Chapter 300

Bases - 18

This chapter is not part of the Project's specifications, but is a guide for project personnel in interpreting CDOT specifications, understanding ASTM, AASHTO, and Colorado Procedures (CPs) for testing, and for completing CDOT forms.

The design and construction of a pavement structure may include one or more base courses. A base course is a layer of material below the wearing surface of a pavement. Bases may be constructed of gravels, mixtures of soil and aggregate, mixtures of asphalt and aggregate, mixtures of cement and aggregate or soil, or other innovative materials. Bases may be made of unbound materials, such as gravel, or bound materials, such as lime treated subgrade.

Base courses under concrete pavements provide a drainage layer, reduce pumping, provide protection against frost damage, and provide support for the heavy equipment used for placing concrete pavements. There is some increase in structural capacity when a base is placed under a concrete pavement, but it is typically not a significant amount.

Base courses under flexible pavements provide a significant increase in structural capacity. Pavement design of flexible pavement depends on the wheel loads being distributed over a greater area as the depth of the pavement structure increases. There are the added benefits of improved drainage and protection against frost damage.

ITEM 206 STRUCTURE BACKFILL ITEM 304 AGGREGATE BASE COURSE

Compaction of unbound bases is important for the stability of the pavement it supports. The maximum dry density is established in the laboratory before construction. During construction measurements of the base dry density are compared to the maximum dry density. The requirements for compaction of aggregate base course (ABC) are shown in Subsection 304.06 of the Standard Specifications for Road and Bridge Construction. Structure Backfill has similar requirements as shown in Subsection 206.03.

Two methods to determine maximum dry density of soils are AASHTO T 99 and AASHTO T 180. AASHTO T 99 is similar to ASTM D 698 and is commonly referred to as the Proctor Test, as it was first proposed by R. R. Proctor in 1933. AASHTO T 99 uses a 5.5 lb. rammer dropped from 12 in. When a 4 in. mold is used, three layers are compacted with 25 blows on each layer. When a 6 in. mold is used, three layers are compacted with 56 blows on AASHTO T 99 results in a each laver. compactive effort of 12,400 ft-lbf/ft3. AASHTO T 180 is similar to ASTM D 1557 and is commonly referred to as the Modified Proctor Test. AASHTO T 180 uses a 10 lb. rammer dropped from 18 in. When a 4 in. mold is used, five layers are compacted with 25 blows on each layer. When a 6 in. mold is used, five layers are compacted with 56 blows on each layer. This results in a compactive effort of 56,000 ft-lbf/ft3. Comparing compactive efforts, AASHTO T 180 produces four and a half times the compactive effort than a sample receives compacted according to AASHTO T 99.

AASHTO T 99 is the appropriate standard for compaction of cohesive soils, particularly if there is the potential for swelling when saturated. AASHTO T 180 is appropriate for granular soils, such as aggregate base course and Structure Backfill, Class 1.

There are four methods of determining moisturedensity relationships by AASHTO T 180:

- Method A uses a 4 in. mold and the fraction of the soil passing a No. 4 sieve. AASHTO states that this is applicable to soil mixtures that have 40% or less retained on a No. 4 sieve.
- Method B uses a 6 in. mold and the fraction of the soil passing a No. 4 sieve. AASHTO states that this is applicable to soil mixtures that have 40% or less retained on a No. 4 sieve.
- Method C uses a 4 in. mold and the fraction of the soil passing a 3/4 in. sieve. AASHTO

states that this is applicable to soil mixtures that have 30% or less retained on a 3/4 in. sieve.

• Method D uses a 6 in. mold and the fraction of the soil passing a 3/4 in. sieve. AASHTO states that this is applicable to soil mixtures that have 30% or less retained on a 3/4 in. sieve.

The gradation requirements for Class 1 Structure Backfill and ABC are shown in Subsections 703.08 and 703.03 respectively. A review of the gradation requirements shows that many granular materials will meet the gradation requirements and exceed the limits of application stated in AASHTO T 180.

Colorado has developed a rock correction formula in Colorado Procedure 23 (CP 23) when AASHTO T180 is used:

$$MDD = (P_f x D_f + P_c x 0.95 D_c) / 100$$

The standard practice within the Department follows:

- 110 lbs. of granular material are sampled and sent to the laboratory before construction begins. This would typically require two standard sample bags.
- The material is separated into two fractions, material retained on a No. 4 sieve and material passing a No. 4 sieve.
- The specific gravity and absorption of the material retained on a No. 4 sieve is determined according to AASHTO T 85 Specific Gravity and Absorption of Coarse Aggregate.
- The maximum dry density and optimum moisture of the material passing a No. 4 sieve is determined according to AASHTO T 180, Method A.
- For bases with crushed concrete or

reclaimed asphalt pavement (RAP), an accurate specific gravity determination is difficult to make. For these materials T 180, Method D is used.

 Method D may be used if more than 30% of the material is retained on the No. 4 sieve, but has 30% or less of the material retained on the ³/₄ inch sieve. When Method D is used, use the above procedure but substitute the 3/4 inch sieve for the No. 4 sieve.

During construction the control of compaction follows according to the plans, specifications, and the Frequency Guide Schedule for Minimum Materials Sampling, Testing and Inspection. Each field test must include a separation of the sample into the two fractions, material retained on a No. 4 sieve and material passing a No. 4 sieve. Percent relative compaction is determined according to CP 25. CP 23 is used to correct the maximum dry density and optimum moisture for soil-rock mixtures with more than 5% material retained on a No. 4 sieve.

ITEM 308 PORTLAND CEMENT & FLY ASH

Sources of portland cement and/or fly ash are listed on the Department's Approved Product List. To verify a specific cementitious material that may be considered for a project check if the supplier / manufacturer of the cement or fly ash is on the Approved Products List at the web site address of:

www.codot.gov/business/apl.

If a manufacturer wants to add a cement or fly ash source use the same web site and follow the instructions within Notice to Manufacturers and also follow all references within CP 11.

CDOT Forms - Applicable for Bases, Examples and Instructions

Form	Title	Page
# 157	Field Report for Sample Identification or Materials Documentation	4 – 8
# 6	Field Tests of Base Aggregate, Fillers, Paving and Miscellaneous Aggregates	9 – 10
# 38	Aggregate Test Report - [computer output]	11
# 194	Structure Backfill Density Report	12
# 564	Soils and Aggregate Sieve Analysis When Splitting On the No. 4 Sieve	13 – 14
# 565	Sieve Analysis For Aggregate Not Split On the No. 4 Sieve	15 – 16
# 633	Sample Tag (Sacks)	17
# 1126	Stabilometer Record of Item 304 Aggregate Base Course	18
# 1296	Granular Materials Moisture – Density Report - [computer output]	19 – 21

ATTENTION!

All of the referenced CDOT Materials Forms above, except those indicated as "*computer output*", have been revised in 2014. All of these forms state: *Previous editions are obsolete and may not be used*. The use of Materials Forms older than what is indicated in Appendix O of the FMM is not authorized!

The examples of completed forms will be revised as necessary and as time permits in future FMM's.

Instructions for *Manually Developing the Field Sheet Numbers for CDOT Forms* is presented in Appendix O. In Chapter 300 the forms that utilize a Field Sheet are bolded above.

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	////		Project No.	FBR 0404	050	
Metric units	yes 🗸	√ no	Project Loc US 40 O			
Material Type STRUCTURAL BACK	FILL		Field Lab pl	hone 719-555-252		ll Phone 719-555-5353
Material Code (LIMS) Ite	em 106	Class 1	Grading		Special Pro	
Previously used on Project No.:		Previous CDC	DT Form #157 F/S No).(S):		OOT Form #633 (sack) OOT Form #634 (can)
 Sample Identification: Quantity & Unit o Materials Documentation: Field inspected 	ted (describe appear	arance, weight/dir	s required, precise loca imensions, model/seri BAGS FOR TEST	rial number), CC	emoved fron	m (stationing), etc.
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Т89, Т-90	CPL2	2104				
T180	G51					
	G57					
User ID KOCHISL						
Sample ID (#1) 153H150948	Sample	e ID (#2)		Sample	ID (#3)	
Sample ID (#4)	Sample	e ID (#5)		Sample	ID (#6)	
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Note: Within Date needed, ASAP is not a date.

