangamon
Station: North End

OPTIMUM MOISTURE

LAB#: 49 A-1
Date: 10/09/23

(105.1 pcf @ 18.4%)



Illinois Department of Transportation

Lab # **49** A-1

Work Sheet for Optimum

Route **D6 Headquarters**

Section **(RFI) 630-442-057**

County **Sangamon**

Station **North End**

Date Sampled **9/18/2023**
Date Ran **10/8/2023**
Tested By **EAK/DD**

Mold Factor **0.066008** or .0061

Depth:

Wt. Mold & Soil	**5767**	Can & Moist Soil	**642.0**			Can & Dry Soil	580.0
Wt. of Mold	**4093**	Can & Dry Soil	**580.0**	Can No.	**B**	Weight	**105.0**
Wt. of Soil	1674	Moisture	62.0			Dry Soil	475.0
Wt. Of Soil X Mold Factor	0.066008			%Moisture	**13.1**		

Wt. Of Soil X Mold Factor / 100 + % Moisture X 100 = **97.7** = Dry Density

Wt. Mold & Soil	**5841**	Can & Moist Soil	**602.0**			Can & Dry Soil	536.0
Wt. of Mold	**4093**	Can & Dry Soil	**536.0**	Can No.	**C**	Weight	**104.0**
Wt. of Soil	1748	Moisture	66.0			Dry Soil	432.0
Wt. Of Soil X Mold Factor	0.066008			%Moisture	**15.3**		

Wt. Of Soil X Mold Factor / 100 + % Moisture X 100 = **100.1** = Dry Density

Wt. Mold & Soil	**5973**	Can & Moist Soil	**596.0**			Can & Dry Soil	520.0
Wt. of Mold	**4093**	Can & Dry Soil	**520.0**	Can No.	**D**	Weight	**102.0**
Wt. of Soil	1880	Moisture	76.0			Dry Soil	418.0
Wt. Of Soil X Mold Factor	0.066008			%Moisture	**18.2**		

Wt. Of Soil X Mold Factor / 100 + % Moisture X 100 = **105.0** = Dry Density

Wt. Mold & Soil	**5967**	Can & Moist Soil	**1986.0**			Can & Dry Soil	1661.0
Wt. of Mold	**4093**	Can & Dry Soil	**1661.0**	Can No.	**11**	Weight	**113.0**
Wt. of Soil	1874	Moisture	325.0			Dry Soil	1548.0
Wt. Of Soil X Mold Factor	0.066008			%Moisture	**21.0**		

Wt. Of Soil X Mold Factor / 100 + % Moisture X 100 = **102.2** = Dry Density

Wt. Mold & Soil		Can & Moist Soil				Can & Dry Soil	0.0
Wt. of Mold		Can & Dry Soil		Can No.		Weight	
Wt. of Soil	0	Moisture	0.0			Dry Soil	0.0
Wt. Of Soil X Mold Factor	0.066008			%Moisture	**#DIV/0!**		

Wt. Of Soil X Mold Factor / 100 + % Moisture X 100 = **#DIV/0!** = Dry Density

Wt. Mold & Soil		Can & Moist Soil				Can & Dry Soil	0.0
Wt. of Mold		Can & Dry Soil		Can No.		Weight	
Wt. of Soil	0	Moisture	0.0			Dry Soil	0.0
Wt. Of Soil X Mold Factor	0.066008			%Moisture			

Wt. Of Soil X Mold Factor / 100 + % Moisture X 100 = _____ = Dry Density

Illinois Department of Transportation

Hydrometer Analysis of Soils
Limit Test Data and P.I.
(AASHTO T-88)

Route:	D6 Headquarters	Sta.	North End
Section:	(RFI) 630-442-057	Ref to CL	
County:	Sangamon	Depth	
Lab / Sample No.		49/A-1	
Orig. Starting Wt.		50.900	
Hygro. Moist. %		4.316	
Corr.% Pass.#10		96.58	
Specific Gravity		2.68	

