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LABORATORY REPORT ON SOIL

Date of Report 02-07-17
Job No. 3147JV005
Event / Invoice No. 31470013 Lab No. 3050
Authorized By TIM WOLFE Date 01-12-17
Sampled By WT/T. MOORE Date 01-12-17
Submitted By WT/T. MOORE Date 01-13-17

Client DIBBLE ENGINEERING
7500 NORTH DREAMY DRAW DRIVE
STE 200
PHOENIX, AZ 85020

Project NDOT BETTERMENT FUNDING PROJECTS – LAB WORK
Location FARMINGTON LAB, NM
Contractor N/A
Arch. / Engr. N/A
Type / Use of Material NATIVE MATERIAL/SUBGRADE
Supplier / Source N21 KAIBITO, AZ/ONSITE
Sample Source / Location N21 3.5M WEST OF EAST END OF PAVE
Source / Location Desig. By WT/T. MOORE Date 01-12-17
Reference: PARTICLE SIZE ANALYSIS OF SOIL ☒ ASTM D422 ☐ AASHTO T88
HYDRAULIC CONDUCTIVITY ☐ ASTM D5084 METHOD ☐ ASTM D2434
Special Instructions:

TEST RESULTS

PARTICLE SIZE ANALYSIS
DISPERSION DEVICE MALT MACHINE LENGTH OF DISPERSION PERIOD, MINUTES 1 SPECIFIC GRAVITY → 2.65 ☐ ASTM D854 ☒ ASSUMED
DIFFICULTY IN DISPERSING MINUS NO. 10 MATERIAL NONE
DESCRIPTION OF SAND & GRAVEL PARTICLES: ☐ HARD ☒ SOFT ☐ FRIABLE ☐ ROUNDED ☐ ANGULAR MAXIMUM PARTICLE SIZE, IN. #10

SIEVE ANALYSIS		HYDROMETER ANALYSIS	
SIEVE SIZE	% PASS	PARTICLE SIZE	% PASS
3 IN.		0.074 MM	15.9
2 IN.			
1 1/2 IN.		0.020 MM	9.7
1 IN.			
3/4	100	0.005 MM	7.9
3/8	97.6		
NO. 4	90.5	0.002 MM	6.5
8	84.6		
10	82.9	0.001 MM	5.2
40	68.0		
50	60.4		
200	15.9		

LIQUID & PLASTIC PROPERTIES
☐ ASTM D4318 ☒ AASHTO T89 & T90
METHOD ☒ A ☐ B

	RESULT	SPECIFICATION
LIQUID LIMIT	NO VALUE	
PLASTIC LIMIT	NO LIMIT	
PLASTICITY INDEX	NO PLASTICITY	

SAMPLE AIR DRIED: ☒ YES ☐ NO
ESTIMATE % RETAINED ON NO. 40

SOIL CLASSIFICATION
☐ ASTM D2487 ☒ AASHTO M145
☐ ASTM D2488 VISUAL / MANUAL
GROUP SYMBOL A-2-4
GROUP NAME

HYDRAULIC CONDUCTIVITY

	SPECIMEN CHARACTERISTIC						
	HEIGHT, IN.	DIAMETER, IN.	DENSITY, PCF	MOISTURE, %	VOID RATIO	SATURATION, %	TYPE
INITIAL							☐ REMOLDED
FINAL							☐ UNDISTURBED

SPECIFIC GRAVITY → ☐ ASTM D854 ☐ ASSUMED
MAXIMUM CONSOLIDATION EFFECTIVE STRESS, PSI →
MINIMUM CONSOLIDATION EFFECTIVE STRESS, PSI →
PERMEANT
HYDRAULIC GRADIENT →
TOTAL BACK PRESSURE, PSI →
HYDRAULIC CONDUCTIVITY, CM PER SECOND →

Comments: GRAVEL = 9.5%, SAND = 74.6%, SILT = 8.0%, CLAY = 7.9%, COLLOIDS = 5.2%

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LABORATORY REPORT ON SOIL

Date of Report **02-07-17**
Job No. **3147JV005**
Event / Invoice No. **31470013** Lab No. **3049**
Authorized By **TIM WOLFE** Date **01-12-17**
Sampled By **WT/T. MOORE** Date **01-12-17**
Submitted By **WT/T. MOORE** Date **01-13-17**

Client **DIBBLE ENGINEERING**
7500 NORTH DREAMY DRAW DRIVE
STE 200
PHOENIX, AZ 85020

Project **NDOT BETTERMENT FUNDING PROJECTS – LAB WORK**
Location **FARMINGTON LAB, NM**
Contractor **N/A**
Arch. / Engr. **N/A**
Type / Use of Material **NATIVE MATERIAL/SUBGRADE**
Supplier / Source **N21 KAIBITO, AZ/ONSITE**
Sample Source / Location **N21 MP0.9 W. OF E. END OF PAVE**
Source / Location Desig. By **WT/T. MOORE** Date **01-12-17**
Reference: **PARTICLE SIZE ANALYSIS OF SOIL** ☒ **ASTM D422** ☐ **AASHTO T88**
HYDRAULIC CONDUCTIVITY ☐ **ASTM D5084 METHOD** ☐ **ASTM D2434**
Special Instructions:

TEST RESULTS

PARTICLE SIZE ANALYSIS
DISPERSION DEVICE **MALT MACHINE** LENGTH OF DISPERSION PERIOD, MINUTES **1** SPECIFIC GRAVITY → **2.65** ☐ ASTM D854 ☒ ASSUMED
DIFFICULTY IN DISPERSING MINUS NO. 10 MATERIAL **NONE**
DESCRIPTION OF SAND & GRAVEL PARTICLES: ☐ HARD ☒ SOFT ☐ FRIABLE ☐ ROUNDED ☐ ANGULAR MAXIMUM PARTICLE SIZE, IN. **#10**

SIEVE ANALYSIS		HYDROMETER ANALYSIS	
SIEVE SIZE	% PASS	PARTICLE SIZE	% PASS
3 IN.		0.074 MM	15.9
2 IN.			
1 1/2 IN.		0.020 MM	11.3
1 IN.			
3/4	100	0.005 MM	9.5
3/8	97.6		
NO. 4	90.5	0.002 MM	8.2
8	84.6		
10	82.9	0.001 MM	6.8
40	68.0		
50	60.4		
200	15.9		

LIQUID & PLASTIC PROPERTIES
☐ ASTM D4318 ☒ AASHTO T89 & T90
METHOD ☒ A ☐ B

	RESULT	SPECIFICATION
LIQUID LIMIT	17	
PLASTIC LIMIT	15	
PLASTICITY INDEX	2	

SAMPLE AIR DRIED: ☒ YES ☐ NO
ESTIMATE % RETAINED ON NO. 40

SOIL CLASSIFICATION
☐ ASTM D2487 ☒ AASHTO M145
☐ ASTM D2488 VISUAL / MANUAL
GROUP SYMBOL **A-2-6**
GROUP NAME

HYDRAULIC CONDUCTIVITY

	SPECIMEN CHARACTERISTIC						
	HEIGHT, IN.	DIAMETER, IN.	DENSITY, PCF	MOISTURE, %	VOID RATIO	SATURATION, %	TYPE
INITIAL							☐ REMOLDED
FINAL							☐ UNDISTURBED

SPECIFIC GRAVITY → ☐ ASTM D854 ☐ ASSUMED
MAXIMUM CONSOLIDATION EFFECTIVE STRESS, PSI →
MINIMUM CONSOLIDATION EFFECTIVE STRESS, PSI →
PERMEANT
HYDRAULIC GRADIENT →
TOTAL BACK PRESSURE, PSI →
HYDRAULIC CONDUCTIVITY, CM PER SECOND →

Comments: **GRAVEL = 9.5%, SAND = 74.6%, SILT = 6.3%, CLAY = 9.5%, COLLOIDS = 6.8%**

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LABORATORY REPORT ON SOIL

Date of Report 02-16-17
Job No. 3147JV005
Event / Invoice No. 31470013 Lab No. 3051
Authorized By TIM WOLFE Date 01-12-17
Sampled By WT/T. MOORE Date 01-12-17
Submitted By WT/T. MOORE Date 01-13-17

Client DIBBLE ENGINEERING
7500 NORTH DREAMY DRAW DRIVE
STE 200
PHOENIX, AZ 85020

Project NDOT BETTERMENT FUNDING PROJECTS – LAB WORK Location FARMINGTON LAB, NM
Contractor N/A Arch. / Engr. N/A
Type / Use of Material NATIVE MATERIAL/SUBGRADE Supplier / Source N21 KAIBITO, AZ/ONSITE
Sample Source / Location N21 8.0M WEST OF EAST END OF PAVE Source / Location Desig. By WT/T. MOORE Date 01-12-17
Reference: PARTICLE SIZE ANALYSIS OF SOIL [X] ASTM D422 [ ] AASHTO T88
HYDRAULIC CONDUCTIVITY [ ] ASTM D5084 METHOD [ ] ASTM D2434
Special Instructions:

