

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 (US) 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	REPT.	S&T TYPE	SAMPLE BY	FREQ.	SAMPLE SIZE	TEST BY		REPORT
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	405												
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	1 pint	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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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	1/1500cy	IM 301	CONTR	800240	V	RCE/ CONTR	Sample 1/day, test 1 st day + 2/lot	IM 301	RCE		
	Grad Non-QMC	302 306 336	CONTR	1/day	IM 301	CONTR		IA V	RCE/ CONTR	Sample 1/day, test 1 st day + 1/lot	IM 301	DME RCE		
	Moist	308, 527	CONTR	1/half day	1000 gm	CONTR		IA				DME		Not applicable with probe
	Sp. Gr.	307	CONTR	IM 527	1000 gm	CONTR								
	Quality	AS 209												
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: IA may be accomplished by system approach or on a per project basis (IA at 1 per 100,000 sy of concrete) 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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PLANT INSPECTION													
Aggregates-Coarse (4115), Intermediate	Grad QMC	302 306 336	CONTR	QMC 1/1500 cy	IM 301	CONTR	800240	V	RCE/ CONTR	Sample 1/day, test 1 st day+2/lot	IM 301	RCE	
	Grad Non-QMC	302 306 336	CONTR	1/day	IM 301	CONTR		IA	RCE/ CONTR	Sample 1/day, test 1 st day + 1/lot	IM 301	DME	
	Moist	308	CONTR	1/half day	IM 301	CONTR		V				RCE	
	Sp. Gr.	307	CONTR	IM 527	IM 301	CONTR		IA				DME	
	Quality	AS 209						V	DME	1/100,000 sy	50 lb	CTRL	
Portland Cement (4101)	Quality	AS Cert D		Each Load				V	DME	1/100,000 sy	15 lb	CTRL	
	Cement Yield		CONTR	1/10,000 cy		CONTR	820912						
Fly Ash	Quality	AS Cert D		Each Load			800240	V	DME	1/100,000 sy	15 lb	CTRL	
GGBFS(Ground Granulated Blast Furnace Slag)	Quality	AS Cert		Each Load				V	DME	1/100,000 sy	15 lb	CTRL	
Air Admixture	Quality	AS 403						V	DME	1/batch	1 pint	CTRL	Sample batches not previously reported or as required by DME
Water Reducer	Quality	AS 403						V	DME	1/batch	1 pint	CTRL	
Retarding Admixture	Quality	AS 403						V	DME	1/batch	1 pint	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											

NOTE: IA may be accomplished by system approach or on a per project basis (IA at 1 per 100,000 sy of concrete) 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 sq. yds., 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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GRADE INSPECTION													
Chloride Solution	Concentration	373	RCE	1/day									
Steel Reinforcement: Dowels	Quality	AS 451.03B					V	DME	1/District/Yr	2 ft	CTRL		
	Quality	AS 451 Cert D 451.03B											
Dowel Basket Assembly Tie Bars	Quality	AS 451					V	DME	1/District/Yr	2 ft	CTRL		
	Quality	AS 451					V	DME	1/District/Yr	48 in	CTRL		
General Use	Quality	AS 451					V	DME	1/batch	1/qt	CTRL		Sample batches not previously reported or as required by DME
Curing Compound (4105)	Quality	Tested 405					V	DME	1/batch	1/qt	CTRL		
Plastic Concrete	Air	318 327	QMC CONTR	QMC only 2301.04C 1/350 cy		QMC CONTR	E115	V	RCE	2301.04C 1/700 cy, 1/100 cy for transit mixer		RCE	Min. 1 test/pour
	Slump	317						IA				DME	
	Grade Yield		RCE	1/1000 cy		RCE		V	RCE	1/700 cy, min 1/pour		RCE	For hand finish or fixed form only
	Beams**	316, 327, 328	RCE	2/day		RCE	E115						
Hardened Concrete	Thickness*	346, 347						V	RCE/ CONTR	1/2000 sy 10%		RCE DME	
	Smoothness	341	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.

NOTE: IA may be accomplished by system approach or on a per project basis (IA at 1 per 100,000 sy of concrete or as noted in the table) at the discretion of the DME.

NOTE: Quality samples not required when mix quantity is less than 2000 sq. yds., 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.