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Metric un	_		no	Project No. Project Loca	FBR 040	4 050	
					/er Sand (Creek	
Material Type AGGREGATE	BASE COURSI	Ξ		Field Lab ph	one 19-555-2	Cell Phone 525 719-555-53	353
Material Code (LIMS) 703.03.06.00	Item 304	C	Class 6	Grading		Special Provisions ye	
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Supervisor (Pro./Res./Matls. Engr./Mai KARL LARSON	nt. Supt.) (print name)	Title CEF	PMI		Residency LIMON	,	
	Central Laboratory					CDOT Form	#157 4/1
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Note: Within Date needed, ASAP is not a date

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Metric units		√ no	Project	FBR 04	04 050	
Metric units	yes	4 10	Project L US 40	Location Over Sand	Creek	
Material Type AGGREGATE BA	SE COURSE		Field Lab	phone 719-555-2		Cell Phone 719-555-5353
Material Code (LIMS)	Item	Class	Grading			Provisions yes
703.03.06.00	304		6			
Previously used on Project No .:		Previous (CDOT Form #157 F/S	No.(s):		DOT Form #633 (sack) DOT Form #634 (can)
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CP31						
Т89, Т90						
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Note: Within Date needed, ASAP is not a date.

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Metric units	yes	\checkmark	/ no		Froject Locati			
					US 40 Ove	r Sand Ci	reek	
Material Type Hydrated Lime					Field Lab phor 71	ne 9-555-25		ell Phone 719-555-5353
Material Code (LIMS) 712.03.01.00	Item 307		Class		Grading		-	provisions yes
Previously used on Project No.:			Previous (CDOT Form a	#157 F/S No.(s):		DOT Form #633 (sack) DOT Form #634 (can)
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Note: Within Date needed, ASAP is not a date.

DAVING AND MISCELLANEO	DAVING AND MISCELLANED				HEGALES, FILLERS,		ń		Proje FBF	Project No. FBR 0404-050	050				Date St 4/09/2	Date Submitted 4/09/2015		
User ID: KOCHISL			3						Proje US	Project Location US 40 Over Sand Creek	r Sand C	Creek			Item 304 C	CL 6		
SMM/LIMS Sampler ID (or Test # [Date])	D Station	In Tons (t) or Yards (m)		Field 1 density 0	Lab max density	% Rel. Comp.	Total moist.			3/4" 1/2"	2" #4	4 #8	3 #30) #50	#100	#200	L.L.	Ц.
15318084125	258+46	46 2000		134.1	138.0	97	6.8	-	100	100 9	95 63	3 47	7 23	15	10	8.5	Z	ď
15318092536	265+43	43 2000		135.2	138.0	98	6.6		100	100 9	95 64	4 46	3 25	16	11	8.9	N	ЧN
15321110256	270+50	50 2000		133.9	138.0	97	6.1		100 1	100 9	94 62	2 42	26	14	0	7.7	Z	NP
15325132419	275+38	38 2000		132.5	138.0	96	5.5	-	100	100 1(100 65	5 45	5 26	15	11	8.5	Z	ď
1542095630	248+50	50 2000		129.6	134.3	97	5.5	-	100	100 8	88 48	35	5 25	თ	Q	3.4	Z	R
										+ +								
1542132426	258+16	16 2000		128.5	134.3	96	5.0	-	100	100 8	87 59	9 45	28	1	σ	8.1	N	dN
1545142846	265+89	39 2000		129.9	134.3	97	5.9	-	100 1	100 9	90 60	0 44	t 30	14	9	7.9	N	NP
1545150213	275+01	01 2000		128.4	134.3	96	6.0	-	100 1	100 8	88 58	3 45	30	15	∞	8.5	Ş	ď
	191100	2		0 7 07	C 1 C 1	6						-						
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15413142825	281+61	51 2000		128.9	134.3	96	6.5	-	100	100	91 62	51	- 28	18	10	8.5	Z	dN
ц <u>у</u>	Sheet Total	18,000	000			>95	N/A	╈	+	100	30-65	65 25-55	55			3-12	<30	
đ	Previous Total	00	C	Specifi	Specifications:			-	-		8		3			4	3	
<u> </u>	Total to Date	18,000	00										Final	Final report:		yes		No 🗸
Spec. deviations:	yes 🗸 no 🗌	4			% for lot #	lot #				Sou	Source (pit)							
Items: 206 Structure Backfill Clas:	5	Remarks								NO	SITE PI	RODUC	ON-SITE PRODUCED BY CONTRACTOR	CONTR	ACTOF	~		
206 Filter Material Class 304 ABC Class 6		FAILING D	DENSI	TY ARE	A WAS I	REWOR	ENSITY AREA WAS REWORKED AND RETESTED	D RETE	STED.	Proj6	Project Tester (print name) LESLIE KOCHIS	(print na CHIS	me)		Title EI	EPST III		
307 Treated Subgrade 403 HMA Grading 403 SMA 409 Cover Coat		Action take	e							FE /	PE Approved by (print name) KARL LARSON	y (print na SON	ame)		Title C	CEPM I		
Other Material:																		

CDOT Form # 6, Gradation

<th rowsp<="" th=""><th>TES BAD</th><th>FIELD TESTS OF BASE AGGREGATES, FILLERS, PAVING AND MISCELLANEOUS AGGREGATES</th><th>E AGGR</th><th>EGAT S AGG</th><th>ES, FI</th><th>LLER</th><th>Ś</th><th></th><th>Pro</th><th>roject code (s</th><th>LM 0235-131 (SA#) 11925 Region 2</th><th>925</th><th>Project code (SA#) 11925 Region 4</th><th></th><th>Item # (Check appropriate item below) 304</th><th>appropriate iter 304</th><th>tem belov</th><th>\$</th></th>	<th>TES BAD</th> <th>FIELD TESTS OF BASE AGGREGATES, FILLERS, PAVING AND MISCELLANEOUS AGGREGATES</th> <th>E AGGR</th> <th>EGAT S AGG</th> <th>ES, FI</th> <th>LLER</th> <th>Ś</th> <th></th> <th>Pro</th> <th>roject code (s</th> <th>LM 0235-131 (SA#) 11925 Region 2</th> <th>925</th> <th>Project code (SA#) 11925 Region 4</th> <th></th> <th>Item # (Check appropriate item below) 304</th> <th>appropriate iter 304</th> <th>tem belov</th> <th>\$</th>	TES BAD	FIELD TESTS OF BASE AGGREGATES, FILLERS, PAVING AND MISCELLANEOUS AGGREGATES	E AGGR	EGAT S AGG	ES, FI	LLER	Ś		Pro	roject code (s	LM 0235-131 (SA#) 11925 Region 2	925	Project code (SA#) 11925 Region 4		Item # (Check appropriate item below) 304	appropriate iter 304	tem belov	\$
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0:05 2000 [23:9] 130.0 95.3 2.5 1 0:05 2.5 1 130.0 95.3 2.5 0:05 2.5 1 130.0 95.3 2.5 0:05 1.30 0.95 3.2.5 1 1 0:05 1.30 0.95 3.2.5 1 1 0:05 1.00 95.0 1.00 1 1 1 0:013 1.01 0.00 Specifications: 1 1 1 1 1:02 0.00 Specifications: 1 1 1 1 1 1:01 1 0.00 Specifications: 1 1 1 1 1:02 1 0.00 Specifications: 1		Station taken	Tons (t) or Yards (m)					2" (50mm)	1½" 37.5mm) (2	1" 50m) (19							L.L.	٦. ۲.	
es n Action taken. Final report. Final report.	bo	100+05 400+95	2000	1123.9		95.5 95.5	2.5												
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Tester F. Gonzalez	ackfill (ial Clas		Remarks							[;]	(in) (in)								
Tester F. Gonzalez										5	nice (pir		arr	۵					
	C Type									Tes	ţ	Ľ.	Gonz	alez	¶ ₩	STe	sch I	H	
										App	ہ دەرەم by	°. St	Stewart	÷	Title	٦.	P.E. I		