TEST RESULTS

PARTICLE SIZE ANALYSIS
DISPERSION DEVICE MALT MACHINE LENGTH OF DISPERSION PERIOD, MINUTES 1 SPECIFIC GRAVITY → 2.65 [ ] ASTM D854 [X] ASSUMED
DIFFICULTY IN DISPERSING MINUS NO. 10 MATERIAL NONE
DESCRIPTION OF SAND & GRAVEL PARTICLES: [ ] HARD [X] SOFT [ ] FRIABLE [ ] ROUNDED [ ] ANGULAR MAXIMUM PARTICLE SIZE, IN. #10

SIEVE ANALYSIS		HYDROMETER ANALYSIS	
SIEVE SIZE	% PASS	PARTICLE SIZE	% PASS
3 IN.		0.074 MM	56.7
2 IN.			
1 1/2 IN.		0.020 MM	44.0
1 IN.			
3/4	100	0.005 MM	36.1
3/8	99.7		
NO. 4	97.9	0.002 MM	32.0
8	96.8		
10	96.6	0.001 MM	28.8
40	95.7		
50	91.8		
200	56.7		

LIQUID & PLASTIC PROPERTIES
[ ] ASTM D4318 [X] AASHTO T89 & T90
METHOD [X] A [ ] B

	RESULT	SPECIFICATION
LIQUID LIMIT	29	
PLASTIC LIMIT	13	
PLASTICITY INDEX	16	

SAMPLE AIR DRIED: [X] YES [ ] NO
ESTIMATE % RETAINED ON NO. 40

SOIL CLASSIFICATION
[ ] ASTM D2487 [X] AASHTO M145
[ ] ASTM D2488 VISUAL / MANUAL
GROUP SYMBOL A-6
GROUP NAME

HYDRAULIC CONDUCTIVITY

	SPECIMEN CHARACTERISTIC						
	HEIGHT, IN.	DIAMETER, IN.	DENSITY, PCF	MOISTURE, %	VOID RATIO	SATURATION, %	TYPE
INITIAL							[ ] REMOLDED
FINAL							[ ] UNDISTURBED

SPECIFIC GRAVITY → [ ] ASTM D854 [ ] ASSUMED
MAXIMUM CONSOLIDATION EFFECTIVE STRESS, PSI →
MINIMUM CONSOLIDATION EFFECTIVE STRESS, PSI →
PERMEANT
HYDRAULIC GRADIENT →
TOTAL BACK PRESSURE, PSI →
HYDRAULIC CONDUCTIVITY, CM PER SECOND →

Comments: GRAVEL = 2.1%, SAND = 41.2%, SILT = 20.6%, CLAY = 36.1%, COLLOIDS = 28.8%

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LABORATORY REPORT ON SOIL

Date of Report 02-16-17
Job No. 3147JV005
Event / Invoice No. 31470013 Lab No. 3052
Authorized By TIM WOLFE Date 01-12-17
Sampled By WT/T. MOORE Date 01-12-17
Submitted By WT/T. MOORE Date 01-13-17

Client DIBBLE ENGINEERING
7500 NORTH DREAMY DRAW DRIVE
STE 200
PHOENIX, AZ 85020

Project NDOT BETTERMENT FUNDING PROJECTS – LAB WORK
Location FARMINGTON LAB, NM
Contractor N/A
Arch. / Engr. N/A
Type / Use of Material NATIVE MATERIAL/SUBGRADE
Supplier / Source N21 KAIBITO, AZ/ONSITE
Sample Source / Location N21 12.4M WEST OF EAST END OF PAVE
Source / Location Desig. By WT/T. MOORE Date 01-12-17
Reference: PARTICLE SIZE ANALYSIS OF SOIL [X] ASTM D422 [ ] AASHTO T88
HYDRAULIC CONDUCTIVITY [ ] ASTM D5084 METHOD [ ] ASTM D2434
Special Instructions:

TEST RESULTS

PARTICLE SIZE ANALYSIS
DISPERSION DEVICE MALT MACHINE LENGTH OF DISPERSION PERIOD, MINUTES 1 SPECIFIC GRAVITY → 2.65 [ ] ASTM D854 [X] ASSUMED
DIFFICULTY IN DISPERSING MINUS NO. 10 MATERIAL NONE
DESCRIPTION OF SAND & GRAVEL PARTICLES: [X] HARD [ ] SOFT [ ] FRIABLE [ ] ROUNDED [ ] ANGULAR MAXIMUM PARTICLE SIZE, IN. #10

SIEVE ANALYSIS		HYDROMETER ANALYSIS	
SIEVE SIZE	% PASS	PARTICLE SIZE	% PASS
3 IN.		0.074 MM	12.1
2 IN.			
1 1/2 IN.		0.020 MM	3.8
1 IN.			
3/4	100	0.005 MM	2.8
3/8	97.6		
NO. 4	96.1	0.002 MM	2.8
8	94.5		
10	94.1	0.001 MM	2.8
40	87.4		
50	76.3		
200	12.1		

LIQUID & PLASTIC PROPERTIES
[ ] ASTM D4318 [X] AASHTO T89 & T90
METHOD [X] A [ ] B

	RESULT	SPECIFICATION
LIQUID LIMIT	NO VALUE	
PLASTIC LIMIT	NO LIMIT	
PLASTICITY INDEX	NO PLASTICITY	

SAMPLE AIR DRIED: [X] YES [ ] NO
ESTIMATE % RETAINED ON NO. 40

SOIL CLASSIFICATION
[ ] ASTM D2487 [X] AASHTO M145
[ ] ASTM D2488 VISUAL / MANUAL
GROUP SYMBOL A-3
GROUP NAME

HYDRAULIC CONDUCTIVITY

	SPECIMEN CHARACTERISTIC						
	HEIGHT, IN.	DIAMETER, IN.	DENSITY, PCF	MOISTURE, %	VOID RATIO	SATURATION, %	TYPE
INITIAL							[ ] REMOLDED
FINAL							[ ] UNDISTURBED

SPECIFIC GRAVITY → [ ] ASTM D854 [ ] ASSUMED
MAXIMUM CONSOLIDATION EFFECTIVE STRESS, PSI →
MINIMUM CONSOLIDATION EFFECTIVE STRESS, PSI →
PERMEANT
HYDRAULIC GRADIENT →
TOTAL BACK PRESSURE, PSI →
HYDRAULIC CONDUCTIVITY, CM PER SECOND →

Comments: GRAVEL = 3.9%, SAND = 84.0%, SILT = 9.3%, CLAY = 2.8%, COLLOIDS = 2.8%

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LABORATORY REPORT ON SOIL

Date of Report 02-10-17
Job No. 3147JV005
Event / Invoice No. 31470013 Lab No. 3053
Authorized By TIM WOLFE Date 01-12-17
Sampled By WT/T. MOORE Date 01-12-17
Submitted By WT/T. MOORE Date 01-13-17

Client DIBBLE ENGINEERING
7500 NORTH DREAMY DRAW DRIVE
STE 200
PHOENIX, AZ 85020

Project NDOT BETTERMENT FUNDING PROJECTS – LAB WORK
Location FARMINGTON LAB, NM
Contractor N/A
Arch. / Engr. N/A
Type / Use of Material NATIVE MATERIAL/SUBGRADE
Supplier / Source N21 KAIBITO, AZ/ONSITE
Sample Source / Location N21 16.0M W. OF E. END OF PAVE
Source / Location Desig. By WT/T. MOORE Date 01-12-17
Reference: PARTICLE SIZE ANALYSIS OF SOIL [X] ASTM D422 [ ] AASHTO T88
HYDRAULIC CONDUCTIVITY [ ] ASTM D5084 METHOD [ ] ASTM D2434
Special Instructions:

TEST RESULTS

PARTICLE SIZE ANALYSIS
DISPERSION DEVICE MALT MACHINE LENGTH OF DISPERSION PERIOD, MINUTES 1 SPECIFIC GRAVITY → 2.65 [ ] ASTM D854 [X] ASSUMED
DIFFICULTY IN DISPERSING MINUS NO. 10 MATERIAL NONE
DESCRIPTION OF SAND & GRAVEL PARTICLES: [X] HARD [ ] SOFT [ ] FRIABLE [ ] ROUNDED [ ] ANGULAR MAXIMUM PARTICLE SIZE, IN. #10

SIEVE ANALYSIS		HYDROMETER ANALYSIS	
SIEVE SIZE	% PASS	PARTICLE SIZE	% PASS
3 IN.		0.074 MM	31.9
2 IN.			
1 1/2 IN.		0.020 MM	5.3
1 IN.	100		
3/4	99.0	0.005 MM	3.7
3/8	97.9		
NO. 4	96.1	0.002 MM	3.7
8	92.1		
10	90.8	0.001 MM	3.7
40	86.4		
50	78.2		
200	31.9		

LIQUID & PLASTIC PROPERTIES
[ ] ASTM D4318 [X] AASHTO T89 & T90
METHOD [X] A [ ] B

	RESULT	SPECIFICATION
LIQUID LIMIT	NO VALUE	
PLASTIC LIMIT	NO LIMIT	
PLASTICITY INDEX	NO PLASTICITY	

SAMPLE AIR DRIED: [X] YES [ ] NO
ESTIMATE % RETAINED ON NO. 40

SOIL CLASSIFICATION
[ ] ASTM D2487 [X] AASHTO M145
[ ] ASTM D2488 VISUAL / MANUAL
GROUP SYMBOL A-2-4
GROUP NAME

HYDRAULIC CONDUCTIVITY

	SPECIMEN CHARACTERISTIC						
	HEIGHT, IN.	DIAMETER, IN.	DENSITY, PCF	MOISTURE, %	VOID RATIO	SATURATION, %	TYPE
INITIAL							[ ] REMOLDED
FINAL							[ ] UNDISTURBED

