

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

Matls. IM 204
Appendix H (US) Units

October 19, 2010
Supersedes April, 21, 2009

[Sections 2403, 2404, 2405, 2406, 2412, & 2415](#)

MATERIAL OR CONSTRUCTION ITEM	TESTS	METHOD OF ACCEPTANCE & RELATED IM's	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 DME-District Cert D-Type D Certification				RCE-Resident Construction Engineer/Project Engineer Materials Engineer CTRL-Central Materials Office CONTR-Contractor				ent Assurance V-Verification			

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

Matls. IM 204
Appendix H (US) Units

October 19, 2010
Supersedes April, 21, 2009

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

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														
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 462 AS												
Timber (4162) & Lumber (4163)		Treated-Cert A 462 AS												
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 (4143)												
Neoprene Bearing Pads (4195)		AS 495.03												
Bronze Bearing Plates (4190.03)		AS D/Cert A												
AS-Approved Source ASD-Approved Shop Drawing S&T-Sampling & Testing														
			Cert A- Type A Certification Cert C- Type C Certification DME-District Cert D- Type D Certification				RCE-Resident Construction Engineer/Project Engineer IA-Independent Materials Engineer CTRL-Central Materials Office CONTR-Contractor				ent 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.														

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

Matls. IM 204
Appendix H (US) Units

October 19, 2010
Supersedes April, 21, 2009

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

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														
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)		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 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 DME-District Cert D-Type D Certification				RCE-Resident Construction Engineer/Project Engineer IA-Independent Materials Engineer CTRL-Central Materials Office CONTR-Contractor				ent 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.

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

Matls. IM 204
Appendix H (US) Units

October 19, 2010
Supersedes April, 21, 2009

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

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
PLANT INSPECTION														
Aggregate- Fine (4110)	Gradation Deck	336 302, 306	CONTR	IM 528	IM 301	CONTR	800240	V	RCE/ CONTR	Sample & Test 1/deck/wk	IM 301	RCE	Plant Monitor Workbook	
	ion All other	CONTR		IM 528	IM 301	CONTR		IA	RCE/ CONTR	Sample 1/wk Test 1 st day +20%	IM 301	RCE	Plant Monitor Workbook	
	Moisture		CONTR	1/lot	1000 gm	CONTR		IA				DME		See IM 528 if Moisture Probe is used
	Sp.		CONTR	IM 528	1000 gm	CONTR								
	Quality	AS 209												
Aggregate- Coarse (4115)	Gradation Deck	336 302, 306	CONTR	IM 528	IM 301	CONTR		V	RCE/ CONTR	Sample & Test 1/deck/wk	IM 301	RCE	Plant Monitor Workbook	
	ion All other	CONTR		IM 528	IM 301	CONTR		IA	RCE/ CONTR	Sample 1/wk Test 1 st day +20%	IM 301	RCE	Plant Monitor Workbook	
	Moisture		CONTR	1/lot	2000gm	CONTR		IA				DME		
	Sp.		CONTR	IM 528	2000gm	CONTR								
	Quality	AS 209						V	DME	1/1000 cy	50 lb	CTR L		(1)
Portland Cement	w/c ratio		CONTR	1/pour		CONTR		V						
	Quality	AS Cert D						V	DME 1/	1000 cy	15 lb	CTR L		(1)
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 Materials Engineer CTRL-Central Materials Office CONTR-Contractor				IA-Independent V-Verification ent Assurance			

(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.

NOTE: RCE/CONTR indicates that the Contractor shall assist in the sampling at the direction of and witnessed by the Project Engineer.

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

Matls. IM 204
Appendix H (US) Units

October 19, 2010
Supersedes April, 21, 2009

[Sections 2403, 2404, 2405, 2406, 2412, & 2415](#)

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	
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	RCE 1/	30 cy		RCE DME		
	Slump	317, 327						V	RCE 1/	30 cy		RCE DME		
	Beams	316, 327, 328							RCE 2/	placement		RCE		If required per 2403
	Cylinders								DME	3/project		DME		Primary Projects Only (Information only)
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 Materials Engineer CTRL-Central Materials Office CONTR-Contractor				IA-Independent Engineer V-Verification ent Assurance			

(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.

NOTE: RCE/CONTR indicates that the Contractor shall assist in the sampling at the direction of and witnessed by the Project Engineer.

*Available from the Office of Construction.

Sampling & Testing Guide-Minimum Frequency

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

Matls. IM 204
Appendix H (US) Units

October 19, 2010
Supersedes April, 21, 2009

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

MATERIAL OR CONSTRUCTION ITEM	TESTS	METHOD OF ACCEPTANCE & RELATED IMs	QUALITY CONTROL				INDEPENDENT ASSURANCE & VERIFICATION S&T					REMARKS		
			SAMPLE BY	FREQ.	SAMPLE SIZE	TES BY	REPORT	S&T TYPE	SAMPLE BY	FREQ.	SAMPLE SIZE		TEST BY	REPORT
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		
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	Cert A-Type A Certification				RCE-Resident Construction Engineer/Project Engineer IA-Independent Materials Engineer				ent Assurance			
			Cert C-Type C Certification				DME-District				V-Verification			
			Cert D-Type D Certification				CONTR-Contractor							

NOTE: RCE/CONTR indicates that the Contractor shall assist in the sampling at the direction of and witnessed by the Project Engineer.

Sampling & Testing Guide-Minimum Frequency

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

Matls. IM 204
Appendix H (US) Units

October 19, 2010
Supersedes April, 21, 2009

[Sections 2403, 2404, 2405, 2406, 2412, & 2415](#)

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
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 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	375				RCE								
Hardened Concrete	Smoothness	341	CONTR	100%		CONTR	821301	V	DME 10%			DME		
AS-Approved Source														
ASD-Approved Shop Drawing														
S&T-Sampling & Testing														
			Cert A-Type A Certification				RCE-Resident Construction Engineer/Project Engineer IA-Independent				ent Assurance			
			Cert C-Type C Certification DME-District				Materials Engineer				V-Verification			
			Cert D-Type D Certification				CTRL-Central Materials Office							
							CONTR-Contractor							
NOTE: RCE/CONTR indicates that the Contractor shall assist in the sampling at the direction of and witnessed by the Project Engineer.														

NOTE: RCE/CONTR indicates that the Contractor shall assist in the sampling at the direction of and witnessed by the Project Engineer.