7-01-2017

Colorado D AGGREGA	•		•	Project ID Project:	IM 0253-151	
Field Sheet	No:	149102		Location:	SH 7 to WCR	: 16
Date Submi	itted	12/23/20	03	Date Sen		
Item Numb	er:	304		Pit Owner		<
			_	Region:	04	
			Agg	regate Test Repor	t	
Sampled Fr	om:	WIN	IDROW			
Materials D	escriptic	n: CLA	SS 3 ABC			
Central Lab	Test No	o.: 200	3937X			
Project ID:				ODEOLE		
(O				SPECIFI	CATIONS	
(Grading A			1000/	•		
Passing	6 4	Inch	100%		6	Inch (152.4 mm)
Passing Passing	4 3	Inch	100% 100%		4	Inch (101.6 mm)
Passing	3 2 1/2	Inch Inch	100%		3 2 1/2	Inch (76.2 mm) Inch (63.5 mm)
Passing	2 1/2	Inch	86%		2 1/2	
Passing	2 1 1/2	Inch	80% 80%		∠ 1 1/2	Inch (50.8 mm)
Passing	1 1/2	Inch	80% 72%		1 1/2	Inch (38.1 mm)
Passing	3/4	Inch	67%			Inch (25.4 mm)
Passing	3/4 1/2	Inch	61%		3/4 1/2	Inch (19.0 mm)
Passing	3/8	Inch	57%		3/8	Inch (12.7 mm)
Passing	3/0 #4	Inch	47%		576 #4	Inch (9.51 mm)
Passing	#8		35%		#4 #8	(4.75 mm)
Passing	#0 #16		23%		#o #16	(2.36 mm)
Passing	#30		14%		#10	(1.18 mm) (600 mu)
Passing	#50		7%		#30 #50	(300 mu)
Passing	#100		4%		#100	
Passing	#200		3.3%	20 MA		(150 mu) (75 mu)
Fractured I		(CP45):	0.070	20 00-		(75 ma)
Abrasion (9		• •				
Liquid Limi		(T89):	NV			
Plastic Lim		(T90):	INV			
Plastic Inde		(T90):	NP		* Indicates De Specification I	eviation from Requirements.
"R" Value		(T190):			opeoneation	requirements.
Fine Aggre			ulk sp.g.:		% Abs.:	
Course Ag			ulk sp.g.: ulk sp.g.:	App. sp.g.: App. sp.g.:	% Abs.:	
-	9.09010	0	ant optgit	, hb. ob.8	~ ~	
Remarks:						
CC: Control I ch					~	
Central Lab	-	Engineer				enn Frieler
Regional M	aterials	⊏ngineer			Concrete/ Physic	al Properties Program Manager
						CDOT FORM # 38
						1/2000

Project code (SA#) 11925 Major Structures Number of Structures: (1 test/200 cu. yds.; minimum 1/structure) Class 1 (cu. yds.) No. of tests Class 2 (cu. yds.) No. of tests Total cu. yds. structure backfill: 1910 1350 7 560 3 Cross Drains Number of Cross Drains: (1 test/200 cu. yds.; minimum 1/structure) Class 1 (cu. yds.) No. of tests Class 2 (cu. yds.) No. of tests Number of Cross Drains: (1 test/200 cu. yds.; minimum 1/structure) Class 1 (cu. yds.) No. of tests Class 2 (cu. yds.) No. of tests Side Drains 1800 10 Side Drains Side Drains	COLORADO DEPARTMENT OF TRANSPORTATION STRUCTURE BACKFILL DENSITY REPORT	Proj. locat		253-151 5H 7 to '	WCR
Number of Structures: (1 test/200 cu. yds.; minimum 1/structure) Class 1 (cu. yds.) No. of tests Class 2 (cu. yds.) No. of tests Total cu. yds. structure backfill: 1910 1350 7 560 3 Cross Drains Number of Cross Drains: (1 test/200 cu. yds.; minimum 1/structure) Class 1 (cu. yds.) No. of tests Class 2 (cu. yds.) No. of tests Total cu. yds. structure backfill: 1800 10 10 10 Side Drains 1 1 1 No. of (cu. yds.) Class 2 (cu. yds.) No. of tests Number of Side Drains: (1 test/200 cu. yds.; minimum 1/structure) Class 1 (cu. yds.) No. of tests Class 2 (cu. yds.) No. of tests Total cu. yds. structure backfill: 750 450 6 300 6 Other Class 1 (cu. yds.) No. of tests Class 2 (cu. yds.) No. of tests Class 2 (cu. yds.) No. of tests			1a (SΔ#)	925	•
2 (cu. yds.) tests (cu. yds.) tests Total cu. yds. structure backfill: 1910 1350 7 560 3 Cross Drains Number of Cross Drains: (1 test/200 cu. yds.; minimum 1/structure) Class 1 (cu. yds.) No. of tests Class 2 (cu. yds.) No. of tests Total cu. yds. structure backfill: 1800 10	Major Structures				
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8 (cu. yds.) tests (cu. yds.) tests Total cu. yds. structure backfill: 1800 10 10 10 Side Drains Number of Side Drains: (1 test/200 cu. yds.; minimum 1/structure) Class 1 (cu. yds.) No. of tests Class 2 (cu. yds.) No. of tests Total cu. yds. structure backfill: 750 450 6 300 6 Other Class 1 (cu. yds.) No. of tests Class 2 (cu. yds.) No. of tests Class 2 (cu. yds.) No. of tests	· · · · · · · · · · · · · · · · · · ·				
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Other Class 1 No. of Class 2 No. of (cu. yds.) tests (cu. yds.) tests	Tatal au vala structure baskfills	T			
Remarks		(cu. yds.)	tests	(cu. yds.)	tests
	Remarks	• ·· ·· ·· ·····			
	Remarks				

