

Sampling & Testing Guide-Minimum Frequency

**PORTLAND CEMENT CONCRETE PAVEMENT, PAVEMENT WIDENING, BASE WIDENING
CURB & GUTTER, & PAVED SHOULDERS**

April 21, 2009

Matls. IM 204

Supersedes October 16, 2007

Section 2122, 2201, 2213, 2301, 2302, 2310, Quality Management Concrete (QM-C)

Appendix E (Metric) Units

MATERIAL OR CONSTRUCTION ITEM	TESTS	METHOD OF ACCEPTANCE & RELATED IMs	QUALITY CONTROL					INDEPENDENT ASSURANCE & VERIFICATION S&T					REMARKS	
			SAMPLE BY	FREQ.	SAMPLE SIZE	TEST BY	REPORT	S&T TYPE	SAMPLE BY	FREQ.	SAMPLE SIZE	TEST BY		REPOR T
SOURCE INSPECTION														
Aggregates- Fine (4110)		AS 209												
Aggregate- Coarse (4115), Intermediate		AS 209												
Portland Cement (4101)	Quality	AS 401												
Fly Ash (4108)	Quality	AS 491.17												
GGBFS (Ground Granulated Blast Furnace Slag)	Quality	AS 491.14												
Curing Compounds (4105)	Lab- Tested													
Clear Curing Compounds (4105)		AB 405.07												
Air Entraining Admixture (4103)	Quality	AB 403												
Water Reducing Admix. (4103)	Quality	AB 403												
Retarding Admixture (4103)	Quality	AB 403												
Joint Sealer (4136.02)	Lab Tested	436.01, 436.02, 436.03												
Backer Rod (4136.02)	Lab Tested	AB 436.04												
Mixing Water (4102)	Lab Tested							V	RCE/ CONTR	1/source	0.5 L	CTRL		Not required for potable water from municipal supply
AS-Approved Source		Cert A-Type A Certification		RCE-Resident Construction Engineer/Project Engineer					IA-Independent Assurance					
ASD-Approved Shop Drawing		Cert C-Type C Certification		DME-District Materials Engineer					V-Verification					
S&T-Sampling & Testing		Cert D-Type D Certification		CTRL-Central Materials Office					QMC-Quality Management Concrete					
				CONTR-Contractor										

NOTE: RCE/CONTR indicates that the contractor shall assist in the sampling at the direction of and witnessed by the project engineer.

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			SAMPLE BY	FREQ.	SAMPLE SIZE	TEST BY	REPORT	S&T TYPE	SAMPLE BY	FREQ.	SAMPLE SIZE	TEST BY	REPORT		
SOURCE INSPECTION															
Steel Reinforcement (4151)															
Dowels	Quality	AS 451													
Tie Bars	Quality	AS 451													
General Use	Quality	AS 451													
PLANT INSPECTION															
Aggregates-Fine (4110/4111)	Grad * QMC	302 306 336	CONTR	1/1200 m ³	IM 301	CONTR	800240	IA V	DME RCE/ CONTR	1/100,000 m ² , sample 1/day, test 1 st day + 2/lot	IM 301 IM 301	DME RCE/ DME		See Notes See IM 213	
	Grad * Non-QMC	302 306 336	CONTR	1/day	IM 301	CONTR		IA V	DME RCE/ CONTR	1/100,000 m ² Sample 1/day, test 1 st day+1/lot	IM 301 IM 301	DME RCE/ DME			
	Moist	308, 527	CONTR	1/half day	1000 gm	CONTR									Not applicable with probe
	Sp. Gr.	307	CONTR	IM 527	1000 gm	CONTR									
	Quality	AS 209													
AS-Approved Source ASD-Approved Shop Drawing S&T-Sampling & Testing			Cert A-Type A Certification Cert C-Type C Certification Cert D-Type D Certification				RCE-Resident Construction Engineer/Project Engineer DME-District Materials Engineer CTRL-Central Materials Office CONTR-Contractor				IA-Independent Assurance V-Verification QMC-Quality Management Concrete				

* A system approach to independent assurance may be applied, at the discretion of the DME.

NOTE: When Certified Plant Inspection is not provided, the engineer is responsible for performing quality control sampling and testing.

NOTE: RCE/CONTR indicates that the contractor shall assist in the sampling at the direction of and witnessed by the project engineer.