Meniscus Correction	-1.0
Corrected Dry Wt.	48.794
Decimal %Pass.#10	0.966

Date: 10/13/23

Valid Temperature Ranges: 66.0 °F to 75.0 °F

Time Min.	Temp F°	Observed Bulb Rd.	Actual Bulb Rd.	Comp. Corr.	Corr. Bulb Rd.	% in Suspen.	Max. Dia. mm
1							
5	70.7	37.0	36.0	5.17	30.83	60.61	0.0192
15	70.3	31.0	30.0	5.33	24.67	48.50	0.0116
30	70.3	26.0	25.0	5.33	19.67	38.67	0.0085
60	70.1	24.0	23.0	5.41	17.59	34.58	0.0061
90	69.9	23.0	22.0	5.49	16.51	32.46	0.0050
120	69.9	22.5	21.5	5.49	16.01	31.47	0.0044
250	69.4	21.5	20.5	5.69	14.81	29.11	0.0031
						26.99	0.0020
1440	68.9	19.5	18.5	5.89	12.61	24.79	0.0013

Sieve	Cumul. Wt. Ret.	% Ret.	% Pass	Corr. % Pass
3/4				
1/2				
3/8				
#4				
#8				
#10		3.42		96.58
#20				
#40	1.957	4.01	95.99	92.71
#100	3.757	7.70	92.30	89.14
#200	4.093	8.39	91.61	88.48

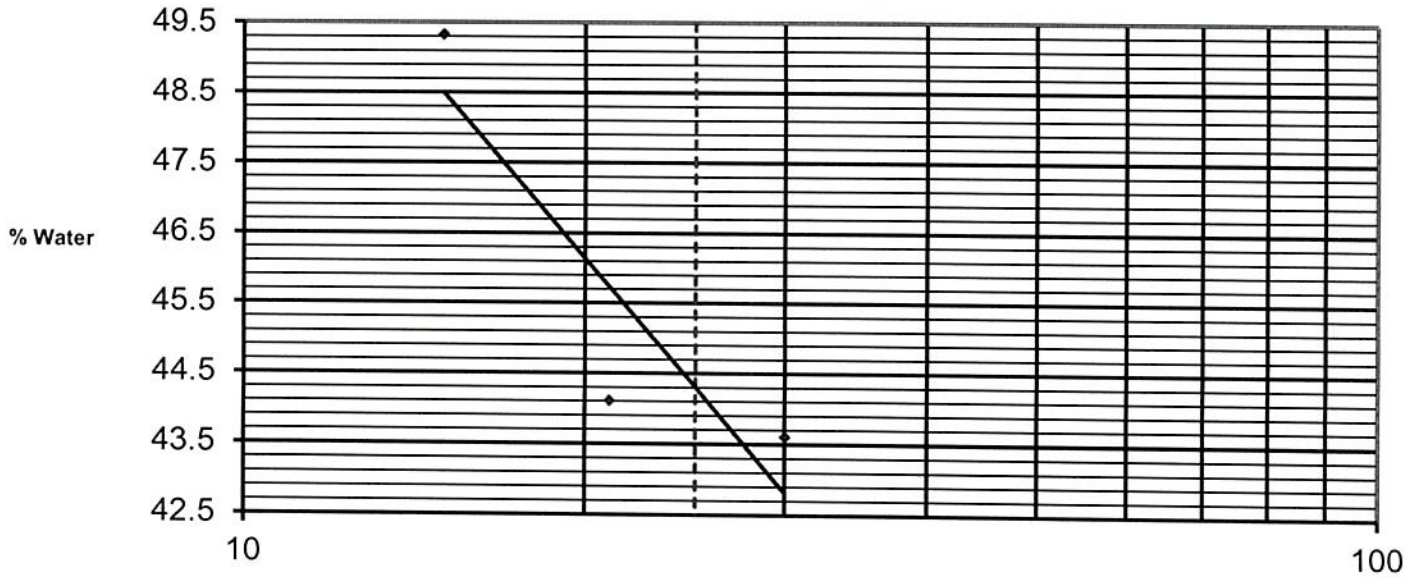
%Clay	26.99	%Silt	61.49	%Sand	8.10
				%Gravel	3.42
				%Combined	11.52