OILS	S AND A	AGGRE		SIE	VE AN		S Project code (SA#)	N 0253-151 11925
			Station 201			/E	Item 304	
name 🧲	boose H	laven		5+8		1	Test no. 3	Sample weight 49.70 Date 10/10/03
sieve	Wet wt.	Dry wt.	Individual percentage		Percent passing	Specs	Liquid limit	Moisture correction
				-			Plastic limit NP	Plus #4 moisture sample
1/2			0.0		100.0	100	Plastic index NP	Wet weight 1587.0
1/6			0.0	-	100.0		Sail clare	Dry weight 1545.0
1/2		1.87	3.9		96.1		N/A	% moisture 2.7
/4	<u>10.28</u> 4.26	10.01 4.15	<u>20.8</u> 8.6	-	75.3		"R" value 80	Minus #4 moisture sample
/2	4.20	4 13	8.6	-	66.7 58.1		Sampled by	<u>Wet weight</u> 584.0
/8	1.57	1.53	3.2	-	54.9		Tested by	
#4	4.83	4.70	9.8		45.1	30-60		% moisture 4.3
#4 otal	22.60 49.70	21.67	45.1 100.0	# 8 # 50	40.2 17.5			
		-0.00	100.0	#200	9.3	5-12		
weight	r		#4 wash					
ms)	Sieve	Weight (grams)	Individual percentage	ļ	Percent passing			1
	# 8 # 50	61 282	10.9 50.3	-	<u>89.1</u> 38.8		Weighing	Individually
weight ms}	#200	101	<u> </u>		20.7			•
	- #200	116	20,7					
<u>60</u>	Total	560	100.0					
	ave all mate	erial until ca		re con	pleted in a	case a che	ck is necessary	
name			Station				Test no. 3	Sample weight 49.70 Date 10/10/03
								49.70 10/10/0.
eve	Wet wt.	Dry wt.	Individual percentage		Percent passing	Specs	Liquid limit NV	Moisture correction
eve	Wet wt.	Dry wt.				Specs	Liquid limit NV Plastic limit	Moisture correction Plus #4 moisture sample
	Wet wt.	Dry wt.	percentage		passing		Liquid limit NV Plastic limit NP Plastic index	Moisture correction Plus #4 moisture sample Wet weight 1587.0
	Wet wt.	Dry wt.			passing 100	100	Liquid limit Plastic limit Plastic index NP Soli class.	Moisture correction Plus #4 moisture sample Wet weight 1587.0 Dry weight 1545.0
	 1.92	1.87	0.0 0.0 3.9		passing 100 100 96.1		Liquid limit NV Plastic limit Plastic index NP Soil class. N/A	Moisture correction Plus #4 moisture sample Wet weight 1587.0 Dry weight 1545.0 Loss 42.0 % moisture 4.3
1/2 1/2	 1.92 12.20	 1.87 11.88	percentage 0.0 0.0 3.9 24.7		passing 100 100 96.1 75.3	100	Liquid limit Plastic limit Plastic index NP Soli class.	Moisture correction Plus #4 moisture sample Wet weight 1587.0 Dry weight 1545.0 Loss 42.0 % moisture 4.3 Minus #4 moisture sample
1/2 1/2 /4	1.92 12.20 16.46	1.87 11.88 16.03	0.0 0.0 3.9 24.7 33.3		passing 100 100 96.1 75.3 66.7	100	Liquid limit NV Plastic limit Plastic index NP Soil class. N/A	Moisture correction Plus #4 moisture sample Wet weight 1587.0 Dry weight 1545.0 Loss 42.0 % moisture 4.3 Minus #4 moisture sample 584
1/2 1/2 /4 /2	 1.92 12.20	 1.87 11.88	percentage 0.0 0.0 3.9 24.7		passing 100 100 96.1 75.3	100	Liquid limit NV Plastic limit NP Plastic index NP Soil class. N/A "R" value 80 Sampled by	Moisture correction Plus #4 moisture sample Wet weight 1587.0 Dry weight 1545.0 Loss 42.0 % moisture 4.3 Minus #4 moisture sample Wet weight Wet weight 584 Dry weight 560
1/2 1/2 /4 /2 /8 #4	1.92 12.20 16.46 20.70 22.27 27.10	 1.87 11.88 16.03 30.16	percentage 0.0 0.0 3.9 24.7 33.3 41.9 45.1 54.9		passing 100 100 96.1 75.3 66.7 58.1 54.9 45.1	100	Liquid limit NV Plastic limit NP Soil class. N/A "R" value 80	Moisture correction Plus #4 moisture sample Wet weight 1587.0 Dry weight 1545.0 Loss 42.0 % moisture 4.3 Minus #4 moisture sample 584
1/2 1/2 /4 /2 /8 #4	1.92 12.20 16.46 20.70 22.27 27.10 22.60	1.87 11.88 16.03 30.16 21.68 26.39 21.67	percentage 0.0 3.9 24.7 33.3 41.9 45.1 54.9 45.1	#	passing 100 100 96.1 75.3 66.7 58.1 54.9 45.1 40.2	100 95-100	Liquid limit NV Plastic limit NP Plastic index NP Soil class. N/A "R" value 80 Sampled by	Moisture correction Plus #4 moisture sample Wet weight 1587.0 Dry weight 1545.0 Loss 42.0 % moisture 4.3 Minus #4 moisture sample Wet weight Wet weight 584 Dry weight 560 Loss 24
1/2 1/2 /4 /4 /8 #4 #4 otal	1.92 12.20 16.46 20.70 22.27 27.10	1.87 11.88 16.03 30.16 21.68	percentage 0.0 0.0 3.9 24.7 33.3 41.9 45.1 54.9	#	passing 100 100 96.1 75.3 66.7 58.1 54.9 45.1 40.2 17.5	100 95-100 30-60	Liquid limit NV Plastic limit NP Plastic index NP Soil class. N/A "R" value 80 Sampled by	Moisture correction Plus #4 moisture sample Wet weight 1587.0 Dry weight 1545.0 Loss 42.0 % moisture 4.3 Minus #4 moisture sample Wet weight Wet weight 584 Dry weight 560 Loss 24
1/2 1/2 /4 /2 /8 #4 #4	1.92 12.20 16.46 20.70 22.27 27.10 22.60	1.87 11.88 16.03 30.16 21.68 26.39 21.67 48.06	percentage 0.0 0.0 3.9 24.7 33.3 41.9 45.1 54.9 45.1 100 44 wash	#	passing 100 100 96.1 75.3 66.7 58.1 54.9 45.1 40.2 17.5 9.3	100 95-100	Liquid limit NV Plastic limit NP Plastic index NP Soil class. N/A "R" value 80 Sampled by	Moisture correction Plus #4 moisture sample Wet weight 1587.0 Dry weight 1545.0 Loss 42.0 % moisture 4.3 Minus #4 moisture sample Wet weight Wet weight 584 Dry weight 560 Loss 24
1/2 1/2 /4 /2 /8 #4 #4 otal	1.92 12.20 16.46 20.70 22.27 27.10 22.60 49.70		percentage 0.0 0.0 3.9 24.7 33.3 41.9 45.1 54.9 45.1 100 4wash Individual percentage	#	passing 100 100 96.1 75.3 66.7 58.1 54.9 45.1 40.2 17.5 9.3 Percent passing	100 95-100 30-60	Liquid limit NV Plastic limit NP Plastic index NP Soil class. N/A "R" value 80 Sampled by	Moisture correction Plus #4 moisture sample Wet weight 1587.0 Dry weight 1545.0 Loss 42.0 % moisture 4.3 Minus #4 moisture sample Wet weight Wet weight 584 Dry weight 560 Loss 24
1/2 1/2 /4 /2 /8 #4 #4	1.92 12.20 16.46 20.70 22.27 27.10 22.60 49.70	1.87 11.88 16.03 30.16 21.68 26.39 21.67 48.06 Minus / Weight (grams) 61	percentage 0.0 0.0 3.9 24.7 33.3 41.9 45.1 54.9 45.1 Individual percentage 10.9	#	Passing 100 100 96.1 75.3 66.7 58.1 54.9 45.1 40.2 17.5 9.3 Percent passing 89.1	100 95-100 30-60 5-12	Liquid limit NV Plastic limit NP Plastic index NP Soil class. N/A "R" value 80 Sampled by Tested by	Moisture correction Plus #4 moisture sample Wet weight 1587.0 Dry weight 1545.0 Loss 42.0 % moisture 4.3 Minus #4 moisture sample Wet weight 584 Dry weight 560 Loss 24 % moisture 4.3
1/2 1/2 /4 /2 /8 #4 #4 tal weight weight			0.0 0.0 3.9 24.7 33.3 41.9 45.1 54.9 45.1 100 44 wash Individual percentage 10.9 61.2	#	passing 100 100 96.1 75.3 66.7 58.1 54.9 45.1 40.2 17.5 9.3 Percent passing 89.1 38.8	100 95-100 30-60 5-12	Liquid limit NV Plastic limit NP Plastic index NP Soil class. N/A "R" value 80 Sampled by Tested by	Moisture correction Plus #4 moisture sample Wet weight 1587.0 Dry weight 1545.0 Loss 42.0 % moisture 4.3 Minus #4 moisture sample Wet weight Wet weight 584 Dry weight 560 Loss 24
1/2 1/2 /4 /2 /8 #4 #4 ptal	1.92 12.20 16.46 20.70 22.27 27.10 22.60 49.70	1.87 11.88 16.03 30.16 21.68 26.39 21.67 48.06 Minus / Weight (grams) 61	percentage 0.0 0.0 3.9 24.7 33.3 41.9 45.1 54.9 45.1 Individual percentage 10.9	#	Passing 100 100 96.1 75.3 66.7 58.1 54.9 45.1 40.2 17.5 9.3 Percent passing 89.1	100 95-100 30-60 5-12	Liquid limit NV Plastic limit NP Plastic index NP Soil class. N/A "R" value 80 Sampled by Tested by	Moisture correction Plus #4 moisture sample Wet weight 1587.0 Dry weight 1545.0 Loss 42.0 % moisture 4.3 Minus #4 moisture sample Wet weight 584 Dry weight 560 Loss 24 % moisture 4.3

CDOT Form # 564 Dry (Note: Page 2 of 2 is not depicted.)

