

**Table 1**  
**CLV Materials Testing and Sampling Frequencies - Nov 2017**  
**Aggregate and Backfill Materials**

Spec Section	Description	Proctor AASHTO T180*	R-Value AASHTO T190	Sieve AASHTO T27* & T11*	PI AASHTO T89 & T90*	Solubility AWWA 4500E and 3500-NaD	Compression Samples Per RTC 704.03.07	Field Density		
								Riding Equipment	Walk Behind Equipment	
203 Excavation & Embankment	203.02.02	Drainage Excavation (Subgrade)	1/Type		1 / 1000 yd <sup>3</sup>			1 / 5000 ft <sup>2</sup> / Lift	1 / 1000 ft <sup>2</sup> / Lift	
	203.02.03	Channel Excavation (Subgrade)	1/Type		1 / 1000 yd <sup>3</sup>			1 / 5000 ft <sup>2</sup> / Lift	1 / 1000 ft <sup>2</sup> / Lift	
	203.02.04	Borrow	1/Type	1/Type	1 / 1000 yd <sup>3</sup>			1 / 5000 ft <sup>2</sup> / Lift	1 / 1000 ft <sup>2</sup> / Lift	
	203.02.05	Selected Borrow	1/Type	1/Type	1 / 1000 yd <sup>3</sup>			1 / 5000 ft <sup>2</sup> / Lift	1 / 1000 ft <sup>2</sup> / Lift	
	203.03.01	Roadway (Subgrade)	1/Type		1 / 1000 lf			1 / 5000 ft <sup>2</sup> / Lift	1 / 1000 ft <sup>2</sup> / Lift	
	203.03.10	Selected Material	1/Type	1/Type	1 / 1000 lf			1 / 5000 ft <sup>2</sup> / Lift	1 / 1000 ft <sup>2</sup> / Lift	
	203.03.15	Foundation (Subgrade)	1/Type		1 / 500 yd <sup>3</sup>			1 / 500 ft <sup>2</sup> / Lift	1 / 100 ft <sup>2</sup> / Lift	
	203.03.18	Compaction, Dirt Embankment	1 / 10,000 yd <sup>3</sup> Per Type		1 / 1000 yd <sup>3</sup>			1 / 5000 ft <sup>2</sup> / Lift	1 / 1000 ft <sup>2</sup> / Lift	
	203.03.19	Compaction, Rock Embankment	Due to Material Properties an Engineering Report Documenting Compactive Effort is Required (See Special Provisions)							
	203.03.73	Compacted Fill (Detention Basin)	1 / 10,000 yd <sup>3</sup> Per Type		1 / 1000 yd <sup>3</sup>		1 / 10,000 yd <sup>3</sup> Per Type		1 / 5000 ft <sup>2</sup> / Lift	1 / 1000 ft <sup>2</sup> / Lift
206 Structure Excavation	206.01.01	Structure Excavation	1/Type		1 / 1000 yd <sup>3</sup>			1 / 500 ft <sup>2</sup> / Lift	1 / 100 ft <sup>2</sup> / Lift	
	206.03.01									
207 Structure Backfill	207.02.01	Selected Backfill	1 / 10,000 yd <sup>3</sup> Per Type		1 / 1000 yd <sup>3</sup>		1/Source	1 / 500 ft <sup>2</sup> / Lift	1 / 250 ft <sup>2</sup> / Lift	
	207.02.02	Granular Backfill	1 / 10,000 yd <sup>3</sup> Per Type		1 / 1000 yd <sup>3</sup>		1/Source	1 / 500 ft <sup>2</sup> / Lift	1 / 250 ft <sup>2</sup> / Lift	
208 Trench Excavation & Backfill	208.02.02	Selected Backfill	1 / 10,000 yd <sup>3</sup> Per Type		1 / 1000 yd <sup>3</sup>		1/Source	1 / 100 lf / Lift		
	208.02.03	Granular Backfill	1 / 10,000 yd <sup>3</sup> Per Type		1 / 1000 yd <sup>3</sup>		1/Source	1 / 100 lf / Lift		
	208.02.04	Sand Backfill			1 / 1000 yd <sup>3</sup>		1/Source			
	208.02.05	Type II Aggregate Base (Trench)	Sampling Per Section 704						1 / 100 lf / Lift	
	208.02.06	Drain backfill								
	208.02.07	Type I and II CLSM (Flowable Fill)	Aggregate Sampling Per Section 704					1/300 yd <sup>3</sup> /Day		
	208.02.09	Type III CLSM (BAF)						1/300 yd <sup>3</sup> /Day		
301 Selected Material	301.02.01	Select Subbase	1/Type	1 / Type	1 / 1000 yd <sup>3</sup>		1/Source	1 / 5000 ft <sup>2</sup> / Lift	1 / 1000 ft <sup>2</sup> / Lift	
302 Aggregate Base Course	302.02.01	Type II / I Aggregate Base	Sampling Per Section 704						1 / 5000 ft <sup>2</sup> / Lift	1 / 1000 ft <sup>2</sup> / Lift