IDOT Class.	SiCL	A-7-6	26

	Plastic Limit			
Pan No.	1	2	3	4
Wet Wt.	10.254	10.774	10.338	10.737
Dry Wt.	10.006	10.485	10.083	10.470
Moisture	0.248	0.289	0.255	0.267
Pan Wt.	8.473	8.739	8.447	8.872
Wt. Dry Mat'l.	1.533	1.746	1.636	1.598
% Moisture	16.2	16.6	15.6	16.7

	Liquid Limit		
	5	6	7
	21.100	20.581	20.470
	17.084	16.829	16.907
	4.016	3.752	3.563
	8.943	8.322	8.736
	8.141	8.507	8.171
	49.3	44.1	43.6
No. Blows	15	21	30

LL	45
PL	16
PI	29

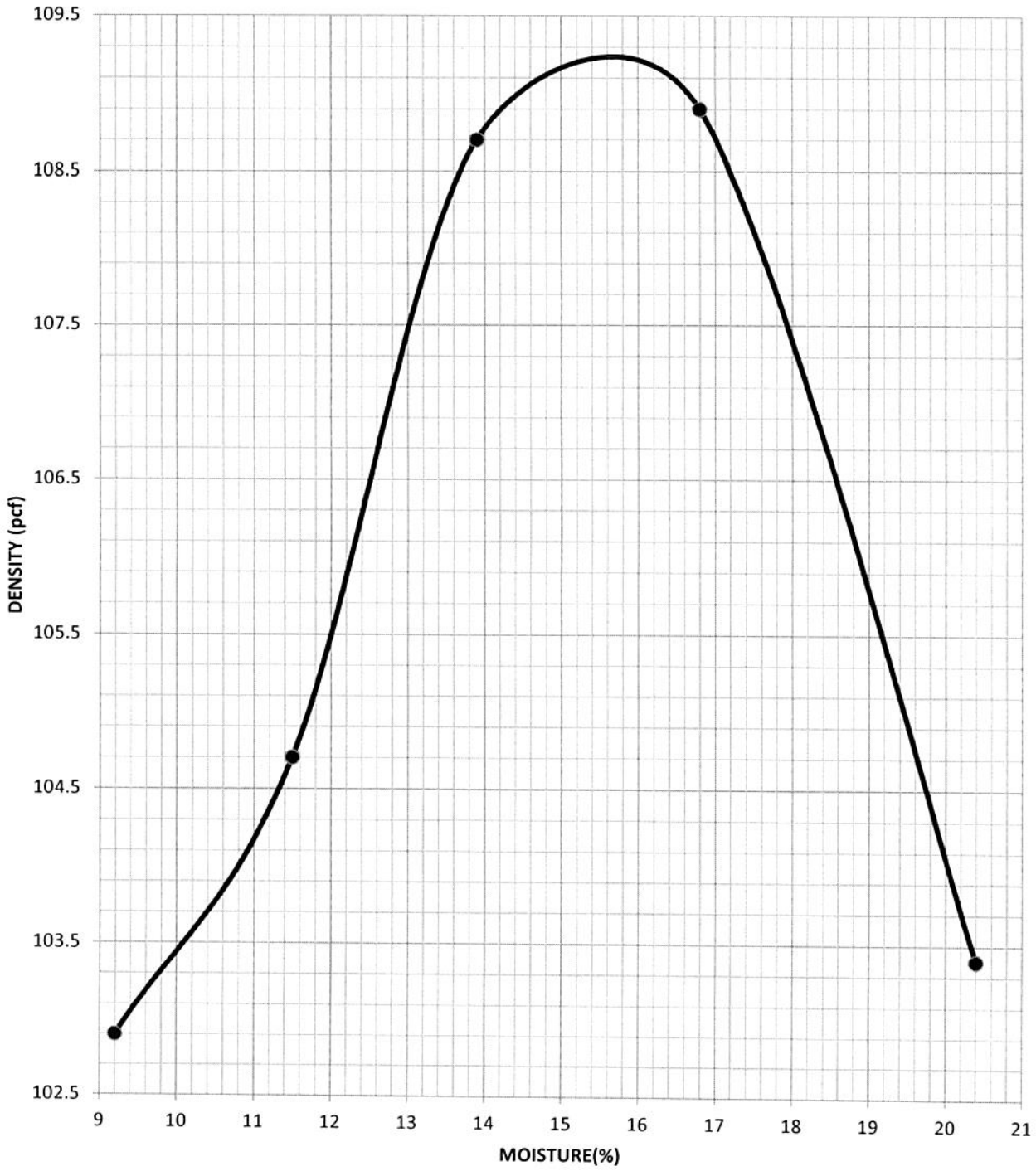


Route: D6 Headquarters
Section: (RFI) 630-442-057
County: Sangamon
Station: Center

OPTIMUM MOISTURE

LAB#: 50 B-1
Date: 10/10/23

(109.2 pcf @ 15.7%)



Illinois Department of Transportation

Lab # **50** B-1

Work Sheet for Optimum

Route **D6 Headquarters**

Section **(RFI) 630-442-057**

County **Sangamon**

Station **Center**

Date Sampled **9/18/2023**
Date Ran **10/9/2023**
Tested By **EAK**

Mold Factor **0.066008** or .0061

Depth:

Wt. Mold & Soil	**5796**	Can & Moist Soil	**653.0**			Can & Dry Soil	607.0
Wt. of Mold	**4093**	Can & Dry Soil	**607.0**	Can No.	**1**	Weight	**108.0**
Wt. of Soil	1703	Moisture	46.0			Dry Soil	499.0
Wt. Of Soil X Mold Factor	0.066008			%Moisture	**9.2**		

Wt. Of Soil X Mold Factor / 100 + % Moisture X 100 = **102.9** = Dry Density