			GATES				Project n Project c		<u>253-151</u> 11925	
			ON THE				-	804		
	Goose H				,	<u> </u>	Test no.	1	Sample weight Date 10	(10
Sieve	Wet wt.	1	Individual	+10	Percent		Liquid limit		22.35 10/	
Sieve	vvet wt.	Dry wt.	percentage		passing	Specs		NV	Moisture corn	
				-			Plastic limit	NP	Pius #4 moisture sample	ė
2 1/2				-	100	100	Plastic index	NP	Wet weight	
2	· · · · · · · · · · · · · · · · · · ·	0.66	3.0	1	97.0	95-100	Soit class.		Loss	
1 1/2		3.32	15.0]	82.0			N/A	% moisture	
1		1.44	6.5	_	75.5		"R" value	80	Minus #4 moisture sam	
3/4 1/2		1.62	7.3	-	68.2		Sampled by	60		0.0
3/8		2.58	11.7	-	56.5					8.0
+ #4		1.40	<u>6.7</u> 4.8		49.8 45.0	20 (0	Tested by			2.0
- #4	10.20	9.95	45.0	#8	37.9	30-60			% moisture	<u> </u>
Total	22.35	22.10	100.0	#50	24.9					
				#200	7.2	5-12				
Wet weight	Sieve	Minus Weight	#4 wash Individual		Percent	1				
(grams)		(grams) 75	percentage		passing	<u> </u>				
	# 8 # 50	138	28.9		84.3 55.4	ЪИ	Veinh	ina	Individuall	~
	#200	189					· • · • •			y
(grams)	#200 - #200	189 76	<u>39.5</u> 15.9	-	15.9		.			y
			39.5							y
	- #200 Total	76 478	<u>39.5</u> 15.9		15.9					y
(grams) 478 NOTE: S	- #200 Total Save all mate	76 478 erial until ca	39.5 15.9 100.0 alculations a	re con	15.9			ssary		
(grams) 478 NOTE: S	- #200 Total	76 478 erial until ca	39.5 15.9 100.0 alculations a Station 41(Individual		15.9 npleted in O Percent	case a che	ck is neces	ssary 4	Sample weight 22.35	10/0
(grams) 478 NOTE: S ^{Pit name}	- #200 Total Save all mate	76 478 erial until ca faven	39.5 15.9 100.0 alculations a	re con	15.9 npleted in O		ck is neces	asary 4 NV	Sample weight 22.35 Moisture corre	10/(
(grams) 478 NOTE: S ^{Pit name}	- #200 Total Save all mate	76 478 erial until ca faven	39.5 15.9 100.0 alculations a Station 41(Individual	re con	15.9 npleted in O Percent	case a che	Ck is neces Test no. Liquid limit Plastic limit	ssary 4	Sample weight 22.35 Moisture corre Plus #4 moisture sample	10/(
(grams) 478 NOTE: S Pit name 6 Sleve 2 1/2	- #200 Total Save all mate	76 478 erial until ca faven	39.5 15.9 100.0 alculations a Station 41(Individual	re con	15.9 npleted in O Percent	case a che	ck is neces Test no. Liquid limit	4 NV NP	Sample weight 22.35 Moisture corre Plus #4 moisture sample Wet weight	10/(
(grams) 478 NOTE: S Pit name 6 Sieve 2 1/2 2	- #200 Total Save all mate	76 478 erial until ca faven	39.5 15.9 100.0 alculations a Station 41(Individual percentage	re con	15.9 npleted in 0 Percent passing 100 97.0	case a che	Ck is neces Test no. Liquid limit Plastic limit Plastic index	4 NV NP NP	Sample weight 22.35 Date 10/ Moisture corre Plus #4 moisture sample Wet weight Dry weight	10/(
(grams) 478 NOTE: S Pit name 6 Sleve 2 1/2	- #200 Total Save all mate	76 478 erial until ca laven Dry wt. 0.66 3.98	39.5 15.9 100.0 alculations a Station 41(Individual percentage 3.0 18.0	re con	15.9 	case a che Specs	Ck is neces Test no. Liquid limit Plastic limit Plastic index Soil class.	4 NV NP	Sample weight 22.35 Moisture corre Plus #4 moisture sample Wet weight Dry weight Loss % moisture	10/(
(grams) 478 NOTE: S Pit name Sieve 2 1/2 2 1 1/2 1	- #200 Total Save all mate	76 478 erial until ca aven Dry wt. 0.66 3.98 5.42	39.5 15.9 100.0 alculations a Station 41(Individual percentage 3.0 18.0 24.5	re con	15.9 npleted in 0 Percent passing 100 97.0 82.0 75.5	case a che Specs	Ck is neces Test no. Liquid limit Plastic limit Plastic index	4 NV NP NP	Sample weight 22.35 Date 10/2 Moisture corre Plus #4 moisture sample Wat weight Dry weight Loss % moisture Minus #4 moisture samp	10/(ection
(grams) 478 NOTE: S Pit name Sieve 2 1/2 2 1 1/2 1 3/4	- #200 Total Save all mate	76 478 erial until ca laven Dry w. 0.66 3.98 5.42 7.04	39.5 15.9 100.0 alculations a Station 41(Individual percentage 3.0 18.0 24.5 31.8	re con	15.9 npleted in 0 Percent passing 100 97.0 82.0 75.5 68.2	case a che Specs	Ck is neces Test no. Liquid limit Plastic limit Plastic index Soil class.	4 NV NP NP N/A	Sample weight 22.35 Moisture corre Plus #4 moisture sample Wet weight Loss % moisture Minus #4 moisture samp Wet weight	10/(ectior ection
(grams) 478 NOTE: S Pit name Sieve 2 1/2 2 1 1/2 1 3/4 1/2	- #200 Total Save all mate	76 478 erial until ca faven Dry wt. 0.66 3.98 5.42 7.04 9.62	39 5 15 9 100 0 alculations a Station 41(Individual percentage 3.0 18.0 24.5 31.8 43.5	re con	15.9 npleted in 0 Percent passing 100 97.0 82.0 75.5 68.2 56.5	case a che Specs	CK is neces Test no, Liquid limit Plastic limit Plastic index Soil class, "R" value Sampled by	4 NV NP NP N/A	Sample weight 22.35 Date 10/2 Moisture corre Plus #4 moisture sample Wet weight Loss % moisture Minus #4 moisture samp Wet weight 49 Dry weight 47	10/(ectior 9 00.(78.(
(grams) 478 NOTE: S Pit name Sieve 2 1/2 2 1 1/2 1 3/4	- #200 Total Save all mate	76 478 erial until ca laven Dry w. 0.66 3.98 5.42 7.04 9.62 11.10	39.5 15.9 100.0 alculations a Station 41(Individual percentage 3.0 18.0 24.5 31.8	re con	15.9 ppleted in 0 Percent passing 100 97.0 82.0 75.5 68.2 56.5 49.8	case a che Specs 100 95-100	CK IS NECES Test no. Liquid limit Plastic limit Plastic index Soil class. "R" value	4 NV NP NP N/A	Sample weight 22.35 Date 10/2 Moisture corre Plus #4 moisture sample Wet weight Loss % moisture Minus #4 moisture samp Wet weight 49 Dry weight 47	10/(ection 9 00.(78.(2.0
(grams) 478 NOTE: S Pit name Sieve 2 1/2 2 1 1/2 1 3/4 1/2 3/8	- #200 Total Save all mate Wet wt.	76 478 erial until ca laven Dry w. 0.66 3.98 5.42 7.04 9.62 11.10	39.5 15.9 100.0 alculations a Station 41(Individual percentage 3.0 18.0 24.5 31.8 43.5 50.2 55.0 45.0	# 8	15.9 ppleted in 0 Percent passing 100 97.0 82.0 75.5 68.2 56.5 49.8 45.0 37.9	case a che Specs 100 95-100 30-60	CK is neces Test no, Liquid limit Plastic limit Plastic index Soil class, "R" value Sampled by	4 NV NP NP N/A	Sample weight 22.35 Date 10/2 Moisture correctly and the sample Wet weight Dry weight Loss Minus #4 moisture sample Wet weight Minus #4 moisture sample Wet weight 29 20 20 20 20 20 20 20 20 20 20	10/(ection 9 00.(78.(2.0