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**Aggregate and Backfill Materials - Continued**

Spec Section		Description	Proctor AASHTO T180*	Sieve AASHTO T27* & T11*	PI AASHTO T89* & T90*	Sand Equivalent ASTM D2419*	Cement Content NDOT T239	Compressive Strength NDOT T237	Field Density	
									Riding Equipment	Walk Behind Equipment
304 Cement Treated Base	304.02.01	Cement Treated Base	Per Special Provisions	1 / 2000 Ton				1 / Day	1 / 5000 ft <sup>2</sup>	1 / 1000 ft <sup>2</sup>
	Spec Section		Description	Proctor AASHTO T180*	R-Value AASHTO T190	Sieve AASHTO T27* & T11*	PI AASHTO T89* & T90*	Fractured Faces NDOT T230	So.I Sulfates AWWA 4500E and 3500-NaD	LA Abrasion ASTM C131 (500 Rev)
704 Base Aggregates	704.03.02	Drain Backfill			1 / 1000 yd <sup>3</sup>				1 / Source	
	704.03.03	Type I Aggregate Base	1 / 10,000 yd <sup>3</sup> Per Type	1 / Type	1 / 1000 yd <sup>3</sup>				1 / Source	
	704.03.04	Type II Aggregate Base	1 / 10,000 yd <sup>3</sup> Per Type	1 / Type	1 / 1000 yd <sup>3</sup>			1 / Source	1 / Source	
	704.03.05	Type III Aggregate	1 / 10,000 yd <sup>3</sup> Per Type		1 / 1000 yd <sup>3</sup>			1 / Source		
	704.03.06	Crushed Rock			1 / 1000 yd <sup>3</sup>		1 / 1000 yd <sup>3</sup>	1 / Source	1 / Source	
	704.03.07	CLSM Aggregate (Type I, II, & III)			1 / 1000 yd <sup>3</sup>					
	704.03.08	Aggregates for PC Treated Base	1 / Type		1 / 1000 yd <sup>3</sup>				1 / Source	
	704.03.09	Shouldering Material			1 / 1000 yd <sup>3</sup>					
	704.03.10	Agg. Base with RAP and Concrete	1 / 2,000 yd <sup>3</sup> Per Type	1 / Type	1 / 1000 yd <sup>3</sup>			1 / Source	1 / Source	1/2000 yd <sup>3</sup>

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**CLV Materials Testing and Sampling Frequencies - Nov 2017**  
**Asphalt Cement Pavement Products and Surfaces**

Spec Section		Description	Material Sampling	Prime Coat	Tack Coat	Field Density		Surface Tolerances	Binder	
						Field Density Mat Testing	Field Density Joint Testing			
400 Asphalt Rubber Pavement	400.01	Asphalt Rubber Pavement Surface	Per Sec 401	Manufacturer Certificate of Compliance		1 / 5000 ft <sup>2</sup> / Lift / Day	1 / 400 lf / Lift / Day	Per Special Provisions	Manufacturer Certificate of Compliance	
	Spec Section		Description	Rice AASHTO T209*	Oil Content by Extraction AASHTO T164	Sieve AASHTO T30*	Marshall Stability & Flow AASHTO T209	TSR AASHTO T283	Air Void Content AASHTO T269	Coldfeed Sample
401 Plantmix Bituminous Pavements	401.03.12	Plantmix Bituminous Pavement Sampling and Testing		1 / 750 Tons / Day			1 / Day	1 / 750 Tons / Day	Manufacturer Certificate of Compliance	