SPECIFIC GRAVITY → [ ] ASTM D854 [ ] ASSUMED
MAXIMUM CONSOLIDATION EFFECTIVE STRESS, PSI →
MINIMUM CONSOLIDATION EFFECTIVE STRESS, PSI →
PERMEANT
HYDRAULIC GRADIENT →
TOTAL BACK PRESSURE, PSI →
HYDRAULIC CONDUCTIVITY, CM PER SECOND →

Comments: GRAVEL = 3.9%, SAND = 64.2%, SILT = 28.2%, CLAY = 3.7%, COLLOIDS = 3.7%

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LABORATORY REPORT ON SOIL

Date of Report **02-10-17**

Client **DIBBLE ENGINEERING**
7500 NORTH DREAMY DRAW DRIVE
STE 200
PHOENIX, AZ 85020

Job No. **3147JV005**
Event / Invoice No. **31470013** Lab No. **3054**
Authorized By **TIM WOLFE** Date **01-12-17**
Sampled By **WT/T. MOORE** Date **01-12-17**
Submitted By **WT/T. MOORE** Date **01-13-17**

Project **NDOT BETTERMENT FUNDING PROJECTS – LAB WORK**
Location **FARMINGTON LAB, NM**
Contractor **N/A**
Arch. / Engr. **N/A**
Type / Use of Material **NATIVE MATERIAL/SUBGRADE**
Supplier / Source **N21 KAIBITO, AZ/ONSITE**
Sample Source / Location **N21 20.0M W. OF E. END OF PAVE**
Source / Location Desig. By **WT/T. MOORE** Date **01-12-17**
Reference: **PARTICLE SIZE ANALYSIS OF SOIL** ☒ **ASTM D422** ☐ **AASHTO T88**
HYDRAULIC CONDUCTIVITY ☐ **ASTM D5084 METHOD** ☐ **ASTM D2434**
Special Instructions:

TEST RESULTS

PARTICLE SIZE ANALYSIS
DISPERSION DEVICE **MALT MACHINE** LENGTH OF DISPERSION PERIOD, MINUTES **1** SPECIFIC GRAVITY → **2.65** ☐ ASTM D854 ☒ ASSUMED
DIFFICULTY IN DISPERSING MINUS NO. 10 MATERIAL **NONE**
DESCRIPTION OF SAND & GRAVEL PARTICLES: ☒ HARD ☐ SOFT ☐ FRIABLE ☐ ROUNDED ☐ ANGULAR MAXIMUM PARTICLE SIZE, IN. **#10**

SIEVE ANALYSIS		HYDROMETER ANALYSIS	
SIEVE SIZE	% PASS	PARTICLE SIZE	% PASS
3 IN.		0.074 MM	34.7
2 IN.			
1 1/2 IN.		0.020 MM	9.2
1 IN.			
3/4	100	0.005 MM	8.9
3/8	98.2		
NO. 4	94.3	0.002 MM	7.8
8	90.5		
10	89.5	0.001 MM	7.1
40	82.2		
50	69.9		
200	34.7		

LIQUID & PLASTIC PROPERTIES
☐ ASTM D4318 ☒ AASHTO T89 & T90
METHOD ☒ A ☐ B

	RESULT	SPECIFICATION
LIQUID LIMIT	16	
PLASTIC LIMIT	16	
PLASTICITY INDEX	0	

SAMPLE AIR DRIED: ☒ YES ☐ NO
ESTIMATE % RETAINED ON NO. 40

SOIL CLASSIFICATION
☐ ASTM D2487 ☒ AASHTO M145
☐ ASTM D2488 VISUAL / MANUAL
GROUP SYMBOL **A-2-6**
GROUP NAME

HYDRAULIC CONDUCTIVITY

	SPECIMEN CHARACTERISTIC						
	HEIGHT, IN.	DIAMETER, IN.	DENSITY, PCF	MOISTURE, %	VOID RATIO	SATURATION, %	TYPE
INITIAL							☐ REMOLDED
FINAL							☐ UNDISTURBED

SPECIFIC GRAVITY → ☐ ASTM D854 ☐ ASSUMED
MAXIMUM CONSOLIDATION EFFECTIVE STRESS, PSI →
MINIMUM CONSOLIDATION EFFECTIVE STRESS, PSI →
PERMEANT
HYDRAULIC GRADIENT →
TOTAL BACK PRESSURE, PSI →
HYDRAULIC CONDUCTIVITY, CM PER SECOND →

Comments: **GRAVEL = 5.7%, SAND = 59.6%, SILT = 25.7%, CLAY = 8.9%, COLLOIDS = 7.1%**

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LABORATORY REPORT ON SOIL

Client **DIBBLE ENGINEERING**
7500 NORTH DREAMY DRAW DRIVE
STE 200
PHOENIX, AZ 85020

Date of Report **02-10-17**
Job No. **3147JV005**
Event / Invoice No. **31470013** Lab No. **3055**
Authorized By **TIM WOLFE** Date **01-12-17**
Sampled By **WT/T. MOORE** Date **01-12-17**
Submitted By **WT/T. MOORE** Date **01-13-17**

Project **NDOT BETTERMENT FUNDING PROJECTS – LAB WORK** Location **FARMINGTON LAB, NM**
Contractor **N/A** Arch. / Engr. **N/A**
Type / Use of Material **NATIVE MATERIAL/SUBGRADE** Supplier / Source **N21 KAIBITO, AZ/ONSITE**
Sample Source / Location **N21 23.3M W. OF E. END OF PAVE** Source / Location Desig. By **WT/T. MOORE** Date **01-12-17**
Reference: **PARTICLE SIZE ANALYSIS OF SOIL** [X] **ASTM D422** [ ] **AASHTO T88**
HYDRAULIC CONDUCTIVITY [ ] **ASTM D5084 METHOD** [ ] **ASTM D2434**
Special Instructions:

TEST RESULTS

PARTICLE SIZE ANALYSIS
DISPERSION DEVICE **MALT MACHINE** LENGTH OF DISPERSION PERIOD, MINUTES **1** SPECIFIC GRAVITY → **2.65** [ ] ASTM D854 [X] ASSUMED
DIFFICULTY IN DISPERSING MINUS NO. 10 MATERIAL **NONE**
DESCRIPTION OF SAND & GRAVEL PARTICLES: [X] HARD [ ] SOFT [ ] FRIABLE [ ] ROUNDED [ ] ANGULAR MAXIMUM PARTICLE SIZE, IN. **#10**

SIEVE ANALYSIS		HYDROMETER ANALYSIS	
SIEVE SIZE	% PASS	PARTICLE SIZE	% PASS
3 IN.		0.074 MM	10.4
2 IN.			
1 1/2 IN.		0.020 MM	6.4
1 IN.			
3/4	100	0.005 MM	4.6
3/8	95.5		
NO. 4	89.7	0.002 MM	4.1
8	83.1		
10	81.7	0.001 MM	4.1
40	75.1		
50	64.1		
200	10.4		

LIQUID & PLASTIC PROPERTIES
[ ] ASTM D4318 [X] AASHTO T89 & T90
METHOD [X] A [ ] B

	RESULT	SPECIFICATION
LIQUID LIMIT	NO VALUE	
PLASTIC LIMIT	NO LIMIT	
PLASTICITY INDEX	NO PLASTICITY	

SAMPLE AIR DRIED: [X] YES [ ] NO
ESTIMATE % RETAINED ON NO. 40

SOIL CLASSIFICATION
[ ] ASTM D2487 [X] AASHTO M145
[ ] ASTM D2488 VISUAL / MANUAL
GROUP SYMBOL **A-3**
GROUP NAME

HYDRAULIC CONDUCTIVITY

SPECIMEN CHARACTERISTIC							
	HEIGHT, IN.	DIAMETER, IN.	DENSITY, PCF	MOISTURE, %	VOID RATIO	SATURATION, %	TYPE
INITIAL							[ ] REMOLDED
FINAL							[ ] UNDISTURBED

SPECIFIC GRAVITY → [ ] ASTM D854 [ ] ASSUMED
MAXIMUM CONSOLIDATION EFFECTIVE STRESS, PSI →
MINIMUM CONSOLIDATION EFFECTIVE STRESS, PSI →
PERMEANT
HYDRAULIC GRADIENT →
TOTAL BACK PRESSURE, PSI →
HYDRAULIC CONDUCTIVITY, CM PER SECOND →

Comments: **GRAVEL = 10.3%, SAND = 79.3%, SILT = 5.7%, CLAY = 4.6%, COLLOIDS = 4.1%**