(grams) 478 NOTE: S Pit name Sieve 2 1/2 2 1 1/2 1 1/2 3/4 1/2 3/8 + #4	- #200 Total save all mate	76 478 erial until ca laven Dry w. 0.66 3.98 5.42 7.04 9.62 11.10 12.15	39.5 15.9 100.0 alculations a Station 41(Individual percentage 3.0 18.0 24.5 31.8 43.5 50.2 55.0 45.0	# 8 # 50	15.9 ppleted in 0 Percent passing 100 97.0 82.0 75.5 68.2 56.5 49.8 45.0 37.9 24.9	case a che Specs 100 95-100 30-60	CK is neces Test no, Liquid limit Plastic limit Plastic index Soil class, "R" value Sampled by	4 NV NP NP N/A	Sample weight 22.35 Date 10/2 Moisture correctly and the sample Wet weight Dry weight Loss Minus #4 moisture sample Wet weight Minus #4 moisture sample Wet weight 29 20 20 20 20 20 20 20 20 20 20	10/(
(grams) 478 NOTE: S Pit name (G Sleve 2 1 2 1 1/2 3/4 1/2 3/4 + #4 - #4	- #200 Total Save all mate Wet wt.	76 478 erial until cr aven Dry m. 0.66 3.98 5.42 7.04 9.62 11.10 12.15 9.95 22.10	39 5 15 9 100 0 alculations a Station 41(Individual percentage 3.0 18.0 24.5 31.8 43.5 50.2 55.0 45.0 100.0	# 8	15.9 ppleted in 0 Percent passing 100 97.0 82.0 75.5 68.2 56.5 49.8 45.0 37.9	case a che Specs 100 95-100 30-60	CK is neces Test no, Liquid limit Plastic limit Plastic index Soil class, "R" value Sampled by	4 NV NP NP N/A	Sample weight 22.35 Date 10/2 Moisture correctly and the sample Wet weight Dry weight Loss Minus #4 moisture sample Wet weight Minus #4 moisture sample Wet weight 29 20 20 20 20 20 20 20 20 20 20	10/(ectior 9 00.(78.(2.(
(grams) 478 NOTE: S Pit name (Sieve 2 2 1 1/2 3/4 1/2 3/4 1/2 3/8 + #4 - #4 Total Wet weight	- #200 Total save all mate wet wt. 10,20 22,35	76 478 erial until ca laven Dry wt. 0.66 3.98 5.42 7.04 9.62 11.10 12.15 9.95 22.10 Minus Weight	39.5 15.9 100.0 alculations a Station 41(Individual percentage 3.0 18.0 24.5 31.8 43.5 50.2 55.0 45.0 100.0	# 8 # 50	15.9 ppleted in Percent passing 100 97.0 82.0 75.5 68.2 56.5 49.8 45.0 37.9 24.9 7.2 Percent	case a che Specs 100 95-100 30-60	CK is neces Test no, Liquid limit Plastic limit Plastic index Soil class, "R" value Sampled by	4 NV NP NP N/A	Sample weight 22.35 Date 10/2 Moisture correctly and the sample Wet weight Dry weight Loss Minus #4 moisture sample Wet weight Minus #4 moisture sample Wet weight 29 20 20 20 20 20 20 20 20 20 20	10/(ection 9 00.(78.(2.0
(grams) 478 NOTE: S Pit name 6 Sieve 2 1/2 2 1 1/2 1 1/2 3/4 1/2 3/4 + #4 - #4 Total	- #200 Total save all mate 0058 - Wet wt. 10.20 22.35 Sieve	76 478 erial until ca laven Dry wt. 0.66 3.98 5.42 7.04 9.62 11.10 12.15 9.95 22.10 Weight (grams)	39 5 15 9 100 0 alculations a Station 41(Individual percentage 3.0 18.0 24.5 31.8 43.5 50.2 55.0 45.0 100.0	# 8 # 50	15.9 ppleted in 0 Percent passing 100 97.0 82.0 75.5 68.2 56.5 49.8 45.0 37.9 24.9 7.2	case a che Specs 100 95-100 30-60 5-12	CK is neces Test no. Liquid limit Plastic limit Plastic index Soil class. "R" value Sampled by Tested by	4 NV NP N/A 80	Sample weight 22.35 Date 10/ Noisture correct Plus #4 moisture sample Wet weight Dry weight Loss % moisture Witt weight 49 Dry weight 47 Loss 1 % moisture	10/(ection 9 00.(8.(2.5
(grams) 478 NOTE: S Pit name (Sieve 2 2 1 1/2 3/4 1/2 3/4 1/2 3/8 + #4 - #4 Total Wet weight	- #200 Total save all mate 0058 F Wet wt. 10.20 22.35 Sieve # 8	76 478 erial until ca laven Dry wt. 0.66 3.98 5.42 7.04 9.62 11.10 12.15 9.95 22.10 Minus Weight (grams) 75	39.5 15.9 100.0 alculations a Station 41(Individual percentage 3.0 18.0 24.5 31.8 43.5 50.2 55.0 45.0 100.0	# 8 # 50	15.9 ppleted in 0 Percent passing 100 97.0 82.0 75.5 68.2 56.5 49.8 45.0 37.9 24.9 7.2 Percent Percent Percent Percent 84.3	case a che Specs 100 95-100 30-60 5-12	CK is neces Test no. Liquid limit Plastic limit Plastic index Soil class. "R" value Sampled by Tested by	4 NV NP N/A 80	Sample weight 22.35 Date 10/2 Moisture correctly and the sample Wet weight Dry weight Loss Minus #4 moisture sample Wet weight Minus #4 moisture sample Wet weight 29 20 20 20 20 20 20 20 20 20 20	10/(ection 9 00.(8.(2.5
(grams) 478 NOTE: S Pit name C Sleve 2 1/2 2 1 1/2 1 1/2 3/4 1/2 3/4 1/2 3/8 + #4 - #4 Total Wet weight Wet weight	- #200 Total save all mate coose F Wet wt. 10,20 22,35 Sieve # 8	76 478 erial until ca laven Dry wt. 0.66 3.98 5.42 7.04 9.62 11.10 12.15 9.95 22.10 Weight (grams)	39 5 15 9 100 0 alculations a Station 41(Individual percentage 3.0 18.0 24.5 31.8 43.5 150.2 55.0 45.0 100.0 #4 wash Individual percentage 15.7	# 8 # 50	15.9 ppleted in Percent passing 100 97.0 82.0 75.5 68.2 56.5 49.8 45.0 37.9 24.9 7.2 Percent	case a che Specs 100 95-100 30-60 5-12 We	CK is neces Test no. Liquid limit Plastic limit Plastic index Soil class. "R" value Sampled by Tested by	4 NV NP N/A 80	Sample weight 22.35 Date 10/ Noisture correct Plus #4 moisture sample Wet weight Dry weight Loss % moisture Witt weight 49 Dry weight 47 Loss 1 % moisture	10/(ection 9 00.(8.(2.5
(grams) 478 NOTE: S Pit name (Sleve 2 1 2 1 1/2 3/4 1/2 3/4 1/2 3/4 + #4 - #4 Total Wet weight (grams)	- #200 Total save all mate coose F Wet wt. 10,20 22,35 Sieve # 8 # 50	76 478 erial until cr laven Dry wt. 0.66 3.98 5.42 7.04 9.62 11.10 12.15 9.95 22.10 Winus Weight (grems) 75 213	39 5 15 9 100 0 alculations a Station 41(Individual percentage 3.0 18.0 24.5 31.8 43.5 55.0 45.0 100.0 45.0 100.0	# 8 # 50	15.9 pipleted in 0 Percent passing 100 97.0 82.0 75.5 68.2 56.5 49.8 45.0 37.9 24.9 7.2 Percent passing 84.3 55.4	case a che Specs 100 95-100 30-60 5-12 We	CK is neces Test no. Liquid limit Plastic limit Plastic index Soil class. "R" value Sampled by Tested by	4 NV NP N/A 80	Sample weight 22.35 Date 10/ Noisture correct Plus #4 moisture sample Wet weight Dry weight Loss % moisture Witt weight 49 Dry weight 47 Loss 1 % moisture	10/(ection 9 00.(8.(2.5

