

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	
<b>SOURCE INSPECTION</b>													
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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<b>SOURCE INSPECTION</b>														
Steel Reinforcement (4151) Dowels  Tie Bars  General Use	Quality	AS	451											
	Quality	AS	451											
	Quality	AS	451											
	Quality	AS	451											
<b>PLANT INSPECTION</b>														
Aggregates-Fine (4110/4111)	Grad * QMC	302 306 336		CONTR	1/1200 m <sup>3</sup>	IM 301	CONTR	800240	IA V	DME RCE/ CONTR	1/100,000 m <sup>2</sup> , sample 1/day, test 1 <sup>st</sup> 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 <sup>2</sup> Sample 1/day, test 1 <sup>st</sup> 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
<b>PLANT INSPECTION</b>														
Aggregates-Coarse (4115), Intermediate	Grad * QMC	302 306 336		CONTR	1/1200m <sup>3</sup>	IM 301	CONTR	800240	IA V	DME RCE/ CONTR	1/100,000 m <sup>2</sup> Sample 1/day, test 1 <sup>st</sup> 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 <sup>2</sup> Sample 1/day, test 1 <sup>st</sup> 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 <sup>2</sup>	22kg	CTRL	
Portland Cement (4101)	Quality	AS Cert D			Each Load			V	DME	1/100,000 m <sup>2</sup>	7 kg	CTRL		
	Cement Yield			CONTR	1/7500m <sup>3</sup>		CONTR	820912						
Fly Ash	Quality	AS Cert D			Each load			800240	V	DME	1/100,000 m <sup>2</sup>	7 kg	CTRL	
GGBFS(Ground Granulated Blast Furnace Slag)	Quality	AS Cert			Each load				V	DME	1/100,000 m <sup>2</sup>	7 kg	CTRL	
Air Admixture	Quality	AS 403							V	DME	1/batch	0.5 L	CTRL	
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 m<sup>2</sup>, 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		REPT.
<b>GRADE INSPECTION</b>														
Chloride Solution	Concentration	373	RCE	1/day										
Steel Reinforcement: Dowels Dowel Basket Assembly Tie Bars General Use	Quality	AS 451.03B						V	DME	1/District/Yr	0.5 m	CTRL		
	Quality	AS 451 Cert D 451.03B												
	Quality	AS 451						V	DME	1/District/Yr	0.5 m	CTRL		
	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 <sup>3</sup>		QMC CONTR	E115	IA V	DME RCE	1/100,000 m <sup>2</sup> 2301.04C 1/550m <sup>3</sup> 1/75 m <sup>3</sup> for transit mixer		DME RCE		Min. 1 test/pour
	Slump	317						V	RCE	1/550 m <sup>3</sup> , min. 1/pour		RCE		For hand finish or fixed form only
	Grade Yield		RCE	1/750 m <sup>3</sup>		RCE								
	Beams**	316, 327, 328	RCE	2/day		RCE	E115							
Hardened Concrete	Thickness*	346, 347						IA V	DME RCE/ CONTR	1/2000 m <sup>2</sup>	10%	DME RCE		
	Smoothness	341 Cert. Test Report	CONTR		100%	CONTR		V	DME		10%	DME		
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						
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\*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 m<sup>2</sup>, except for curing compound.

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