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**Asphalt Cement Pavement Products and Surfaces - Continued**

Spec Section		Description	Material Sampling	Prime Coat	Tack Coat	Field Density		Surface Tolerances	Binder	
						Field Density Mat Testing	Field Density Joint Testing			
402 Plantmix Bituminous Surface	402.03	Plantmix Bituminous Surface	Per Sec 401	Manufacturer Certificate of Compliance		1 / 5000 ft <sup>2</sup> / Lift / Day	1 / 400 lf/ Lift / Day	Per Special Provisions	Manufacturer Certificate of Compliance	
Spec Section		Description	Material Sampling	Field Density				Surface Tolerances		
				Mat Testing		Joint Testing				
404 Hot Plantmix Recycled Bit. Pavement	404.03	Recycled Bituminous Surface	Per Sec 401	1 / 5000 ft <sup>2</sup> / Lift / Day		1 / 400 lf/ Lift / Day		Per Special Provisions		
Spec Section		Description	Sampling							
405 - 407 Tack, Prime, Seal Coat	405 -407	Tack, Prime, Seal Coat Surface Treatment	Manufacturer Certificate of Compliance							
Spec Section		Description	PMM Application Rate RTC 413.03.06	Oil Content by Extraction AASHTO T164	Sieve AASHTO T30	Yield Verification	Surface Tolerances	Binder	PMM Sample	Cold Feed
413 Plantmix Gap-Graded Surface (UTACS)	413.03.06	Ultra Thin Asphalt Cement Surface (UTACS)	2 / Day Min.	3 / Day	3 / Day	Twice / Day (Mid Day and End of Shift)	See Special Provisions	Manufacturer Certificate of Compliance	Manufacturer Certificate of Compliance	3 / Day
Spec Section		Description	Sieve AASHTO T27* & T11*	Methylene Blue AASHTO TP57	Fine Agg Angularity AASHTO T304	Fractured Faces AASHTO T335	LA Abrasion ASTM C131 (500 Rev)	Elongation @ 5:1 ASTM D4791	Soundness ASTM C88	
705 Aggregates Bituminous Courses	705.03	Plantmix Base and Surface Agg.	1 / 750 Tons / Day				1 / Source			
Spec Section		Description	Sieve AASHTO T27* & T11*	Fractured Faces ASTM D5821	Methylene Blue AASHTO TP57	Uncompacted Void Content AASHTO T304	Sand Equivalent AASHTO T176	LA Abrasion ASTM C131 (500 Rev)	Elongation @ 3:1 ASTM D4791	Soundness ASTM C88
705 Aggregates for UTACS	705.03.08	UTACS Coarse and Fine Aggregate	3 / Day	1 / Day	1 / Day	1 / Day	1 / Source			

**Table 1**  
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**Portland Cement Concrete Pavement, Materials, and Structures**

