

Sampling & Testing Guide-Minimum Frequency

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

October 16, 2007
Supersedes April 17, 2007

Section 2122, 2201, 2213, 2301, 2302, 2310, SS-01046

Matls. IM 204
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 | |
| 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 | | | | | | | | | | | | |
| 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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|---|-------------------|------------------------------------|---|-----------------|---------------|-------------|---|--|----------|----------------------|---|------------------|--------------------|------------------------------|
| | | | | SAMPLE BY | FREQ. | SAMPLE SIZE | TEST BY | REPORT | S&T TYPE | SAMPLE BY | FREQ. | SAMPLE SIZE | TEST BY | |
| SOURCE INSPECTION | | | | | | | | | | | | | | |
| Steel Reinforcement (4151) Dowels Tie Bars General Use | Quality | AS | 451 | | | | | | | | | | | |
| | Quality | AS | 451 | | | | | | | | | | | |
| | Quality | AS | 451 | | | | | | | | | | | |
| | Quality | AS | 451 | | | | | | | | | | | |
| PLANT INSPECTION | | | | | | | | | | | | | | |
| Aggregates-Fine (4110/4111) | Grad * QMC | 302 306 336 | | CONTR | 1/1200 m³ | IM 301 | CONTR | 800240 | IA V | DME RCE/ CONTR | 1/100,000 m², sample 1/day, test 1 st 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 m² Sample 1/day, test 1 st 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 | |
| PLANT INSPECTION | | | | | | | | | | | | | |
| Aggregates-Coarse (4115), Intermediate | Grad * QMC | 302 306 336 | CONTR | 1/1200m ³ | IM 301 | CONTR | 800240 | IA V | DME RCE/ CONTR | 1/100,000 m ² Sample 1/day, test 1 st 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 ² Sample 1/day, test 1 st 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 ² | 22kg | CTRL | |
| Portland Cement (4101) | Quality | AS Cert D | | Each Load | | | V | DME | 1/100,000 m ² | 7 kg | CTRL | | |
| | Cement Yield | | CONTR | 1/7500m ³ | | CONTR | 820912 | | | | | | |
| Fly Ash | Quality | AS Cert D | | Each load | | | 800240 | V | DME | 1/100,000 m ² | 7 kg | CTRL | |
| GGBFS(Ground Granulated Blast Furnace Slag) | Quality | AS Cert | | Each load | | | | V | DME | 1/100,000 m ² | 7 kg | CTRL | |
| Air Admixture | Quality | AS 403 | | | | | | V | DME | 1/batch | 0.5 L | CTRL | Sample batches not previously reported or as required by DME |
| 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 | | | | | |
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* 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 m², 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. | |
| GRADE INSPECTION | | | | | | | | | | | | | | |
| 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 ³ | | QMC CONTR | E115 | IA V | DME RCE | 1/100,000 m ² 2301.04C 1/550m ³ 1/75 m ³ for transit mixer | | DME RCE | | Min. 1 test/pour |
| | Slump | 317 | | | | | | V | RCE | 1/550 m ³ , min. 1/pour | | RCE | | For hand finish or fixed form only |
| | Grade Yield | | RCE | 1/750 m ³ | | RCE | | | | | | | | |
| | Beams** | 316, 327, 328 | RCE | 2/day | | RCE | E115 | | | | | | | |
| Hardened Concrete | Thickness* | 346, 347 | | | | | | IA V | DME RCE/ CONTR | 1/2000 m ² | 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.)

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