Wt. Mold & Soil	**5862**	Can & Moist Soil	**619.0**			Can & Dry Soil	566.0
Wt. of Mold	**4093**	Can & Dry Soil	**566.0**	Can No.	**3**	Weight	**107.0**
Wt. of Soil	1769	Moisture	53.0			Dry Soil	459.0
Wt. Of Soil X Mold Factor	0.066008			%Moisture	**11.5**		

Wt. Of Soil X Mold Factor / 100 + % Moisture X 100 = **104.7** = Dry Density

Wt. Mold & Soil	**5970**	Can & Moist Soil	**748.0**			Can & Dry Soil	670.0
Wt. of Mold	**4093**	Can & Dry Soil	**670.0**	Can No.	**4**	Weight	**110.0**
Wt. of Soil	1877	Moisture	78.0			Dry Soil	560.0
Wt. Of Soil X Mold Factor	0.066008			%Moisture	**13.9**		

Wt. Of Soil X Mold Factor / 100 + % Moisture X 100 = **108.7** = Dry Density

Wt. Mold & Soil	**6021**	Can & Moist Soil	**760.0**			Can & Dry Soil	666.0
Wt. of Mold	**4093**	Can & Dry Soil	**666.0**	Can No.	**5**	Weight	**107.0**
Wt. of Soil	1928	Moisture	94.0			Dry Soil	559.0
Wt. Of Soil X Mold Factor	0.066008			%Moisture	**16.8**		

Wt. Of Soil X Mold Factor / 100 + % Moisture X 100 = **108.9** = Dry Density

Wt. Mold & Soil	**5979**	Can & Moist Soil	**1989.0**			Can & Dry Soil	1670.0
Wt. of Mold	**4093**	Can & Dry Soil	**1670.0**	Can No.	**7**	Weight	**104.0**
Wt. of Soil	1886	Moisture	319.0			Dry Soil	1566.0
Wt. Of Soil X Mold Factor	0.066008			%Moisture	**20.4**		

