



MDT-MAT-111 01/2018

**Montana Department of Transportation**  
**Preconstruction Soil Survey Data**  
**and Special Recommendations Relative to Subgrade and Road Surface Design**

Use for form specific needs  
Examples: MDT address or  
department use only

Project Number NH 1-7(59) 404 Project Name Chinook East Length 6 Miles County Blaine Date 7/23/18  
UPN 9540 Contract No.                       
Submitted by Clarissa Martin Title Lab Tech District Materials Supervisor Camaree Uliua Dist. Preconstruction Engineer Stephen Prinzing

Hole Number	Sample Number	Date	Reference to Centerline - Location of Boring	Depth	Representing Stationing	Soil Class (MT214)	LL	PI	10 Mesh (2.00 mm)	40 Mesh (.425 mm)	200 Mesh (.075 mm)	In Place Density	Specific Gravity	Density Maximum Dry	Moisture Percent Natural	Moisture Percent Optimum	Water Table Depth to	"R" Value (AASHTO T190)
1		5/15/18	7ft RT/CL	0.0-.5ft	MM 404.1	Asphalt												
1	1	5/15/18	7ft RT/CL	.5-2.6ft	MM 404.1	A-1-b(0)			46	31	10.8				4.1			62
1	2	5/15/18	7ft RT/CL	2.6-5.0ft	MM 404.1	A-7-6(23)	48	27	98	96	82.8			100.8	23.7	20.8		
2		5/15/18	6.5ft LT/CL	0.0-.6ft	MM 404.52	Asphalt												
2	1	5/15/18	6.5ft LT/CL	.6-1.1ft	MM 404.52	A-1-a(0)			43	25	8.9				4.8			67
2	2	5/15/18	6.5ft LT/CL	1.1-5.5ft	MM 404.52	A-4(4)	28	9	97	95	69.1			111.7	14.6	15.0		22
3		5/15/18	7.5ft RT/CL	0.0-.6ft	MM 405.0	Asphalt												
3	1	5/15/18	7.5ft RT/CL	.6-1.9ft	MM 405.0	A-1-a(0)			39	19	6.7				4.8			55
3	2	5/15/18	7.5ft RT/CL	1.9-3.8ft	MM 405.0	A-6(16)	40	20	99	94	80.1			104.9	20.6	17.6		
3	3	5/15/18	7.5ft RT/CL	3.8-5.4ft	MM 405.0	A-7-6(20)	41	22	98	97	89.9			104.7	27.7	18.4		

Remarks:

Distribution: Preconstruction Bureau; Geotech, Materials Bureau; Surfacing Design, Materials Bureau; District Lab; Area Lab, \_\_\_\_\_  
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4		5/15/18	8.5ft LT/CL	0.0-.8ft	MM 405.5	Asphalt												
4	1	5/15/18	8.5ft LT/CL	.8-1.7ft	MM 405.5	A-1-a(0)			46	22	7.6				3.7			75
4	2	5/15/18	8.5ft LT/CL	1.7-5.4ft	MM 405.5	A-2-4(0)			92	85	32.4			123	9.6	10.6		66
5		5/15/18	7.9ft RT/CL	0.0-.5ft	MM 406.0	Asphalt												
5	1	5/15/18	7.9ft RT/CL	.5-1.6ft	MM 406.0	A-1-a(0)			37	20	7.5				4.0			73
5	2	5/15/18	7.9ft RT/CL	1.6-2.6ft	MM 406.0	A-6(9)	33	13	99	98	78.6			109.7	19.8	15.5		
5	3	5/15/18	7.9ft RT/CL	2.6-6.4ft	MM 406.0	A-7-6(21)	43	24	100	99	84.8			102.4	29.1	19.9		
6		5/15/18	7.7ft LT/CL	0.0-.7ft	MM 406.5	Asphalt												
6	1	5/15/18	7.7ft LT/CL	.7-1.8ft	MM 406.5	A-1-a(0)			37	27	8.9				6.0			72
6	2	5/15/18	7.7ft LT/CL	1.8-6.0ft	MM 406.5	A-6(17)	40	20	99	97	86.0			105.2	25.7	17.9		

