

Sampling & Testing Guide-Minimum Frequency

**STRUCTURAL CONCRETE, REINFORCEMENT, FOUNDATIONS & SUBSTRUCTURES,
CONCRETE STRUCTURES, CONCRETE FLOORS, & CONCRETE BOX,
ARCH & CIRCULAR CULVERTS**

April, 21, 2009
Supersedes October 16, 2007

Sections 2403, 2404, 2405, 2406, 2412, & 2415

Matls. IM 204
Appendix H (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	REPORT	S&T TYPE	SAMPLE BY	FREQ.	SAMPLE SIZE	TEST BY		REPORT
SOURCE INSPECTION														
Aggregate-Fine (4110)		AS 209												
Aggregate-Coarse (4115)		AS 209												
Granular Backfill (4133)		AS 209												
Portland Cement (4101)	Quality	AS 401												
Fly Ash (4108)	Quality	AS 491.17												
Mixing Water (4102)	Quality							V	RCE	1/source	1pt	CTRL		Not required for potable water from Municipal Supply
GGBFS (Ground Granulated Blast Furnace Slag)	Quality	AS 491.14												
Air Entraining Admixture	Quality	AS 403												
Retarding Admixture	Quality	AS 403												
Water reducing Admixture	Quality	AS 403												
Curing Compound, White (4105)	Lab Tested	AS 405						V	DME	1/batch	1qt	CTRL		
Curing Compound, Clear (4105)		AS 405.07												
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	

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														
Pre-formed Joint Sealer (4136)	Lab-Tested	AS	436.02 436.05											
Reinforcing Steel Bars (4151)	Quality	AS	451 451.03B											
Steel Pile (4167)	Quality		467											
Concrete Pile (4166)	Quality	AS	570											
Timber Pile (4165)	Quality	Cert A AS	462											
Timber (4162) & Lumber (4163)		Treated-Cert A AS	462											
Concrete Anchors	Quality	AS	453.09											
Epoxy Grout	Quality	AS	491.11											
Concrete Sealer	Quality	AS	491.12											
Subdrain Pipe (4143)	Quality	AS	443, 448											
Neoprene Bearing Pads (4195)		AS	495.03											
Bronze Bearing Plates (4190.03)		AS D/Cert A												
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SOURCE INSPECTION													
Steel Masonry Plate (4152)		ASD/Cert A											
Precast Units (2407)	Quality	AS 570											
Anchor Bolts (lighting, signing, handrail, structures) (4153)	Lab Tested	ASD											
Structural Steel (4152)	Quality	Cert A											Monitor Sample According to plans or other instructions
Aluminum & Steel Bridge Rail & Anchor Assembly		ASD											
Conduit (Electrical) (4185.10) Steel		AS											
Conduit (Plastic) (4185.10)	Lab Tested							V	DME	1/size	4'	CTRL	
Bentonite		Visual											
Flowable Mortar	Lab Tested	Approved Trial Mix 525, 375											Tested by DME
Grout for Revetment Armor Units (2550) and (Fabric Formed Concrete Structure Revetment)		Approved Trial Mix 375											Tested by 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		

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PLANT INSPECTION														
Aggregate- Fine (4110)	Gradation Deck	302, 306 336	CONTR	IM 528	IM 301	CONTR	800240	V IA	RCE/ CONTR	Sample & Test 1/deck/wk	IM 301	RCE DME	Plant Monitor Workbook	
	Gradation All other		CONTR	IM 528	IM 301	CONTR		V IA	RCE/ CONTR	Sample 1/wk Test 1 st day +20%	IM 301	RCE DME	Plant Monitor Workbook	
	Moisture	308, 528	CONTR	1/lot	1000 gm	CONTR								See IM 528 if Moisture Probe is used
	Sp. Gr.	307	CONTR	IM 528	1000 gm	CONTR								
	Quality	AS 209												
Aggregate- Coarse (4115)	Gradation Deck	302, 306 336	CONTR	IM 528	IM 301	CONTR		V IA	RCE/ CONTR	Sample & Test 1/deck/wk	IM 301	RCE DME	Plant Monitor Workbook	
	Gradation All other		CONTR	IM 528	IM 301	CONTR		V IA	RCE/ CONTR	Sample 1/wk Test 1 st day +20%	IM 301	RCE DME	Plant Monitor Workbook	
	Moisture	308, 528	CONTR	1/lot	2000gm	CONTR								
	Sp. Gr.	307	CONTR	IM 528	2000gm	CONTR								
	Quality	AS 209						V	DME	1/1000 cy	50 lb	CTRL		(1)
Portland Cement	w/c ratio	528	CONTR	1/pour		CONTR								
	Quality	AS Cert D						V	DME	1/1000 cy	15 lb	CTRL		(1)
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(1) These verification samples for concrete materials not required when mix quantity is less than 50 cu. yd.