Wt. Of Soil X Mold Factor / 100 + % Moisture X 100 = **103.4** = Dry Density

Wt. Mold & Soil		Can & Moist Soil				Can & Dry Soil	0.0
Wt. of Mold		Can & Dry Soil		Can No.		Weight	
Wt. of Soil	0	Moisture	0.0			Dry Soil	0.0
Wt. Of Soil X Mold Factor	0.066008			%Moisture			

Wt. Of Soil X Mold Factor / 100 + % Moisture X 100 = _____ = Dry Density

Illinois Department of Transportation

Hydrometer Analysis of Soils
Limit Test Data and P.I.
(AASHTO T-88)

Route:	D6 Headquarters	Sta.	Center
Section:	(RFI) 630-442-057	Ref to CL	
County:	Sangamon	Depth	
Lab / Sample No.		50/B-1	
Orig. Starting Wt.		50.200	
Hygro. Moist. %		2.812	
Corr.% Pass.#10		97.55	
Specific Gravity		2.68	

Meniscus Correction	-1.0
Corrected Dry Wt.	48.827
Decimal %Pass.#10	0.976

Date: 10/13/23

Valid Temperature Ranges: 66.0 °F to 75.0 °F

Time Min.	Temp F°	Observed Bulb Rd.	Actual Bulb Rd.	Comp. Corr.	Corr. Bulb Rd.	% in Suspen.	Max. Dia. mm
1							
5	70.5	33.0	32.0	5.25	26.75	53.08	0.0198
15	70.3	27.0	26.0	5.33	20.67	41.01	0.0120
30	70.3	23.0	22.0	5.33	16.67	33.08	0.0087
60	70.1	20.5	19.5	5.41	14.09	27.96	0.0062
90	69.9	20.0	19.0	5.49	13.51	26.81	0.0051
120	69.8	19.0	18.0	5.53	12.47	24.74	0.0045
250	69.4	17.5	16.5	5.69	10.81	21.45	0.0031
						19.70	0.0020
1440	68.9	16.0	15.0	5.89	9.11	18.08	0.0013

Sieve	Cumul. Wt. Ret.	% Ret.	% Pass	Corr. % Pass
3/4				
1/2				
3/8				
#4				
#8				
#10		2.45		97.55
#20				
#40	2.242	4.59	95.41	93.07
#100	4.947	10.13	89.87	87.67
#200	5.433	11.13	88.87	86.70

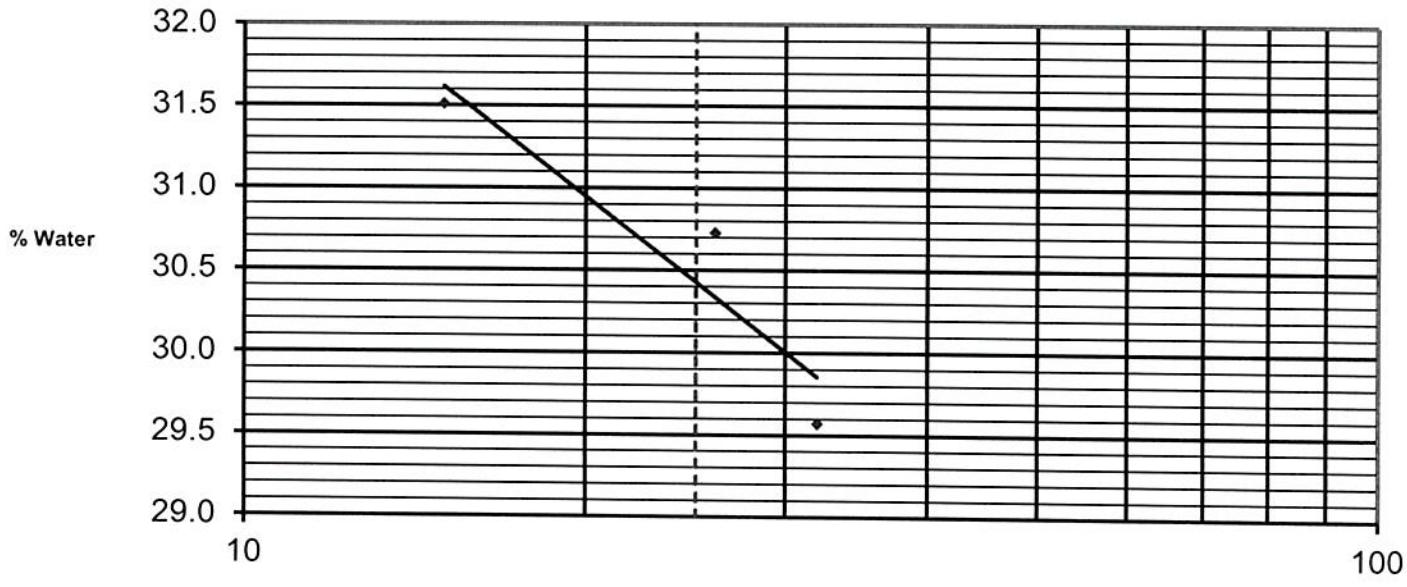
%Clay	19.70	%Silt	67.00	%Sand	10.85
				%Gravel	2.45
				%Combined	13.30