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7		5/15/18	6.5ft RT/CL	0.0-0.8ft	MM 407.0	Asphalt												
7	1	5/15/18	6.5ft RT/CL	0.8-1.8ft	MM 407.0	A-1-a(0)			31	20	9.5				9.5			
7	2	5/15/18	6.5ft RT/CL	1.8-5.8ft	MM 407.0	A-7-6(24)	44	26	99	99	88.5			106.3	20.7	17.6		58
8		5/15/18	5.9ft LT/CL	0.0-.7ft	MM 407.5	Asphalt												
8	1	5/15/18	5.9ft LT/CL	7-1.7ft	MM 407.5	A-1-a(0)			40	28	10.8				5.0			57
8	2	5/15/18	5.9ft LT/CL	1.7-3.0ft	MM 407.5	A-4(0)	23	7	92	85	46.9			120	12.7	12.3		25
8	3	5/15/18	5.9ft LT/CL	3.0-4.0ft	MM 407.5	A-7-6(38)	55	35	99	99	97.4			98.6	26.9	21.8		
8	4	5/15/18	5.9ft LT/CL	4.0-5.0ft	MM 407.5	A-7-6(25)	43	25	100	100	95.5			103.9	28.1	18.9		
9		5/15/18	6.5ft RT/CL	0.0-0.9ft	MM 408.0	Asphalt												
9	1	5/15/18	6.5ft RT/CL	0.9-1.6ft	MM 408.0	A-1b(0)			44	32	11.0				6.5			66
9	2	5/15/18	6.5ft RT/CL	1.6-5.4ft	MM 408.0	A-6(15)	35	18	99	99	87.5			108	18.6	16.9		

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10		5/16/18	7.4ft LT/CL	0.0-.7ft	MM 408.5	Asphalt												
10	1	5/16/18	7.4ft LT/CL	7-1.6ft	MM 408.5	A-1-a(0)			38	27	10.4				6.5			62
10	2	5/16/18	7.4ft LT/CL	1.6-6.0ft	MM 408.5	A-4(0)			100	99	77.7			109.3	20	15.8		27
11		5/16/18	6.5ft RT/CL	0.0-.8ft	MM 409.0	Asphalt												
11	1	5/16/18	6.5ft RT/CL	.8-2.0ft	MM 409.0	A-1-a(0)			29	21	7.4				6.1			74
11	2	5/16/18	6.5ft RT/CL	2.0-5.5ft	MM 409.0	A-4(4)	27	8	99	98	73.2			115.0	15.7	13.1		
12		5/16/18	7.5ft LT/CL	0.0-.8 ft	MM 409.5	Asphalt												
12	1	5/16/18	7.5ft LT/CL	.8-1.6ft	MM 409.5	A-1-a(0)			28	19	7.4				5.0			61
12	2	5/16/18	7.5ft LT/CL	1.6-5.7ft	MM 409.5	A-6(14)	37	17	98	97	83.9			105	25.3	17.71		
13		5/16/18	9.7ft RT/CL	0.0-.7ft	MM 410.0	Asphalt												
13	1	5/16/18	9.7ft RT/CL	.7-2.0ft	MM 410.0	A-1-a(0)			37	20	6.0				3.1			72
13	2	5/16/18	9.7ft RT/CL	2.0-5.5ft	MM 410.0	A-4(0)			97	95	67.3			113	18.1	13.8		31

Remarks:

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NDT Data Collection

NH 1-7(59)404 [9540]  
Chinook East

EXHIBITS

Exhibit 1:

The boring for this sample was made 7ft RT/CL at MM 404.1. The depth of the surfacing materials encountered was 2.6ft which included .5ft of oil mat and 2.1ft of crushed base course. The material encountered in the subgrade was A-7-6(23) soil expected to have High swell tendencies. No water table was encountered. Subgrade natural moisture exceeds optimal moisture.

Exhibit 2:

The boring for this sample was made 6.5ft LT/CL at MM 404.52. The depth of the surfacing materials encountered was 1.1ft which included .6ft of oil mat and .5ft of crushed base course. The material encountered in the subgrade was A-4(4) soil expected to have Medium swell tendencies. No water table was encountered. Subgrade natural moisture does not exceed optimal moisture.

Exhibit 3:

The boring for this sample was made 7.5ft RT/CL at MM 405.0. The depth of the surfacing materials encountered was 1.9ft which included .6ft of oil mat and 1.3ft of crushed base course. The material encountered in the first subgrade sample was A-6(16) soil expected to have High swell tendencies. No water table was encountered. Subgrade natural moisture exceeds optimal moisture. The material encountered in the Second subgrade sample was A-7-6(20) soil expected to have High swell tendencies. No water table was encountered. Subgrade natural moisture exceeds optimal moisture.