NOTE: IA may be accomplished by system approach or on a per project basis (IA at 1 per 1000 cy of concrete) at the discretion of the DME according to IM 207.

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PLANT INSPECTION														
Fly Ash	Quality	AS	Cert D		Each Load			800240						
GGBFS(Ground Granulated Blast Furnace Slag)	Quality	AS	Cert D		Each Load									
Air-Entraining Admixture (4103)		AS	403						V	RCE	1/batch	1pt	CTRL	(1) Sample lots/batches not previously reported or as required by DME
Retarding Admixture		AS	403						V	RCE	1/batch	1pt	CTRL	
Water Reducing Admixture (4103)		AS	403						V	RCE	1/batch	1pt	CTRL	
GRADE INSPECTION														
Plastic Concrete	Air Content	316, 327						E145*	V IA	RCE	1/30 cy		RCE DME	
	Slump	317, 327							V IA	RCE	1/30 cy		RCE DME	
	Beams	316, 327, 328								RCE	2/placement		RCE	If required per 2403.18 and 2403.19
	Cylinders									DME	3/project		DME	Primary Projects Only (Information only)
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*Available from the Office of Construction.

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GRADE INSPECTION														
Reinforcing Steel (4151)	Quality	AS	Cert A		Each Shipment			Field Book	V	DME	IM 451	6 ft	CTRL	
Reinforcing Steel Epoxy Coated (4151)	Quality	AS	Cert A		Each Shipment			Field Book	V	DME	1 bar	6 ft	CTRL	Will be acceptance tested for coating
Steel Pile (4167)	Quality	AS	Cert A		Each Heat			Field Book		DME	IM 467		CTRL	
Timber Pile (4165)	Quality	AS	462 Cert A						V	DME	IM 467		CTRL	No grade requirement Charge numbers on butt end.
Anchor Bolts (lighting, signing, handrail, structures)	Lab Tested	ASD							V	DME	1/project	1 bolt w/nut & washer	CTRL	Sample only if not source inspected
Steel Masonry Plates (4152)		ASD	Cert A		Each Shipment			Field Book						Approved by Materials Department
Bronze Bearing Plates (4190.03)	Lab Tested								V	DME	1/project	1 only	CTRL	Sample only if not source inspected
Neoprene Bearing Pads (4195)		AS	495.03		Each Shipment			820905						
Alum. Bridge Rail & Anchor Assembly		ASD			Each Shipment			Field Book						Approved By Materials Dept.
Drains (Std Steel Pipe)(as per plan)	Dimensions Galvanized	ASD	Visual 332						V	DME	1/project		DME	
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GRADE INSPECTION														
Timber (4162) & Lumber (4163)	Quality	AS Treated-Cert A 462												
Subdrain Pipe (4143)	Quality	AS Cert D 443, 448		Each Shipment										
Flowable Mortar (2506)	Flow Test	375					V	RCE	1/4 hours (critical) Visual (noncritical)		RCE	Plant Report	Mix Design approval by DME	
Grout for Revetment Armor Units (2550) and (Fabric Formed Concrete Structure Revetment)	Air Content	340					V	RCE	1/half day			Plant Report	Mix Design approval by DME	
	Flow Test	375					V	RCE	1/half day					
	Compressive Strength	315						DME	3/project		DME		Primary Projects Only (Information only)	
Bentonite	Flow Test	Visual 375				RCE								
Hardened Concrete	Smoothness	341	CONTR	100%		CONTR	V	DME	10%		DME			
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