CDOT Form # 564 (Note: Page 2 of 2 is not depicted.)

CDOT FORM # 565 INSTRUCTIONS

This form is a field work sheet for use when testing aggregates in accordance with CP 31 when the maximum nominal particle size is less than 3/4 in.

This procedure allows for the total dry weight (mass) of the specimen, before washing, to be determined by either drying the total specimen or correcting it to dry weight (mass) using a moisture specimen of the same gradation and approximate weight (mass) as the specimen for wash.

Example No. 1 illustrates using a separate moisture specimen to correct the wet weight (mass) of the wash specimen to dry weight (mass).

Example No. 2 illustrates drying the total specimen to be washed and sieved. The percent moisture may be calculated if desired.

When correcting to dry weight (mass) by the use of a moisture specimen, it is very important that the specimen for wash and the specimen for moisture be taken and weighed at the same time. It is also important that the samples be as nearly identical in weight (mass) and gradation as possible.

NOTE: CDOT Form #565 was revised on 01/2013. The example still depicts the previous revision date of 4/07.

						7						
				TATION EGATES	Project no. IM 0253-151 Project code (SA#) 11925 Proj. location T 05 011 T 1							
NOT SP					Pitname Goose Haven							
		11114		. • •		<u>600</u> 03	<u>se H</u>		^{ss} R-50	(spec)		
Station 258	8+15 1	3' +	Test# 1:	<u>२</u>	Item 203 Class R-50 (spec) Station 3000+00 5' rt Test # 14							
Specimen wt (dr B	^{y)} 772 2	>		5/02	Specimen wt (c		5962		Data	5/03		
Sieve	Weight	Percent retained	Percent	Specs	Sieve		eight	Percent	Percent	Specs		
2"1		retained	passing	<u> </u>	2"1	+	1.1	retained 2.1	passing 97.9			
1 1/2"					1 1/2			4.7	93.3			
1"	· , ·			<u> </u>	1"			10.1	89.9			
3/4"					3/4"		·	13.2	86.8			
1/2"					1/2"	-	98.7		83.1			
3/8"					3/8"	29	67.9	18.6	81.4			
#4	0.3	0	100		#4	35	603.7	21.9	78.1			
#10	39.8	5.2	94.8		#10	41	50.4	26.0	74.0			
#16	84.8	11.0	89.0		#16	48	68.7	30.5	69.5			
#40	258.2	33.4	66.6		#40	76	62.2	48.0	25.0			
#50	379.0	49.1	50.9		#50	96	09.7	60.2	39.8			
#100	577.9	74.8	25.2		#100	12	818.2	80.3	19.7			
#200	668.6	86.6	13.4		#200	14	286.8	89.5	10.5			
-#200	5.7				-#200	10).5					
TOTAL	674.3				TOTAL	14	297.3					
DealD	Grada	tion Sample	e Moistu	re Sample	D (D		Grada	tion Sample	e Moistu	re Sample		
Pan ID Pan weight			-		Pan ID Pan weight							
Wet weight + Pa	in l				Wet weight +	Pan						
Wetweight	A		702	2 6	Wetweight		A		70	2.2		
Dry weight + Pa			,,,,,		Dry weight + F	Pan			, , ,			
Dry weight	В		65	0.6	Dryweight		в		65	0.1		
Dry wash H _L C weight Los			52	2.0		40 .085			5	2.1		
-#200 %H	<u></u>			.0	-#200 %	H ₂ O				8.0		
Wet weigh	nt + (100 + %	6 H ₂ O) x 10	0 = Dry we	ight	Wet we	ight +	(100 + %	% H ₂ O) x 10)0 = Dry we	ight		
A <u>834.0</u>	+ (100 + _	<u>8.0</u>) x 10) = в <u>772</u>	.2	A 17239	9_+	(100 + _8	.0 _) x 100	= B <u>159</u>	62.9		
Sampled by	ave Buc	Tested	· .	Assad	Sampled by	e Bi	JCK	Tested		Assad		
NOTE: Save	all material	until calcul			ase check is	nece	essary.	Page	1 of 2 CDOT	Form #565 4/07		

CDOT Form # 565 (Note: The current form of 4/16 must be used. Page 2 of 2 is not depicted.)

CDOT Form #633, Materials Sample Tag Revision Date 05/2013 Actual required size 8" x 2 5/8" with a detachable stub and with a wire tie through a reinforced hole located on left side of the tag so as to attach to cans, bags, etc. Paper stock as used in the past.

The example below is not to scale.

Contract ID # (Project C	^{ode)} 11925	Material Code	403.02.0121	Contract ID # 1192	5
Sample ID #	FS # 120027	Test #	4A	Sample ID #	
Lab Ref. #				FS # 120027	Test # 4A
Item # 403	Container 1	of 8		Station Cooley Morr	ison Quarry 3/4 Rock
COLORADO DEPA	RTMENT OF TRANSI	PORTATION		Depth 5'	
Materials & Geot	echnical Branch			Item # 403	
4670 N. Holly St.	Denver, Unit A			Container 1 of	8
Denver, CO 8021	6-6408	CDOT For	m# 633 05/2013	DETACH STUB AND PLA	CE IN CONTAINER

CDOT Form #633 (Note: Use Revision 4/16 after the 05/2013 tags are depleted.)

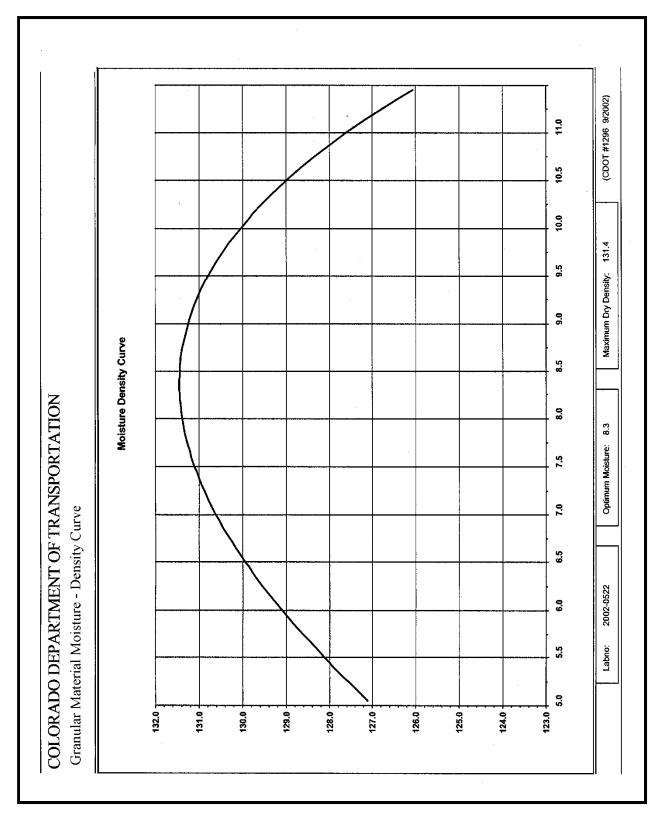
STABIL OMETER RECORD OF							Project No.	-151	Reg			
	1 304 /						Project code (SA#) 11925					
							Proj. location		- 7 to W	CR 1		
Pitname					Date	3/21/0	Field sam	ple #	Lab#			
Represent	te	se f	lave	en			DI	<u>30152</u>		13A		
·	<u> 30</u>	4					1 ''		Ciass	6		
	G As run		ON Set	un	Stabilomete	r "R" value:	<u>78</u>					
Seive	% passing	Scalp		<u>up</u>	<u>`</u>	% moistur	e at		lbs. per c	u. ft		
si <u>ze</u>	paseirig		1		% Moisture	- #4 Material	<u> </u>	<u>85</u> ×				
<u>4"</u>			4		Weight of - a			<u> </u>				
<u>3"</u>		ļ			Weight of H	-		 +				
<u>2½"</u>					Initial H ₂ O a		_5(
			1		Total initial	H ₂ O		(A)				
2"	-+						СОМР	ACTION				
11/2"		<u> </u>			Cylinder #	·	3	4	5			
1"					H ₂ O added (B)	65	75	70			
3/4"	100	100			Exudation p		10000	2960	5700			
	89	89	11	%	Exudation p	ressure, PSI	796	236	454			
<u>1/2"</u>		73	27									
3/8"	73				Ht. of brique		2.41	2.40	2.42			
<u>#</u> 4	47	47	53	%		& wet sample		3282	3281			
#8	36				Cylinder tare Wet wt. of s		2115	2117	2116			
	29				¹ Weight of I		1160	1165	1165			
<u>#16_</u>					² Dry wt. (D)							
<u>#50</u>	18				³ % Moisture							
<u>#100</u>	13				⁴ Density			· · · · · · · · · · · · · · · · · · ·				
#200	9				Height corre	ction by wt.						
	S	et up we	ights					1	h			
-3/4" +	1/2"	121					STABI	OMETER				
-1/2" +		297			Total load	PSI		1				
		583			1000	80						
-3/8" + :	#4 —				2000	160	15	23	16			
- #4		110	U		Displacemer	nt turns	5.52	4.38	5.24			
1 (A)) + (P)	- 100			"R" value		81(80)	77(76)	81(80)			
2 (W) + (B) /w) - (C)	= (C) = (D)			Drainage	<u> </u>						
) + (D) /_) x 30.3	= (M))		Exp. pressur	e dial reading						