Spec Section		Description	Slump ASTM C172*	Unit Weight and Yield ASTM C138*	Air Content Pressure Method	Concrete Compression	Concrete Beams Nev T442		Plant Inspection	Aggregate Sampling
409 Portland Cement Concrete Pavement	409.00.00	Portland Cement Concrete Pavement	1 / 300 yd <sup>3</sup> / Day				1 / 750 yd <sup>3</sup> / Day		Continuous	1 / 500 yd <sup>3</sup> / Day
	Spec Section		Description	Slump ASTM C172*	Unit Weight and Yield ASTM C138*	Air Content Pressure Method	Concrete Compression		Unauthorized Sources	
501 - 502 Portland Cement Concrete and Structures	501.02.04	Portland Cement Concrete	1 / 100 yd <sup>3</sup> / Day						Continuous	1 / 500 yd <sup>3</sup> / Day
	502.01.01	Portland Cement Concrete	1 / 100 yd <sup>3</sup> / Day						Continuous	1 / 500 yd <sup>3</sup> / Day
Spec Section		Description	PCC Testing	Tests for Popouts ASTM C330	Freezing and Thawing ASTM C666	Dry Unit Weight ASTM C567	Unit Weight & Cement Factor ASTM C138	Air Content Vol. Method (Lw Concrete)	Unauthorized Sources	
504 Lightweight Concrete	504.02.03	Lightweight Portland Cement Concrete	Section 501	1 / 100 yd <sup>3</sup> / Day	1 / 100 yd <sup>3</sup> / Day	1 / 100 yd <sup>3</sup> / Day	1 / 100 yd <sup>3</sup> / Day	1 / 100 yd <sup>3</sup> / Day	Continuous	1 / 500 yd <sup>3</sup> / Day
Spec Section		Description	Submittal							
505 Reinforcing Steel	505.02.02	#4 Bars and Larger	Mill Certification							
Spec Section		Description	Gradation Visual	LA Abrasion (500 Rev) ASTM C131	Bulk Specific Gravity ASTM C127					
610 Rip- Rap	610.02.04	RipRap	1 / Shipment	1 / Source	1 / Source					
Spec Section		Description	Field Density Subgrade & Aggregate base		Portland Cement Concrete Refer to Section 501					
613 Curb, Sidewalk, Gutter, & Driveway	Varies	Curbs	1 / 100 lf / Day		1 / 100 yd <sup>3</sup> / Day					
		Sidewalk	1 / 100 lf / Day		1 / 100 yd <sup>3</sup> / Day					
		Driveways / Spandrels	1 / 250 ft <sup>2</sup> / Day		1 / 100 yd <sup>3</sup> / Day					

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**Portland Cement Concrete Materials and Structures - Continued**

Spec Section		Description	Sieve AASHTO T27* & T11*	Fractured Faces NDOT T230	LA Abrasion ASTM C131 (100 & 500)	Soundness Sodium Sulfate AASHTO T104	Clay Lumps AASHTO T112	C.V. Cal Trans 227	Organic Impurities ASTM C40	Bulk Specific Gravity
706 Aggregates for Portland Cement Products	706.03.01	Coarse Aggregate	1 / 500 yd <sup>3</sup>	1 / 500 yd <sup>3</sup>	1 / Source	1 / Project	1 / Project	1 / 500 yd <sup>3</sup>		1 / Source
	706.03.02	Lightweight Aggregate	1 / 500 yd <sup>3</sup>					1 / 500 yd <sup>3</sup>	1 / Source	1 / Source
		Description	Sieve AASHTO T27* & T11*	Sand Equivalent ASTM D2419*	Soundness Sodium Sulfate AASHTO T104	Organic Impurities ASTM C40	Lightweight Pieces AASHTO T113			Bulk Specific Gravity
	706.03.03	Fine Aggregate	1 / 500 yd <sup>3</sup>	1 / 1000 yd <sup>3</sup>	1 / Project	1 / Source	1 / 500 yd <sup>3</sup>			1 / Source
	706.03.04	Grout and Mortar Sand	1 / 500 yd <sup>3</sup>			1 / Source				1 / Source
Spec Section		Description	Submittal							
713 Reinforcement	713.03.01	Deformed Steel Bars	Mill Certification							
		Spiral Reinforcement	Mill Certification							

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**Notes:**

**General Notes**

- Note 1: The Engineer may request additional testing not to exceed a maximum of 10% of the required testing for any type performed.
- Note 2: Refer to project special provisions for concrete sampling and testing requirements on placement quantities less than 3 yd<sup>3</sup>/ day and less than 50 yd<sup>3</sup>/ week.
- Note 3: The specified density testing frequencies are based on a per lift basis. For example an embankment fill of 7500 ft<sup>2</sup> per lift requires a min of 2 tests per lift.
- Note 4: Soluble Sulfate testing is required on soil in contact water lines, concrete structures, metal pipe, and fittings.

\* For federal projects, testing methods listed in the latest NDOT approved version of the City of Las Vegas Construction Quality Program may be used. For projects within NDOT right of way, NDOT test methods are required.