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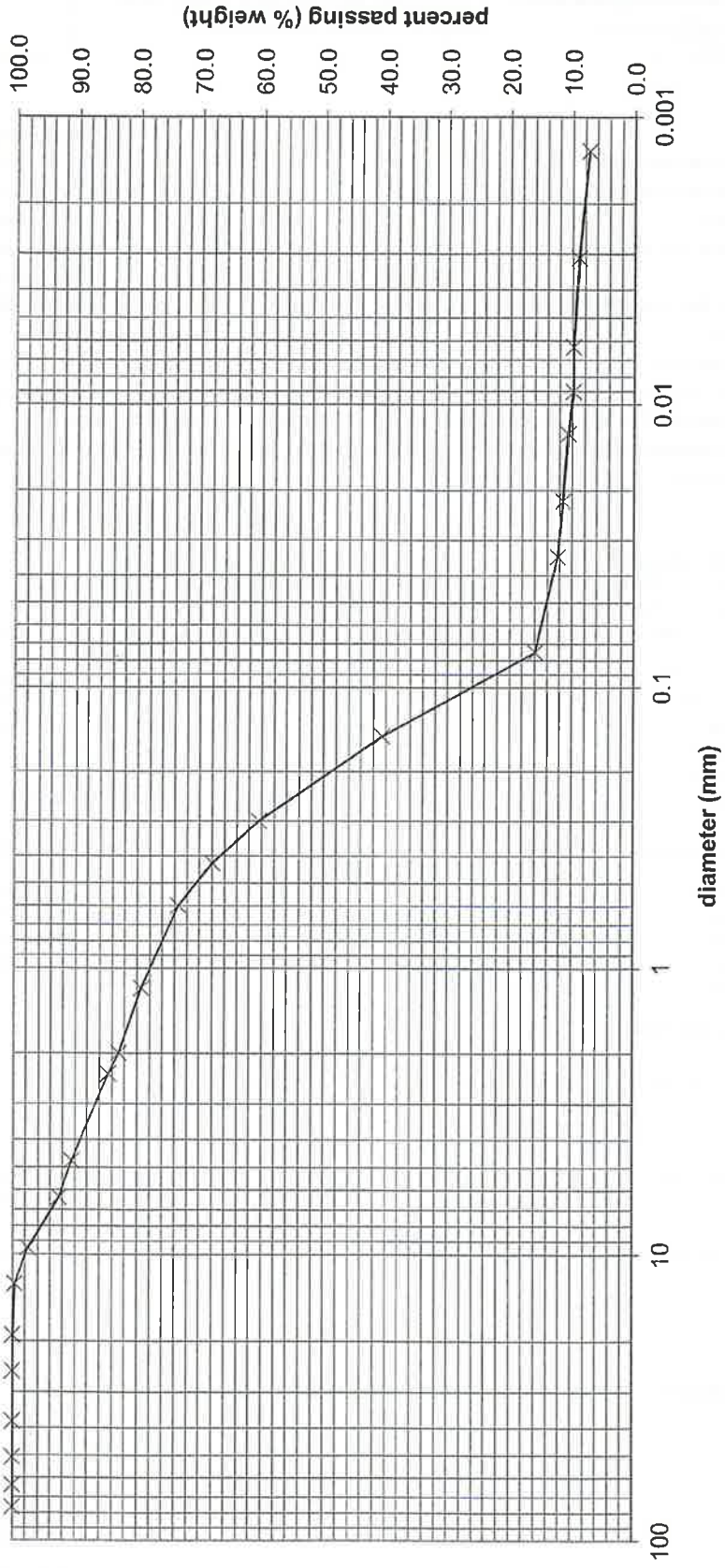
Farmington, New Mexico 87401
(505) 327-4966 • fax 327-5293

Project Number: 3147JV005
Event Number: 17
Lab Number: 3049
Tested by: T. Moore
Date Tested : 1/31/2017



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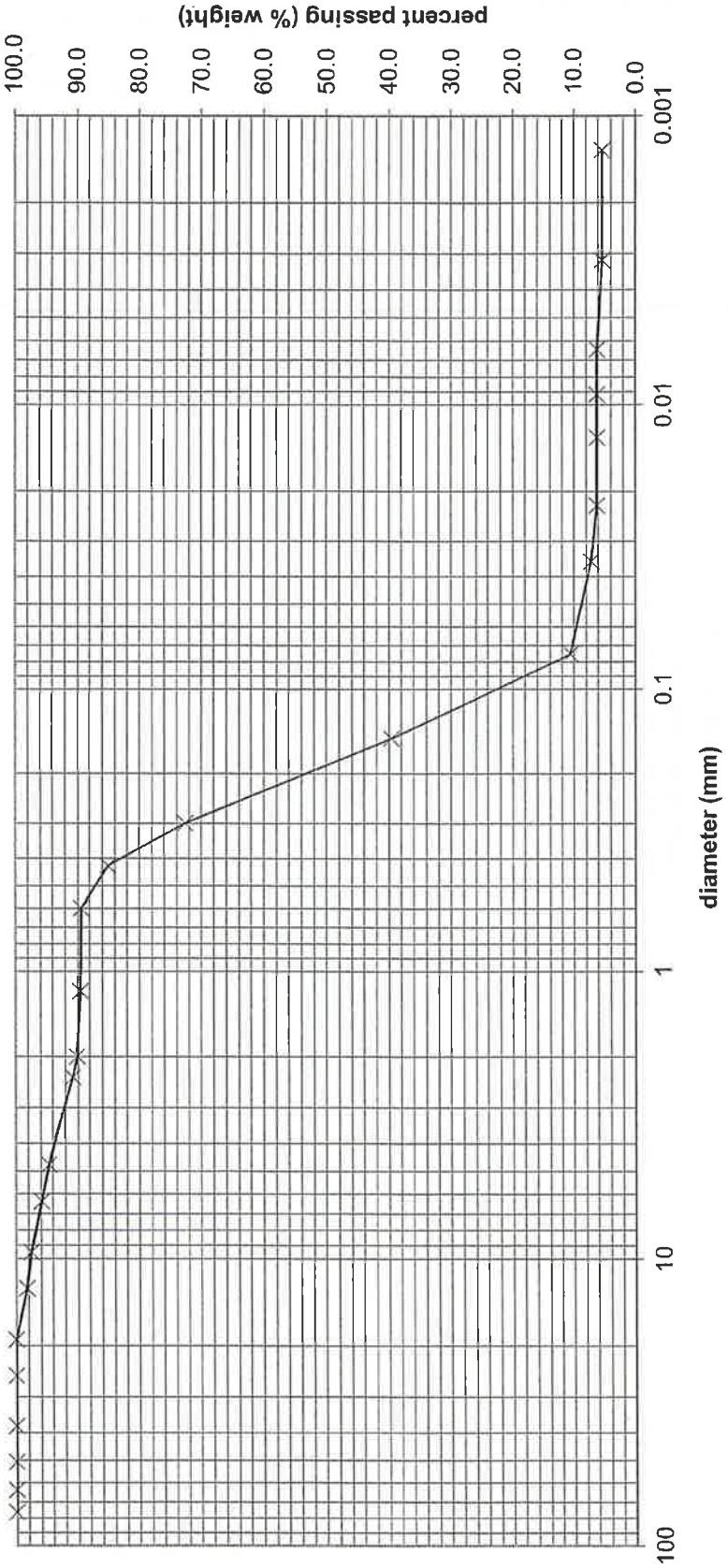
Project Number: 3147JV005
Event Number: 17
Lab Number: 3050
Tested by: T. Moore
Date Tested : 1/31/2017



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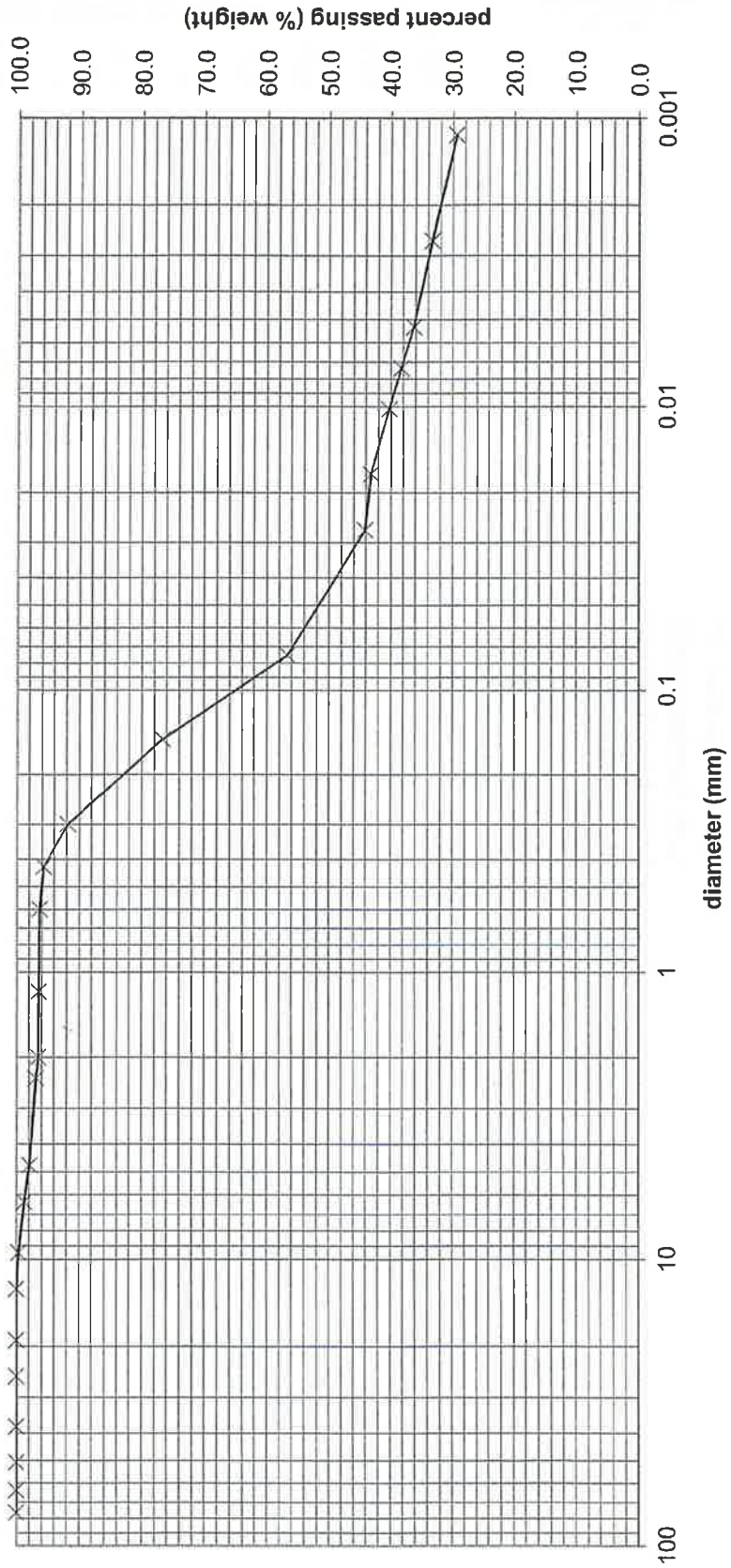
Project Number: 3147JV005
Event Number: 17
Lab Number: 3051
Tested by: T. Moore
Date Tested : 2/13/2017