Test Moisture#1#2#3#4#5Moisture bry Density4.76.79.211.5Tory Density126.4130.2131.1125.6All state of the stat	Project ID Project F.S. # Engineer Comments				Loca Sour Regi Physical	ce G on O4	H 7 TO WCR OOSE HAVEI 4 es Program I	N	Report Date Construction	3200
Method: T180A Test #1 #2 #3 #4 #5 Moisture 4.7 6.7 9.2 11.5 Dry Density 126.4 130.2 131.1 125.6 Moisture Chart:	Lab #	S	p. G.	Δ	bsorption					
Test #1 #2 #3 #4 #5 Moisture 4.7 6.7 9.2 11.5 Dry Density (26.4 130.2 131.1 125.6 Moisture Chart:	2002-0522		2.57		1.3					
Test #1 #2 #3 #4 #5 Moisture Dry Density 4.7 6.7 9.2 11.5 Moisture Dry Density 126.4 130.2 131.1 125.6 Moisture Chart:	Lab Tests:		Me	thod: T18	BOA.	-				
Adisture Chart: %H20 Dry Density %H20 Displis andis and and andisplay %H20	Test Moisture	tv	4.7	6.7	9.2	11.5	#5			
WH20 Dry Density %H20 Dry Density %H20 Dry Density %H20 Dry Density 5.0 127.1 7.3 130.9 9.4 130.8 130.7 5.1 127.3 7.3 131.0 9.5 130.7 130.7 5.2 127.6 7.4 131.1 9.6 130.6 140.6 5.3 127.8 7.5 131.1 9.7 130.5 140.6 140.6 5.4 128.0 7.6 131.2 9.8 130.1 140.7 140.7 5.5 128.4 7.8 131.3 10.0 129.9 140.7 140.7 5.7 128.6 7.9 131.4 10.1 129.8 140.7 140.7 140.7 5.7 128.6 7.9 131.4 10.3 129.1 140.7 140.7 140.7 140.7 140.7 140.7 140.7 140.7 140.7 140.7 140.7 140.7 140.7 128.1 140.7			•••				· - ··			· · · · · · · · · · · · · · · · · · ·
5.0 127.1 7.2 130.9 9.4 130.8 5.1 127.3 7.3 131.0 9.5 130.7 5.2 127.6 7.4 131.1 9.6 130.6 5.3 127.8 7.5 131.1 9.7 130.5 5.4 128.0 7.6 131.2 9.8 130.3 5.5 128.2 7.7 131.3 9.9 130.1 5.6 128.4 7.8 131.4 10.1 129.9 5.7 128.6 7.9 131.4 10.2 129.6 5.8 128.8 8.0 131.4 10.2 129.6 5.9 129.0 8.1 131.4 10.3 129.3 6.0 129.2 8.2 131.4 10.4 129.1 6.1 129.4 8.3 131.4 10.5 128.9 6.2 129.5 8.4 131.4 10.6 128.6 6.3 129.7 8.5 131.4 10.8 128.1 6.4 129.9 8.6 131.4 10.9 127.8 6.6 130.2 8.8 131.3 131.4 10.9 127.8 6.6 130.4 9.0 131.2 131.1 7.0 130.6 9.1 131.1 7.1 7.1 130.8 9.3 131.0 $Glenn Frieler$										
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5.3 127.8 7.5 131.1 9.7 130.5 5.4 128.0 7.6 131.2 9.8 130.3 5.5 128.2 7.7 131.3 9.9 130.1 5.6 128.4 7.8 131.3 10.0 129.9 5.7 128.6 7.9 131.4 10.1 129.8 5.8 128.8 8.0 131.4 10.2 129.6 5.9 129.0 8.1 131.4 10.3 129.3 6.0 129.2 8.2 131.4 10.4 129.1 6.1 129.4 8.3 131.4 10.5 128.9 6.2 129.5 8.4 131.4 10.6 128.6 6.3 129.7 8.5 131.4 10.6 128.6 6.3 129.9 8.6 131.4 10.8 128.1 6.5 130.0 8.7 131.4 10.9 127.8 6.6 130.2 8.8 131.3 14.9 127.8 6.6 130.4 9.0 <td< td=""><td></td><td></td><td></td><td></td><td></td><td></td><td></td><td></td><td></td><td></td></td<>										
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6.6 130.2 8.8 131.3 6.7 130.3 8.9 131.3 6.8 130.4 9.0 131.2 6.9 130.6 9.1 131.1 7.0 130.7 9.2 131.1 7.1 130.8 9.3 131.0 Glenn Frieler	6.4	129.9		8.6	131.4		10.8	128.1		
6.7 130.3 8.9 131.3 6.8 130.4 9.0 131.2 6.9 130.6 9.1 131.1 7.0 130.7 9.2 131.1 7.1 130.8 9.3 131.0	6.5			8.7	131.4		10.9	127.8		
6.8 130.4 9.0 131.2 6.9 130.6 9.1 131.1 7.0 130.7 9.2 131.1 7.1 130.8 9.3 131.0 Glenn Frieler	6.6	130.2		8.8	131.3					
6.9 130.6 9.1 131.1 7.0 130.7 9.2 131.1 7.1 130.8 9.3 131.0	6.7									
7.0 130.7 9.2 131.1 7.1 130.8 9.3 131.0 Glenn Frieler	6.8									
7.1 130.8 9.3 131.0 Glenn Frieler	6.9									
	7.0									
Optimum Moisture : 8.3 Maximum Dry Density : 131.4	7.1									
			ptimum	Moisture	: 8.3		Ma	ximum Dry Den	sity: 131.4	

COLORADO DEPARTMENT OF TRANSPORTATION

Granular Material Moisture - Density Report

0 1 2 3	8.3	121.4		%H2O	Dry Density	%+4		Dry Densit
2		131.4	20	6.9	134.0	40	5.5	136.6
	8.2	131.6	21	6.8	134.2	41	5.4	136.7
2	8.2	131.7	22	6.8	134.3	42	5.4	136.9
3	8.1	131.8	23	6.7	134.4	43	5.3	137.0
4	8.0	132.0	24	6.6	134.5	44	5.2	137,1
5	8.0	132.1	25	6.6	134.7	45	5.2	137.2
6	7.9	132.2	26	6.5	134.8	46	5.1	137.4
7	7.8	132.3	27	6.4	134.9	47	5.0	137.5
8	7.8	132.5	28	6.4	135.1	48	4.9	137.6
9	7.7	132.6	29	6.3	135.2	49	4.9	137.8
10	7.6	132.7	30	6.2	135.3	50	4.8	137.9
11	7.5	132.9	31	6.1	135.4	51	4.7	138.0
12	7.5	133.0	32	6.1	135.6	52	4.7	138.1
13	7.4	133.1	33	6.0	135.7	53	4.6	138.3
14	7.3	133.3	34	5.9	135.8	54	4.5	138.4
15	7.3	133.4	35	5.9	136.0	55	4.5	138.5
16	7.2	133.5	36	5.8	136.1	56	4.4	138.7
17	7.1	133.6	37	5.7	136.2	57	4.3	138.8
18	7.1	133.8	38	5.7	136.3	58	4.2	138.9
19	7.0	133.9	39	5.6	136.5	59	4.2	139.0
•••••	Optim	um Moisture: 8	.3		Maximum Dry De	nsity: 131.4		
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