

Sampling and Testing Guide-Minimum Frequency

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

Matls. IM 204
Appendix E (US) Units

Section 2122, 2201, 2213, 2301, & 2302

April 19, 2005
Supersedes October 21, 2003

MATERIAL OR CONSTRUCTION ITEM	TESTS	METHOD OF ACCEPTANCE & RELATED IMs	QC/ACCEPTANCE S&T					ASSURANCE, CORRELATION AND VERIFICATION S&T					REMARKS ➔	
			SAMPLE BY	FREQ.	SAMPLE SIZE	TEST BY	REPORT	S&T TYPE	SAMPLE BY	FREQ.	SAMPLE SIZE	TEST BY		REPORT
SOURCE INSPECTION														
Aggregates-Fine (4110)		AS 209												
Aggregate-Coarse (4115)		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		RCE	➔1/source	1 qt	CTRL								Not required for potable water from municipal supply
AS-Approved Source AB-Approved Brand 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 DME-District Materials Engineer CTRL-Central Materials Office CONTR-Contractor							ASSUR-Independent Assurance VERIF-Verification CORR-Correlation MON-Monitor

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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 Tie Bars Continuous Reinforcement General Use	Quality	AS 451													
	Quality	AS 451													
	Quality	AS 451													
	Quality	AS 451													
	Quality	AS 451													
PLANT INSPECTION															
Aggregates-Fine (4110/4111)	Grad *	302, 306 336	CONTR	3/lot	IM 301	CONTR	800240	ASSUR CORR V	DME CONTR DME	1/100,000 sy 1 st day+10% 1/QM-C proj.	IM 301 IM 301 IM 301	DME RCE CTRL		See Notes See IM 213	
	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 AB-Approved Brand 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				ASSUR-Independent Assurance VERIF-Verification CORR-Correlation MON-Monitor						

* A system approach may be applied, at the discretion of the DME

NOTE 1: When Certified Plant Inspection is not provided, the Engineer is responsible for performing sampling and testing.

NOTE 2: When the project engineer does the acceptance gradation testing, the assurance sample is to be split with the project engineer. This split sample is for correlation purposes, and if it is not a routine lot sample, should not be used for determining specification compliance of a lot. However, any non-compliant test result is to be resolved.

NOTE 3: If a third aggregate is used on a QM-C project, individual verification samples of the third aggregate must be obtained by the DME at a rate of 1/QM-C project for gradation and quality testing by CTRL.

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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)	Grad *	302 306 336	CONTR	3/lot	IM 301	CONTR	800240	ASSUR CORR V	DME CONTR DME	1/100,000 sy 1 st day+10% 1/QM-C proj.	IM 301 IM 301 IM 301	DME RCE CTRL		See Notes								
	Moist	308	CONTR	1/half day	2000 gm	CONTR															1000gm may be used (IM 301)	
	Sp. Gr.	307	CONTR	IM 527	2000 gm	CONTR																1000gm may be used (IM 301)
	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	AB 403	DME	1/lot	1 pint	CTRL																
Water Reducer	Quality	AB 403	DME	1/lot	1 pint	CTRL																
Retarding Admixture	Quality	AB 403	DME	1/lot	1 pint	CTRL																
AS-Approved Source AB-Approved Brand 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 Engr. DME-District Materials Engineer CTRL-Central Materials Office CONTR-Contractor				ASSUR-Independent Assurance VERIF-Verification CORR-Correlation MON-Monitor															

*A - System approach may be applied at the discretion of the DME

NOTE 1: When Certified Plant Inspection is not provided, the Engineer is responsible for performing sampling and testing.

NOTE 2: When the project engineer does the acceptance gradation testing, the assurance sample is to be split with the project engineer. This split sample is for correlation purposes, and if it is not a routine lot sample, should not be used for determining specification compliance of a lot. However, any non-compliant test result is to be resolved.

NOTE 3: If a third aggregate is used on a QM-C project, individual verification samples of the third aggregate must be obtained by the DME at a rate of 1/QM-C project for gradation and quality testing by CTRL. Verification/Assurance samples not required when mix quantity is less than 2000 sq. yds.

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			SAMPLE BY	FREQ.	SAMPLE SIZE	TEST BY	REPORT	S&T TYPE	SAMPLE BY	FREQ.	SAMPLE SIZE	TEST BY	
GRADE INSPECTION													
Chloride Solution	Concentration	373	RCE	1/day									
Wire Mesh		AS CERT A						V	DME	1/Project/Yr	2 ft X 2 ft	CTRL	
Steel Reinforcement: Dowels	Quality	AS 451.03B						V	DME	1/District/Yr	2 ft	CTRL	Steel sampling
	Dowel Basket Assembly Tie Bars	AS 451 Cert D 451.03B											
General Use	Quality	AS 451						V➡	DME	1/District/Yr	2 ft	CTRL	Frequency
	Quality	AS 451						V➡	DME	1/District/Yr	48 in	CTRL	Minimum of one per District per year
Continuous Reinforcement	Quality	AS 451						V➡	DME	1/District/Yr	2 - 2 ft pcs.	CTRL	
	Air	318 327	RCE	➡ 1/1000 cy		RCE	E115***	ASSUR	DME	1/100,000 sy		DME	1/100 cy for transit mixer min 1 per day
	Grade Yield		RCE	1/1000 cy		RCE							
	Beams**	316, 327, 328	RCE	2/day		RCE	E115***						
Hardened Concrete	Thickness*➡	346, 347	CONTR	1/2000 sy	IM 346	RCE		ASSUR	CONTR		10%	DME	Monitor Sampling
	Smoothness	341 Cert. Test Report	CONTR		100%	CONTR		CORR	DME		10%	DME	
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*Thickness cores sent to Central Lab for additional project information testing (Interstate and Primary only.)

**None required when maturity is used. Verification/Assurance samples not required when mix quantity is less than 2000 sq. yds.

*** Available from the Office of Construction.