IDOT Class. SiL A-6 10

	Plastic Limit			
Pan No.	1	2	3	4
Wet Wt.	10.897	10.370	10.900	10.777
Dry Wt.	10.547	10.040	10.583	10.486
Moisture	0.350	0.330	0.317	0.291
Pan Wt.	8.622	8.122	8.825	8.795
Wt. Dry Mat'l.	1.925	1.918	1.758	1.691
% Moisture	18.2	17.2	18.0	17.2

	Liquid Limit		
	5	6	7
	27.675	20.493	19.950
	23.185	17.734	17.343
	4.490	2.759	2.607
	8.935	8.755	8.527
	14.250	8.979	8.816
	31.5	30.7	29.6
No. Blows	15	26	32

LL	31
PL	18
PI	13

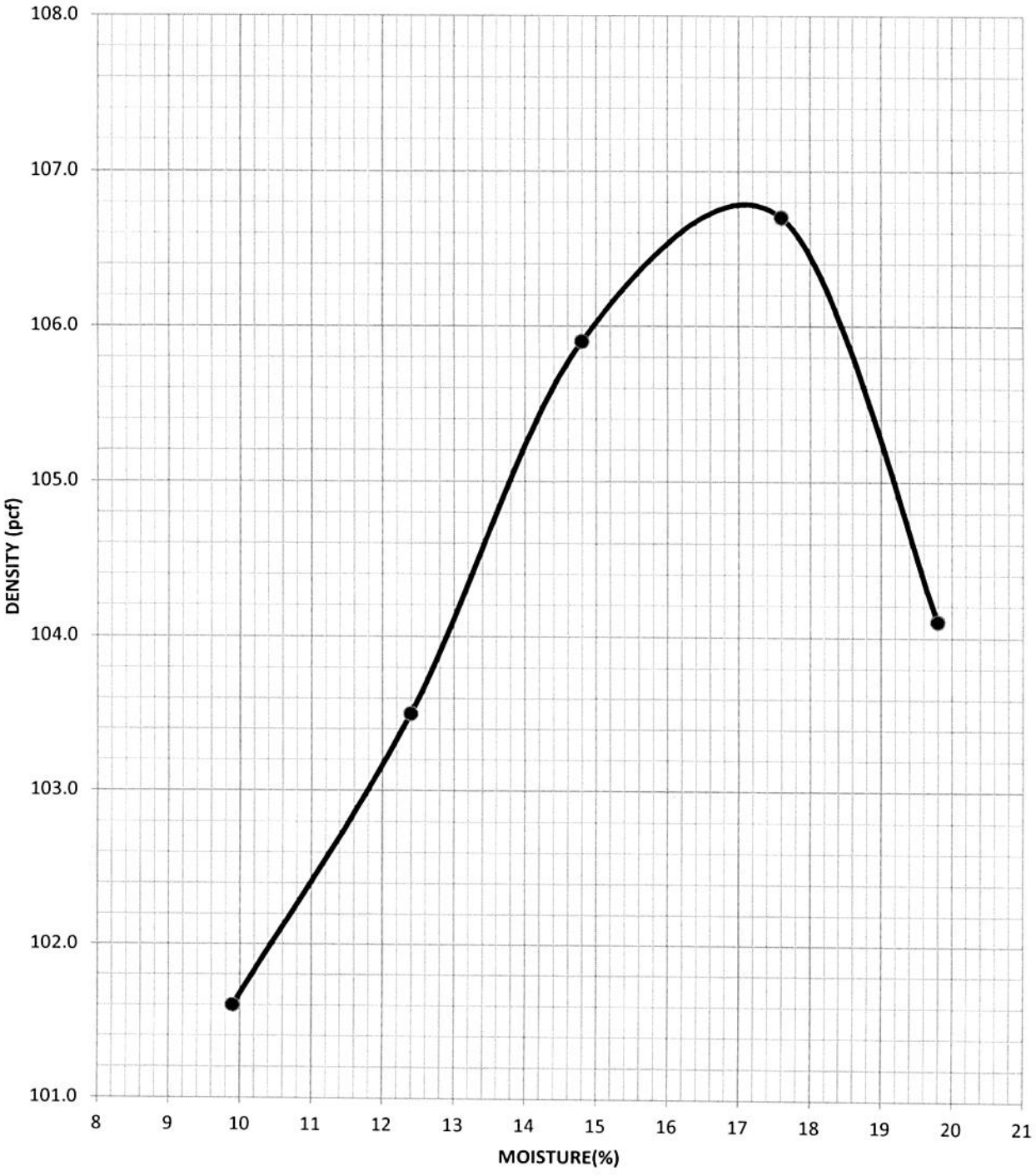


Route D6 HEADQUARTERS
Section: (RIF) 630-442-057
County: SANGAMON
Station: SOUTH END

OPTIMUM MOISTURE

LAB#: 51-C1
Date: 10/11/2023

(106.8 pcf @ 17.1%)



Illinois Department of Transportation

Lab # **51-C1**

Work Sheet for Optimum

Route **D6 HEADQUARTERS**

Section **RFI 630-442-057**

County **SANGOMON**

Station **SOUTH END**

Date Sampled **9/18/2023**
Date Ran **10/11/2023**
Tested By **DD**

Mold Factor **0.066008** or .0061

Depth:

Wt. Mold & Soil	**5786**	Can & Moist Soil	**504.0**			Can & Dry Soil	468.0
Wt. of Mold	**4093**	Can & Dry Soil	**468.0**	Can No.	**A**	Weight	**106.0**