Exhibit 4:

The boring for this sample was made 8.5ft LT/CL at MM 405.5. The depth of the surfacing materials encountered was 1.7ft which included .8ft of oil mat and .9ft of crushed base course. The material encountered in the subgrade was A-2-4(0) soil expected to have Low swell tendencies. No water table was encountered. Subgrade natural moisture does not exceed optimal moisture.

Exhibit 5:

The boring for this sample was made 7.9ft RT/CL at MM 406.0. The depth of the surfacing materials encountered was 1.6ft which included .5ft of oil mat and 1.1ft of crushed base course. The material encountered in the

first subgrade sample was A-6(9) soil expected to have Medium swell tendencies. No water table was encountered. Subgrade natural moisture exceeds optimal moisture. The material encountered in the Second subgrade sample was A-7-6(21) soil expected to have High swell tendencies. No water table was encountered. Subgrade natural moisture exceeds optimal moisture.

Exhibit 6:

The boring for this sample was made 7.7ft LT/CL at MM 406.5. The depth of the surfacing materials encountered was 1.8ft which included .7ft of oil mat and 1.1ft of crushed base course. The material encountered in the subgrade was A-6(14) soil expected to have High swell tendencies. No water table was encountered. Subgrade natural moisture exceeds optimal moisture.

Exhibit 7:

The boring for this sample was made 6.5ft RT/CL at MM 407.0. The depth of the surfacing materials encountered was 1.8ft which included .8ft of oil mat and 1ft of crushed base course. The material encountered in the subgrade was A-7-6(24) soil expected to have High swell tendencies. No water table was encountered. Subgrade natural moisture exceeds optimal moisture.

Exhibit 8:

The boring for this sample was made 5.9ft LT/CL at MM 407.5. The depth of the surfacing materials encountered was 1.7ft which included .7ft of oil mat and 1ft of crushed base course. The material encountered in the first subgrade was A-4(0) soil expected to have Low swell tendencies. No water table was encountered. Subgrade natural moisture does exceed optimal moisture. The material encountered in the second subgrade was A-7-6(38) soil expected to have High swell tendencies. No water table was encountered. Subgrade natural moisture exceeds optimal moisture. The material encountered in the Third subgrade was A-7-6(25) soil expected to have High swell tendencies. No water table was encountered. Subgrade natural moisture exceeds optimal moisture.

Exhibit 9:

The boring for this sample was made 6.5ft RT/CL at MM 408.0. The depth of the surfacing materials encountered was 1.6ft which included .9ft of oil mat and .7ft of crushed base course. The material encountered in the subgrade was A-6(15) soil expected to have High swell tendencies. No water table was encountered. Subgrade natural moisture exceeds optimal moisture.

Exhibit 10:

The boring for this sample was made 7.4ft LT/CL at MM 408.5. The depth of the surfacing materials encountered was 1.6ft which included .7ft of oil mat and .9ft of crushed base course. The material encountered in the subgrade was A-4(0) soil expected to have Medium swell tendencies. No water table was encountered. Subgrade natural moisture exceeds optimal moisture.

Exhibit 11:

The boring for this sample was made 6.5ft RT/CL at MM 409.0. The depth of the surfacing materials encountered was 2.0ft which included .8ft of oil mat and 1.2ft of crushed base course. The material encountered in the subgrade was A-4(4) soil expected to have High swell tendencies. No water table was encountered. Subgrade natural moisture exceeds optimal moisture.

Exhibit 12:

The boring for this sample was made 7.5ft LT/CL at MM 409.5. The depth of the surfacing materials encountered was 1.6ft which included .8ft of oil mat and .8ft of crushed base course. The material encountered in the subgrade was A-6(14) soil expected to have High swell tendencies. No water table was encountered. Subgrade natural moisture exceeds optimal moisture.

Exhibit 13:

The boring for this sample was made 9.7ft RT/CL at MM 410.0. The depth of the surfacing materials encountered was 2.0ft which included .7ft of oil mat and 1.3ft of crushed base course. The material encountered in the subgrade was A-4(0) soil expected to have Medium swell tendencies. No water table was encountered. Subgrade natural moisture exceeds optimal moisture.