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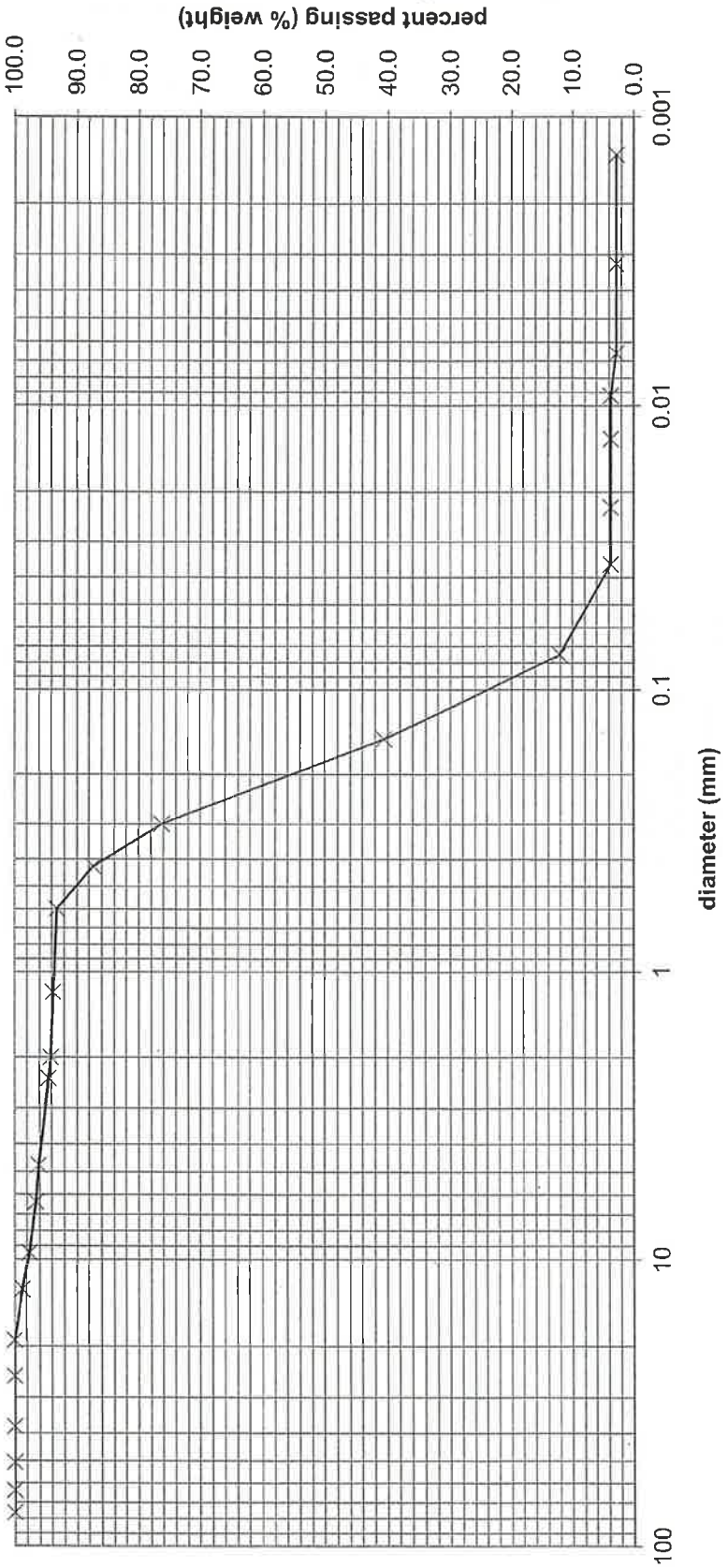
Project Number: 3147JV005
Event Number: 17
Lab Number: 3052
Tested by: T. Moore
Date Tested : 2/13/2017



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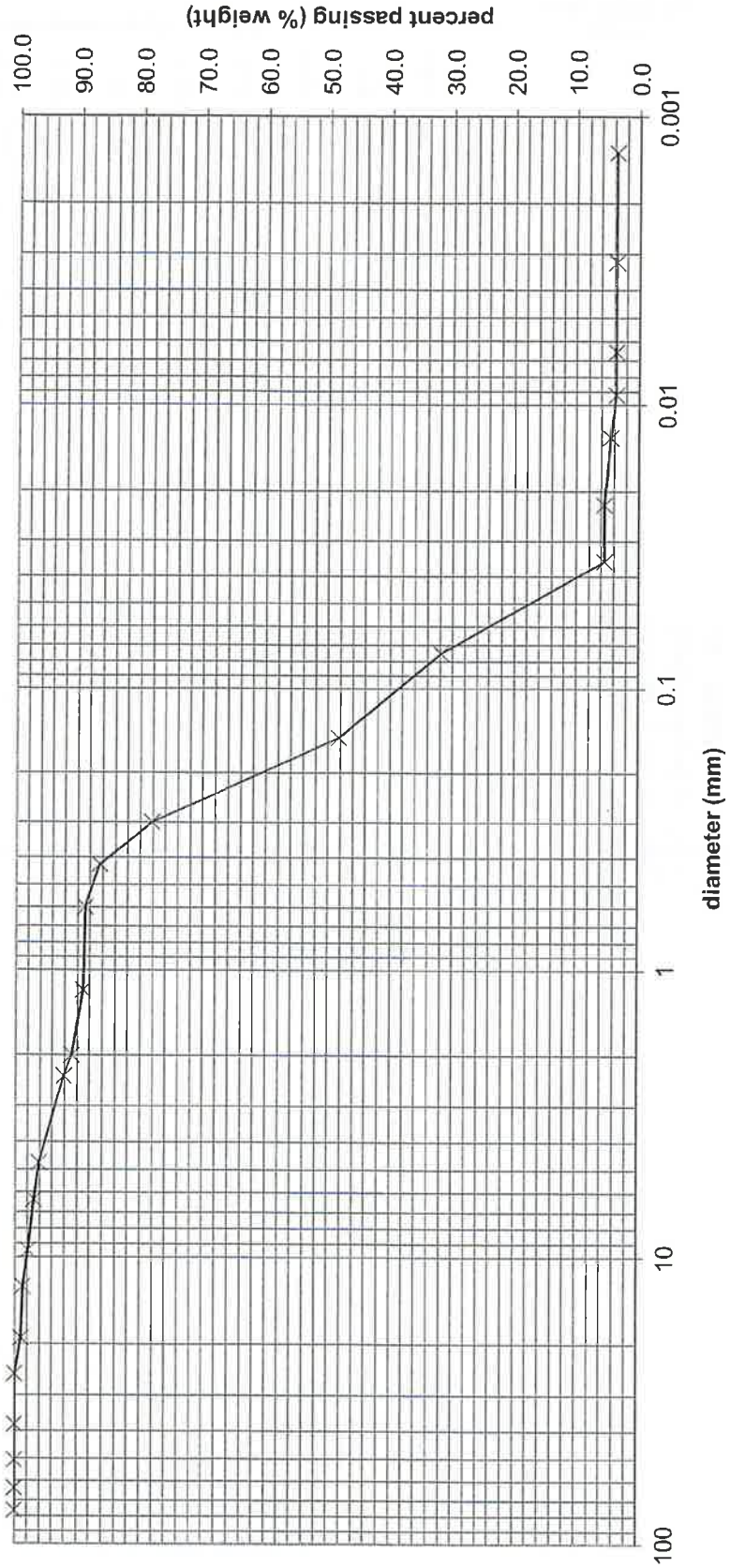
Project Number: 3147JV005
Event Number: 17
Lab Number: 3053
Tested by: T. Moore
Date Tested : 1/31/2017