Wt. of Soil	1693	Moisture	36.0			Dry Soil	362.0
Wt. Of Soil X Mold Factor	0.066008			%Moisture	**9.9**		

Wt. Of Soil X Mold Factor / 100 + % Moisture X 100 = **101.6** = Dry Density

Wt. Mold & Soil	**5855**	Can & Moist Soil	**523.0**			Can & Dry Soil	477.0
Wt. of Mold	**4093**	Can & Dry Soil	**477.0**	Can No.	**B**	Weight	**105.0**
Wt. of Soil	1762	Moisture	46.0			Dry Soil	372.0
Wt. Of Soil X Mold Factor	0.066008			%Moisture	**12.4**		

Wt. Of Soil X Mold Factor / 100 + % Moisture X 100 = **103.5** = Dry Density

Wt. Mold & Soil	**5935**	Can & Moist Soil	**615.0**			Can & Dry Soil	549.0
Wt. of Mold	**4093**	Can & Dry Soil	**549.0**	Can No.	**C**	Weight	**104.0**
Wt. of Soil	1842	Moisture	66.0			Dry Soil	445.0
Wt. Of Soil X Mold Factor	0.066008			%Moisture	**14.8**		

Wt. Of Soil X Mold Factor / 100 + % Moisture X 100 = **105.9** = Dry Density

Wt. Mold & Soil	**5994**	Can & Moist Soil	**516.0**			Can & Dry Soil	454.0
Wt. of Mold	**4093**	Can & Dry Soil	**454.0**	Can No.	**D**	Weight	**102.0**
Wt. of Soil	1901	Moisture	62.0			Dry Soil	352.0
Wt. Of Soil X Mold Factor	0.066008			%Moisture	**17.6**		