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			SAMPLE BY	FREQ.	SAMPLE SIZE	TEST BY	REPORT	S&T TYPE	SAMPLE BY	FREQ.	SAMPLE SIZE	TEST BY		REPORT
PLANT INSPECTION														
Aggregates-Coarse (4115), Intermediate	Grad * QMC	302 306 336	CONTR	1/1200m ³	IM 301	CONTR	800240	IA V	DME RCE/ CONTR	1/100,000 m ² Sample 1/day, test 1 st day+2/lot	IM 301 IM 301	DME RCE/ DME		See Notes
	Grad * Non-QMC	302 306 336	CONTR	1/day	IM 301	CONTR		IA V	DME RCE/ CONTR	1/100,000 m ² Sample 1/day, test 1 st day+1/lot	IM 301 IM 301	DME RCE/ DME		
	Moist	308	CONTR	1/half day	IM 301	CONTR								
	Sp. Gr.	307	CONTR	IM 527	IM 301	CONTR								
	Quality	AS 209						V	DME	1/100,000 m ²	22kg	CTRL		
Portland Cement (4101)	Quality	AS Cert D		Each Load				V	DME	1/100,000 m ²	7 kg	CTRL		
	Cement Yield		CONTR	1/7500m ³		CONTR	820912							
Fly Ash	Quality	AS Cert D		Each load			800240	V	DME	1/100,000 m ²	7 kg	CTRL		
GGBFS(Ground Granulated Blast Furnace Slag)	Quality	AS Cert		Each load				V	DME	1/100,000 m ²	7 kg	CTRL		
Air Admixture	Quality	AS 403						V	DME	1/batch	0.5 L	CTRL		Sample batches not previously reported or as required by DME
Water Reducer	Quality	AS 403						V	DME	1/batch	0.5 L	CTRL		
Retarding Admixture	Quality	AS 403						V	DME	1/batch	0.5 L	CTRL		
AS-Approved Source		Cert A-Type A Certification		RCE-Resident Construction Engineer/Project Engineer				IA-Independent Assurance						
ASD-Approved Shop Drawing		Cert C-Type C Certification		DME-District Materials Engineer				V-Verification						
S&T-Sampling & Testing		Cert D-Type D Certification		CTRL-Central Materials Office				QMC-Quality Management Concrete						
				CONTR-Contractor										

* A system approach to independent assurance may be applied, at the discretion of the DME.

NOTE: When Certified Plant Inspection is not provided, the engineer is responsible for performing quality control sampling and testing.

NOTE: Quality samples not required when mix quantity is less than 2000 m², except for curing compound.

NOTE: RCE/CONTR indicates that the contractor shall assist in the sampling at the direction of and witnessed by the project engineer.

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			SAMPLE BY	FREQ.	SAMP. SIZE	TEST BY	REPT.	S&T TYPE	SAMP. BY	FREQ.	SAMP. SIZE	TEST BY	
GRADE INSPECTION													
Chloride Solution	Concentration	373	RCE	1/day									
Steel Reinforcement: Dowels	Quality	AS 451.03B						V	DME	1/District/Yr	0.5 m	CTRL	
	Quality	AS 451 Cert D 451.03B											
Dowel Basket Assembly	Quality	AS 451						V	DME	1/District/Yr	0.5 m	CTRL	
Tie Bars	Quality	AS 451						V	DME	1/District/Yr	1 m	CTRL	
General Use	Quality	AS 451						V	DME	1/District/Yr	1 m	CTRL	
Curing Compound	Quality	Tested 4105						V	DME	1/batch	1/L	CTRL	Sample batches not previously reported or as required by DME
Plastic Concrete	Air	318 327	QMC CONTR	QMC only 2301.04C 1/275 m ³		QMC CONTR	E115	IA V	DME RCE	1/100,000 m ² 2301.04C 1/550m ³ 1/75 m ³ for transit mixer		DME RCE	Min. 1 test/pour
	Slump	317						V	RCE	1/550 m ³ , min. 1/pour		RCE	For hand finish or fixed form only
	Grade Yield		RCE	1/750 m ³		RCE							
	Beams**	316, 327, 328	RCE	2/day		RCE	E115						
Hardened Concrete	Thickness*	346, 347						IA V	DME RCE/ CONTR	1/2000 m ²	10%	DME RCE	
	Smoothness	341 Cert. Test Report	CONTR		100%	CONTR		V	DME		10%	DME	
AS-Approved Source ASD-Approved Shop Drawing S&T-Sampling & Testing			Cert A-Type A Certification Cert C-Type C Certification Cert D-Type D Certification				RCE-Resident Construction Engineer/Project Engineer DME-District Materials Engineer CTRL-Central Materials Office CONTR-Contractor				IA-Independent Assurance V-Verification QMC-Quality Management Concrete		

*IA thickness cores sent to Central Lab for additional project information testing (Interstate and Primary only.)

**None required when maturity is used. Quality samples not required when mix quantity is less than 2000 m², except for curing compound.

NOTE: RCE/CONTR indicates that the contractor shall assist in the sampling at the direction of and witnessed by the project engineer.

NOTE: Form #E115 available from the Office of Construction.