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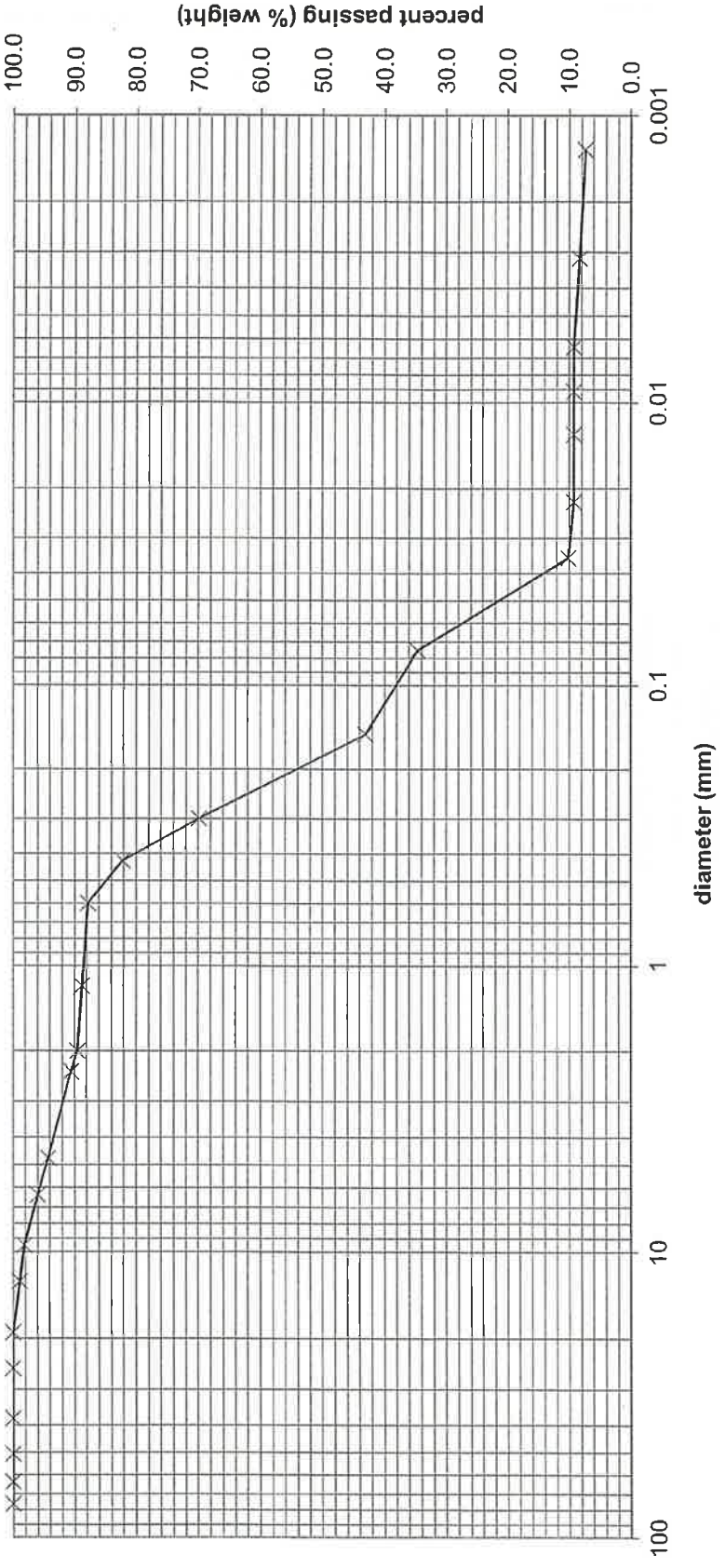
Project Number: 3147JV005
Event Number: 17
Lab Number: 3054
Tested by: T. Moore
Date Tested : 2/1/2017



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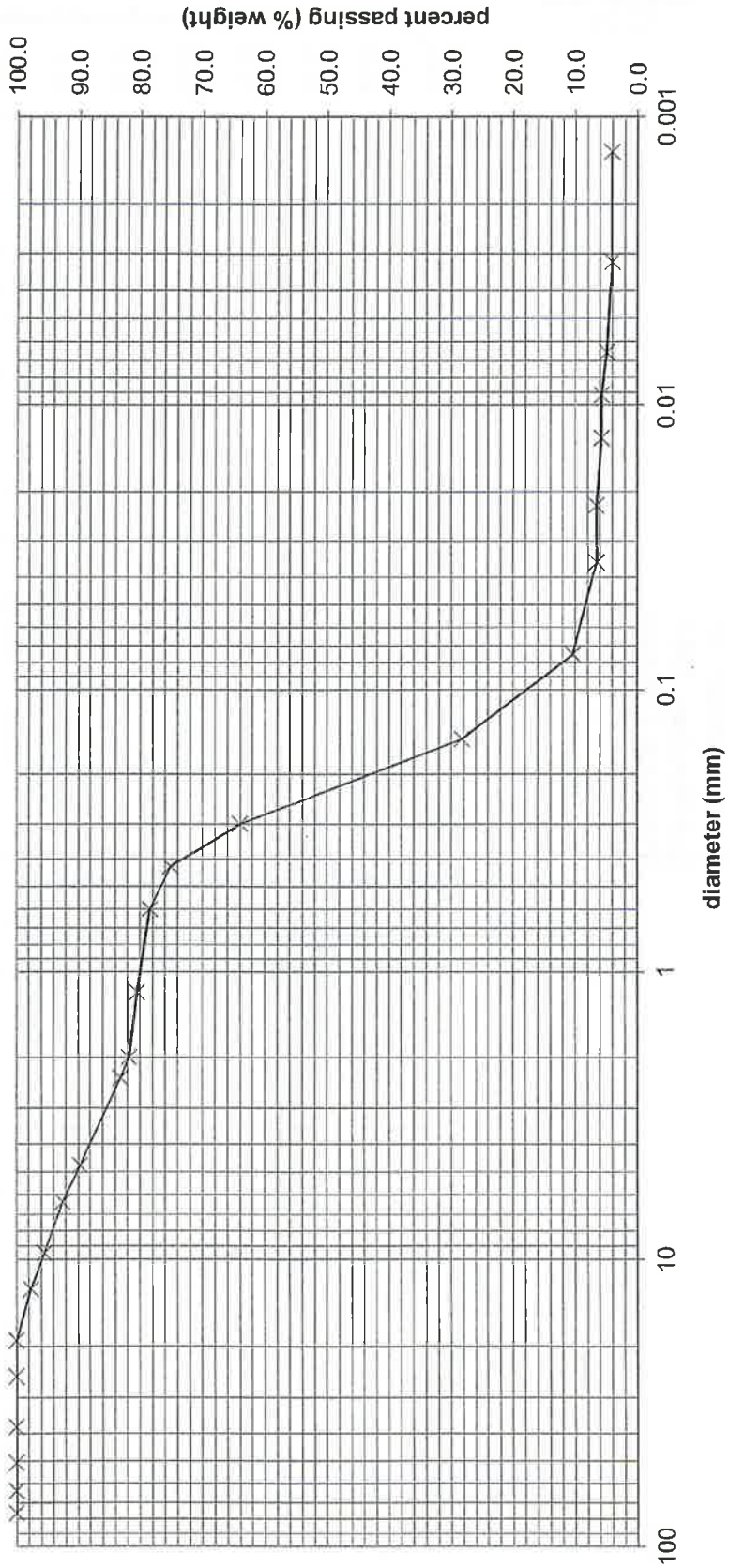
Project Number: 3147JV005
Event Number: 17
Lab Number: 3055
Tested by: T. Moore
Date Tested : 1/31/2017



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PHYSICAL PROPERTIES OF SOILS & AGGREGATES

Client **DIBBLE ENGINEERING**
7500 NORTH DREAMY DRAW DRIVE
STE 200
PHOENIX, AZ 85020

Date of Report **02-16-17**
Job No. **3147JV005**
Event / Invoice No. **31470013** Lab No. **3049**
Authorized by **TIM WOLFE** Date **01-12-17**
Sampled by **WT/T. MOORE** Date **01-12-17**
Submitted by **WT/T. MOORE** Date **01-13-17**
Source / Location Designated by **WT/T. MOORE** Date **01-12-17**

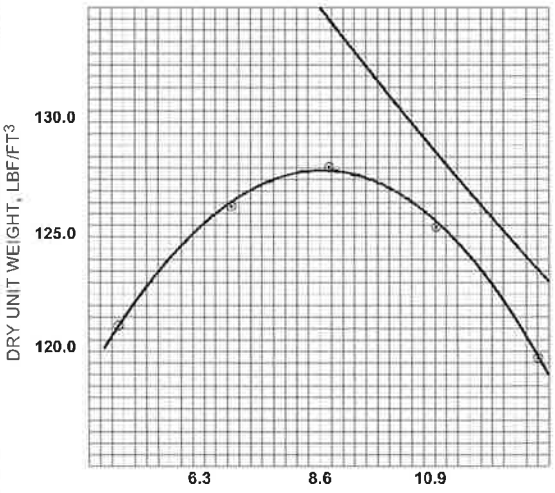
Project **NDOT BETTERMENT FUNDING PROJECTS - LAB WORK**
Location **FARMINGTON LAB, NM**
Type / Use of Material **NATIVE MATERIAL/SUBGRADE**
Supplier / Source **N21 KAIBITO, AZ/ONSITE**
Sample Source / Location **N21 MP0.9 W. OF E. END OF PAVE**
Special Instructions