Wt. Of Soil X Mold Factor / 100 + % Moisture X 100 = **106.7** = Dry Density

Wt. Mold & Soil	**5982**	Can & Moist Soil	**1996.0**			Can & Dry Soil	1684.0
Wt. of Mold	**4093**	Can & Dry Soil	**1684.0**	Can No.	**1**	Weight	**108.0**
Wt. of Soil	1889	Moisture	312.0			Dry Soil	1576.0
Wt. Of Soil X Mold Factor	0.066008			%Moisture	**19.8**		

Wt. Of Soil X Mold Factor / 100 + % Moisture X 100 = **104.1** = Dry Density

Wt. Mold & Soil		Can & Moist Soil				Can & Dry Soil	0.0
Wt. of Mold		Can & Dry Soil		Can No.		Weight	
Wt. of Soil	0	Moisture	0.0			Dry Soil	0.0
Wt. Of Soil X Mold Factor	0.066008			%Moisture			

Wt. Of Soil X Mold Factor / 100 + % Moisture X 100 = _____ = Dry Density

Illinois Department of Transportation

Hydrometer Analysis of Soils
Limit Test Data and P.I.
(AASHTO T-88)

Route:	D6 Headquarters	Sta.	South End
Section:	(RFI) 630-442-057	Ref to CL	
County:	Sangamon	Depth	
Lab / Sample No.		51/C-1	
Orig. Starting Wt.		50.800	
Hygro. Moist. %		3.852	
Corr.% Pass.#10		94.15	
Specific Gravity		2.68	

Meniscus Correction	-1.0
Corrected Dry Wt.	48.916
Decimal %Pass.#10	0.942

Date: 10/14/23

Valid Temperature Ranges: 66.0 °F to 75.0 °F

Time Min.	Temp F°	Observed Bulb Rd.	Actual Bulb Rd.	Comp. Corr.	Corr. Bulb Rd.	% in Suspen.	Max. Dia. mm
1							
5	71.0	33.0	32.0	5.05	26.95	51.52	0.0197
15	70.2	27.0	26.0	5.37	20.63	39.44	0.0120
30	70.3	24.0	23.0	5.33	17.67	33.78	0.0086
60	69.9	22.0	21.0	5.49	15.51	29.65	0.0062
90	69.9	21.5	20.5	5.49	15.01	28.69	0.0051
120	69.8	20.5	19.5	5.53	13.97	26.71	0.0044
250	69.2	19.0	18.0	5.77	12.23	23.38	0.0031
						21.31	0.0020
1440	68.9	17.0	16.0	5.89	10.11	19.33	0.0013

Sieve	Cumul. Wt. Ret.	% Ret.	% Pass	Corr. % Pass
3/4				
1/2				
3/8				
#4				
#8				
#10		5.85		94.15
#20				
#40	2.191	4.48	95.52	89.93
#100	4.198	8.58	91.42	86.07
#200	4.589	9.38	90.62	85.32

%Clay	21.31	%Silt	64.01	%Sand	8.83
				%Gravel	5.85
				%Combined	14.68

IDOT Class. SiCL A-6 16

	Plastic Limit			
Pan No.	1	2	3	4
Wet Wt.	10.709	10.978	10.830	10.606
Dry Wt.	10.352	10.642	10.518	10.274
Moisture	0.357	0.336	0.312	0.332
Pan Wt.	8.473	8.830	8.756	8.477
Wt. Dry Mat'l.	1.879	1.812	1.762	1.797
% Moisture	19.0	18.5	17.7	18.5

	Liquid Limit		
	5	6	7
	25.680	21.960	22.124
	21.097	18.347	18.616
	4.583	3.613	3.508
	8.893	8.422	8.816
	12.204	9.925	9.800
	37.6	36.4	35.8
No. Blows	15	25	33

LL	37
PL	18
PI	19