TEST RESULTS

SIEVE ANALYSIS : AASHTO T27
FINER THAN NO. 200 : AASHTO T11

SIEVE	ACCUMULATIVE % PASSING	SPECIFICATION
4		
3		
2		
1-1/2"		
1"		
3/4"		
1/2"	**100**	
3/8"	**98**	
1/4"	**93**	
No.4	**91**	
8	**85**	
10	**83**	
16	**78**	
30	**71**	
40	**65**	
50	**58**	
100	**37**	
200	**15**	

LABORATORY COMPACTION CHARACTERISTICS : AASHTO T99 METHOD C



SAMPLE PREPARATION: [X] WET [ ] DRY
RAMMER USED:
[X] 2 IN. CIRCULAR FACE [ ] OTHER
[ ] MECHANICAL [X] MANUAL

PROJECT PROCTOR ID: **18**
MAXIMUM DRY UNIT WEIGHT, LBF/FT3 → **128**
OPTIMUM WATER CONTENT, % → **8**

OVERSIZE AGGREGATE :
ASSUMED BULK SPECIFIC GRAVITY: **2.65**
ASSUMED ABSORPTION, % : **1.0**
% OVERSIZE IN LAB SAMPLE : **0**

ASSUMED SPECIFIC GRAVITY IN ZERO AIR VOID CURVE : **2.65**

TEST PROCEDURE	RESULT	SPECS
LIQUID & PLASTIC PROPERTIES :AASHTO T89, 90		
METHOD **A** LIQUID LIMIT →	**17**	
ESTIMATED % RETAINED ON NO. 40 **0** PLASTIC LIMIT →	**15**	
SAMPLE AIR DRIED [X] YES [ ] NO PLASTICITY INDEX →	**2**	
MOISTURE CONTENT : AASHTO T265 PORTION TESTED **FULL** % DRY WEIGHT →	**6.9**	
EXPANSION / COMPRESSION PROPERTIES OF COHESIVE SOIL :		
[ ] EXPANSION [ ] COMPRESSION, % →		
MAXIMUM SWELL PRESSURE, KSF →		
SURCHARGE, PSF		
INITIAL WATER CONTENT, % DRY UNIT WEIGHT LBF/FT3		
EXPANSION INDEX OF SOIL :		
INITIAL WATER CONTENT, % :		
INITIAL DRY UNIT WEIGHT LBF/FT3 : EI →		
INITIAL DEGREE OF SATURATION :		
FINAL WATER CONTENT, % :		

TEST PROCEDURE	RESULT	SPECS
RESISTANCE TO DEGRADATION OF SMALL-SIZE COARSE AGGREGATES BY ABRASION :		
GRADING 100 REV, % LOSS →		
GRADING 500 REV, % LOSS →		
SPECIFIC GRAVITY :		
MAX. PARTICLE SIZE, IN. SPECIFIC GRAVITY @ 20°C →		
pH DETERMINATION :		
pH →		
SOLUBLE SALTS :		
PPM →		
MINIMUM RESISTIVITY :		
OHM-CM →		
SOIL CLASSIFICATION : AASHTO M145 GROUP SYMBOL: **A-2-6**		
NAME:		

Comments :

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PHYSICAL PROPERTIES OF SOILS & AGGREGATES

Client **DIBBLE ENGINEERING**
7500 NORTH DREAMY DRAW DRIVE
STE 200
PHOENIX, AZ 85020

Date of Report **02-16-17**
Job No. **3147JV005**
Event / Invoice No. **31470013** Lab No. **3050**
Authorized by **TIM WOLFE** Date **01-12-17**
Sampled by **WT/T. MOORE** Date **01-12-17**
Submitted by **WT/T. MOORE** Date **01-13-17**
Source / Location Designated by **WT/T. MOORE** Date **01-12-17**

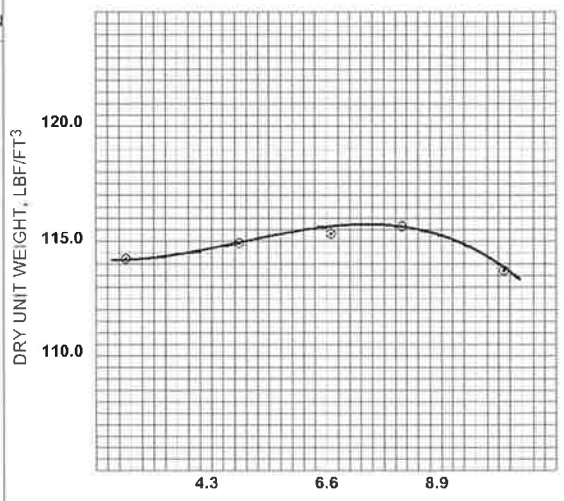
Project **NDOT BETTERMENT FUNDING PROJECTS - LAB WORK**
Location **FARMINGTON LAB, NM**
Type / Use of Material **NATIVE MATERIAL/SUBGRADE**
Supplier / Source **N21 KAIBITO, AZ/ONSITE**
Sample Source / Location **N21 3.5M W. OF EAST END OF PAVE**
Special Instructions

TEST RESULTS

SIEVE ANALYSIS : AASHTO T27
FINER THAN NO. 200 : AASHTO T11

SIEVE	ACCUMULATIVE % PASSING	SPECIFICATION
4		
3		
2		
1-1/2"		
1"		
3/4"	100	
1/2"	98	
3/8"	98	
1/4"	96	
No.4	95	
8	91	
10	90	
16	89	
30	89	
40	84	
50	72	
100	38	
200	11	

LABORATORY COMPACTION CHARACTERISTICS : AASHTO T180 METHOD D



SAMPLE PREPARATION: [X] WET [ ] DRY
RAMMER USED:
[X] 2 IN. CIRCULAR FACE [ ] OTHER
[ ] MECHANICAL [X] MANUAL

PROJECT PROCTOR ID: **25**
MAXIMUM DRY UNIT WEIGHT, LBF/FT3 → **116**
OPTIMUM WATER CONTENT, % → **7**

OVERSIZE AGGREGATE :
ASSUMED BULK SPECIFIC GRAVITY: **2.65**
ASSUMED ABSORPTION, % : **1.0**
% OVERSIZE IN LAB SAMPLE : **0**

ASSUMED SPECIFIC GRAVITY IN ZERO AIR VOID CURVE : **2.65**

TEST PROCEDURE	RESULT	SPECS
LIQUID & PLASTIC PROPERTIES :AASHTO T89, 90		
METHOD **A** LIQUID LIMIT →	**0**	**NV**
ESTIMATED % RETAINED ON NO. 40 **0** PLASTIC LIMIT →	**0**	**NL**
SAMPLE AIR DRIED [X] YES [ ] NO PLASTICITY INDEX →	**0**	**NP**
MOISTURE CONTENT : AASHTO T265 PORTION TESTED **FULL** % DRY WEIGHT →	**4.6**	
EXPANSION / COMPRESSION PROPERTIES OF COHESIVE SOIL :		
[ ] EXPANSION [ ] COMPRESSION, % →		
MAXIMUM SWELL PRESSURE, KSF →		
SURCHARGE, PSF		
INITIAL WATER CONTENT, % DRY UNIT WEIGHT LBF/FT3		
EXPANSION INDEX OF SOIL :		
INITIAL WATER CONTENT, % :		
INITIAL DRY UNIT WEIGHT LBF/FT3 : EI →		
INITIAL DEGREE OF SATURATION :		
FINAL WATER CONTENT, % :		

TEST PROCEDURE	RESULT	SPECS
RESISTANCE TO DEGRADATION OF SMALL-SIZE COARSE AGGREGATES BY ABRASION :		
GRADING 100 REV, % LOSS →		
GRADING 500 REV, % LOSS →		
SPECIFIC GRAVITY :		
MAX. PARTICLE SIZE, IN. SPECIFIC GRAVITY @ 20°C →		
pH DETERMINATION :		
pH →		
SOLUBLE SALTS :		
PPM →		
MINIMUM RESISTIVITY :		
OHM-CM →		
SOIL CLASSIFICATION : AASHTO M145 GROUP SYMBOL: **A-2-4**		
NAME:		

Comments :

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PHYSICAL PROPERTIES OF SOILS & AGGREGATES

Client **DIBBLE ENGINEERING**
7500 NORTH DREAMY DRAW DRIVE
STE 200
PHOENIX, AZ 85020

Date of Report **02-16-17**
Job No. **3147JV005**
Event / Invoice No. **31470013** Lab No. **3051**
Authorized by **TIM WOLFE** Date **01-12-17**
Sampled by **WT/T. MOORE** Date **01-12-17**
Submitted by **WT/T. MOORE** Date **01-13-17**
Source / Location Designated by **WT/T. MOORE** Date **01-12-17**

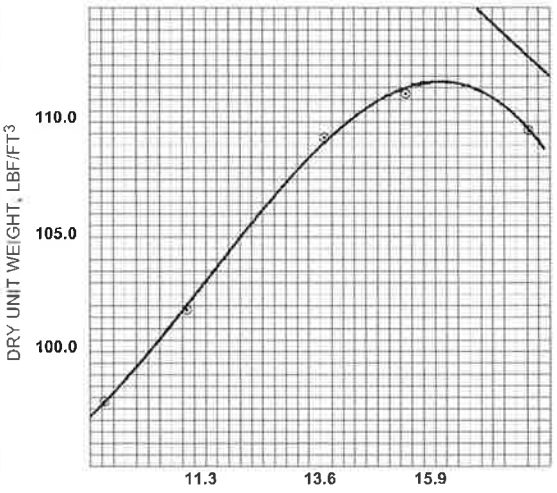
Project **NDOT BETTERMENT FUNDING PROJECTS - LAB WORK**
Location **FARMINGTON LAB, NM**
Type / Use of Material **NATIVE MATERIAL/SUBGRADE**
Supplier / Source **N21 KAIBITO, AZ/ONSITE**
Sample Source / Location **N21 8.0M WEST OF E. END OF PAVE**
Special Instructions

TEST RESULTS

SIEVE ANALYSIS : AASHTO T27
FINER THAN NO. 200 : AASHTO T11

SIEVE	ACCUMULATIVE % PASSING	SPECIFICATION
4		
3		
2		
1-1/2"		
1"		
3/4"		
1/2"		
3/8"	**100**	
1/4"	**99**	
No.4	**98**	
8	**97**	
10	**97**	
16	**96**	
30	**96**	
40	**95**	
50	**91**	
100	**75**	
200	**52**	

LABORATORY COMPACTION CHARACTERISTICS : AASHTO T99 METHOD C



SAMPLE PREPARATION: [X] WET [ ] DRY
RAMMER USED:
[X] 2 IN. CIRCULAR FACE [ ] OTHER
[ ] MECHANICAL [X] MANUAL

PROJECT PROCTOR ID: **37**
MAXIMUM DRY UNIT WEIGHT, LBF/FT3 → **112**
OPTIMUM WATER CONTENT, % → **16**

OVERSIZE AGGREGATE :
ASSUMED BULK SPECIFIC GRAVITY: **2.65**
ASSUMED ABSORPTION, % : **1.0**
% OVERSIZE IN LAB SAMPLE : **0**

ASSUMED SPECIFIC GRAVITY IN ZERO AIR VOID CURVE : **2.65**

TEST PROCEDURE	RESULT	SPECS
LIQUID & PLASTIC PROPERTIES :AASHTO T89, 90		
METHOD **A** LIQUID LIMIT →	**29**	
ESTIMATED % RETAINED ON NO. 40 **0** PLASTIC LIMIT →	**13**	
SAMPLE AIR DRIED [X] YES [ ] NO PLASTICITY INDEX →	**16**	
MOISTURE CONTENT : AASHTO T265 PORTION TESTED **FULL** % DRY WEIGHT →	**9.7**	
EXPANSION / COMPRESSION PROPERTIES OF COHESIVE SOIL :		
[ ] EXPANSION [ ] COMPRESSION, % →		
MAXIMUM SWELL PRESSURE, KSF →		
SURCHARGE, PSF		
INITIAL WATER CONTENT, % DRY UNIT WEIGHT LBF/FT3		
EXPANSION INDEX OF SOIL :		
INITIAL WATER CONTENT, %		
INITIAL DRY UNIT WEIGHT LBF/FT3 EI →		
INITIAL DEGREE OF SATURATION		
FINAL WATER CONTENT, %		

TEST PROCEDURE	RESULT	SPECS
RESISTANCE TO DEGRADATION OF SMALL-SIZE COARSE AGGREGATES BY ABRASION :		
GRADING 100 REV, % LOSS →		
GRADING 500 REV, % LOSS →		
SPECIFIC GRAVITY :		
MAX. PARTICLE SIZE, IN. SPECIFIC GRAVITY @ 20°C →		
pH DETERMINATION :		
pH →		
SOLUBLE SALTS :		
PPM →		
MINIMUM RESISTIVITY :		
OHM-CM →		
SOIL CLASSIFICATION : AASHTO M145 GROUP SYMBOL: **A-6**		
NAME:		

Comments :

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PHYSICAL PROPERTIES OF SOILS & AGGREGATES

Client **DIBBLE ENGINEERING**
7500 NORTH DREAMY DRAW DRIVE
STE 200
PHOENIX, AZ 85020

Date of Report **02-16-17**
Job No. **3147JV005**
Event / Invoice No. **31470013** Lab No. **3052**
Authorized by **TIM WOLFE** Date **01-12-17**
Sampled by **WT/T. MOORE** Date **01-12-17**
Submitted by **WT/T. MOORE** Date **01-13-17**
Source / Location Designated by **WT/T. MOORE** Date **01-12-17**

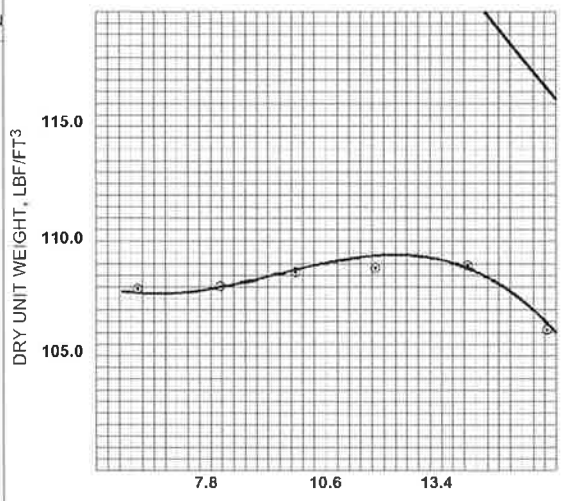
Project **NDOT BETTERMENT FUNDING PROJECTS - LAB WORK**
Location **FARMINGTON LAB, NM**
Type / Use of Material **NATIVE MATERIAL/SUBGRADE**
Supplier / Source **N21 KAIBITO, AZ/ONSITE**
Sample Source / Location **N21 12.4M W. OF E. END OF PAVE**
Special Instructions

TEST RESULTS

SIEVE ANALYSIS : AASHTO T27
FINER THAN NO. 200 : AASHTO T11

SIEVE	ACCUMULATIVE % PASSING	SPECIFICATION
4		
3		
2		
1-1/2"		
1"		
3/4"		
1/2"		
3/8"	**100**	
1/4"	**98**	
No.4	**98**	
8	**96**	
10	**96**	
16	**95**	
30	**94**	
40	**88**	
50	**77**	
100	**39**	
200	**4.6**	

LABORATORY COMPACTION CHARACTERISTICS : AASHTO T99 METHOD C



SAMPLE PREPARATION: [X] WET [ ] DRY
RAMMER USED:
[X] 2 IN. CIRCULAR FACE [ ] OTHER
[ ] MECHANICAL [X] MANUAL

PROJECT PROCTOR ID: **27**
MAXIMUM DRY UNIT WEIGHT, LBF/FT^3 → **109**
OPTIMUM WATER CONTENT, % → **12**

OVERSIZE AGGREGATE :
ASSUMED BULK SPECIFIC GRAVITY: **2.65**
ASSUMED ABSORPTION, % : **1.0**
% OVERSIZE IN LAB SAMPLE : **0**

ASSUMED SPECIFIC GRAVITY IN ZERO AIR VOID CURVE : **2.65**

TEST PROCEDURE	RESULT	SPECS
LIQUID & PLASTIC PROPERTIES :AASHTO T89, 90		
METHOD **A** LIQUID LIMIT →	**0**	**NV**
ESTIMATED % RETAINED ON NO. 40 **0** PLASTIC LIMIT →	**0**	**NL**
SAMPLE AIR DRIED [X] YES [ ] NO PLASTICITY INDEX →	**0**	**NP**
MOISTURE CONTENT : AASHTO T265 PORTION TESTED **FULL** % DRY WEIGHT →	**4.5**	
EXPANSION / COMPRESSION PROPERTIES OF COHESIVE SOIL :		
[ ] EXPANSION [ ] COMPRESSION, % →		
MAXIMUM SWELL PRESSURE, KSF →		
SURCHARGE, PSF		
INITIAL WATER CONTENT, % DRY UNIT WEIGHT LBF/FT^3		
EXPANSION INDEX OF SOIL :		
INITIAL WATER CONTENT, %		
INITIAL DRY UNIT WEIGHT LBF/FT^3 EI →		
INITIAL DEGREE OF SATURATION		
FINAL WATER CONTENT, %		

TEST PROCEDURE	RESULT	SPECS
RESISTANCE TO DEGRADATION OF SMALL-SIZE COARSE AGGREGATES BY ABRASION :		
GRADING 100 REV, % LOSS →		
GRADING 500 REV, % LOSS →		
SPECIFIC GRAVITY :		
MAX. PARTICLE SIZE, IN. SPECIFIC GRAVITY @ 20°C →		
pH DETERMINATION :		
pH →		
SOLUBLE SALTS :		
PPM →		
MINIMUM RESISTIVITY :		
OHM-CM →		
SOIL CLASSIFICATION : AASHTO M145 GROUP SYMBOL: **A-3**		
NAME:		

Comments :

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