

VIRGINIA DEPARTMENT OF TRANSPORTATION

MATERIALS DIVISION

MEMORANDUM

<b>GENERAL SUBJECT:</b> Revision to Materials Division's Manual of Instructions Chapter IV – Sampling and Control of Hydraulic Cement Concrete	<b>NUMBER:</b> MD 401-16
<b>SPECIFIC SUBJECT:</b> Update of all sections in Chapter IV, including concrete testing frequencies, and incorporation of a new section for specialty concretes	<b>DATE:</b> June 16, 2016
	<b>SUPERSEDES:</b>
<b>APPROVED:</b>	Charles A. Babish, PE State Materials Engineer Approved: _____

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**EFFECTIVE DATE**

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- This memorandum is effective **July 1, 2016**.
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**PURPOSE**

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- This memorandum notifies users of the Materials Division's Manual of Instructions that Chapter IV is being revised. VDOT has reformatted Chapter IV and re-organized the content regarding concrete sampling and testing. VDOT is revising the testing frequencies for acceptance and IA testing during concrete placement and will update Chapter II to reflect this change. VDOT has also added additional sections with new information regarding specialty concretes, as well as several new Appendices, including an entire Appendix for definitions of concrete terminology.
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Changes are shaded

**PROCEDURES**

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- Rearranged Sections for Chapter IV.
- Added the following Appendices:
  - Appendix D: Definitions of Terms and Abbreviations
  - Appendix E: Creating a Concrete Mix Design – Added from Reference: VDOT

## HCC Plant and Field Certification Study Guide.

- Revised the following Appendices:
  - Appendix B: Latex Volumetric Mixer Calibration Procedure and Form – Revised. Now includes instructional worksheet along with updated form.
  - Appendix F: Prestressed HCC Quality Assurance Inspection Items – Moved from MOI Sec. 413.10 Summary of General Outline of Duties of Prestressed Plant Inspector.
  
- Revised the following procedures from previous sections:
  - Sec. 401.01(c) Equipment – air meters are repaired by the District Materials rather than Central Office Materials.
  - Deleted SECTION 402 AGGREGATE MOISTURE
    - Deleted Sec. 402.01 Physical Characteristics – some of the information is included in other sections.
    - Deleted Sec. 402.02 Methods of Determining Water Content – Total evaporable moisture content of Aggregate by drying is adequately in AASHTO T255 and discussed in the new Sec. 408.01 HANDLING AND STORAGE OF MATERIALS – Aggregates. Calculating the free moisture content is adequately covered in the VDOT HCC Plant and Field Certification Study Guide and Appendix E Creating a Mix Design.
  - SECTION 403 WATER-CEMENT RATIO – has been moved to Appendix D Definitions of Terms and Abbreviations.
  - SECTION 404 FINENESS MODULUS – has been moved to Appendix D Definitions of Terms and Abbreviations.
  - SECTION 405 PROPORTIONING OF AIR-ENTRAINED CONCRETE is replaced in SECTION 409 HCC MIX DESIGNS, which covers major portions of the current Section 405 with the following explanations:
    - Deleted Sec. 405.01 General – this section is adequately covered in the VRBS, Section 217.
    - Deleted Sec. 405.02 ACI Concrete Mix Design Utilizing Conventional Materials – information is adequately covered in the VDOT HCC Plant and Field Certification Study Guide and Appendix E Creating a Mix Design.
    - Deleted Sec. 405.03 ACI Concrete Mix Design Using Fly Ash – information is adequately addressed in the VRBS, Section 217.02(a) and the VDOT HCC Plant and Field Certification Study Guide and Appendix E Creating a Mix Design.
    - Deleted Sec. 405.04 ACI Concrete Mix Design Utilizing Granulated Iron Blast-Furnace Slag - information is adequately addressed in the VRBS, Section 217.02(a) and the VDOT HCC Plant and Field Certification Study Guide and Appendix E Creating a Mix Design.
    - Deleted Sec. 405.05 Allowable Field Adjustments - information is adequately covered in the VDOT HCC Plant and Field Certification Study Guide and Appendix E Creating a Mix Design.

- Deleted **Sec. 405.06 Batch Weight Adjustments** - information is adequately covered in the VDOT HCC Plant and Field Certification Study Guide and Appendix E Creating a Mix Design.
  - Moved **Sec. 405.07 Remediation of Alkali Silica Reaction** – relocated to the definitions in the Appendix D Definitions of Terms and Abbreviations and New SECTION 409 HCC MIX DESIGNS.
- **SECTION 406 USE OF ADMIXTURES** – the part of this section that discussed chemical admixture characteristics and compatibility was moved to New Sec. 407.02 Chemical Admixtures.
  - **Sec. 406.01 Addition of Admixtures** – condensed and moved to New Sec. 408.03 Chemical Admixtures. In the future, additions of air-entrainment must be made before turning the truck over to VDOT for testing. The VDOT inspector will either accept or reject the load. Addition of high-range water reducer, if used, may be added after the slump has been tested by VDOT.
- **SECTION 407 PLACEMENT AND CURING OF CONCRETE** was condensed.
- **SECTION 408 CONSISTENCY OF CONCRETE** was moved to New SECTION 410 HCC TESTING.
- **SECTION 409 DETERMINATION OF AIR CONTENT** was moved to New SECTION 410 HCC TESTING. The Chase Air Indicator was deleted.
- **New Sec. 408.02 Cement and Mineral Admixtures** and **New Section 410.01 HCC Mix Designs Using Mineral Admixtures** were added. The Approved List No. 85 for cement manufacturers has been developed and will be posted in conjunction with publication of Chapter IV.
- **SECTION 410 YIELD OF MIX** was deleted because it is essentially contained in ASTM C138 (discussed in new Section 411)
- **SECTION 411 STRUCTURAL AND MISCELLANEOUS CONCRETE** was incorporated into other sections.
- Deleted **Sec. 413.10(h) Plant Erection** – obsolete. Replaced this section by the statement, “Ensure bearing insert plates are properly positioned.” in Sec. 413.10(c) Forming Operation, which was moved to Appendix F: Prestressed HCC Quality Assurance Inspection Items.
- **SECTION 414 OVERLAY CONCRETE** – the latex mobile mixer calibration was moved into Appendix B: Latex Volumetric Mixer Calibration Procedure and Form along with the calibration sheet.
- **SECTION 416 UNIFORM GUIDE FOR CONCRETE CONTROL** was incorporated into other sections.
- **SECTION 417 SUMMARY OF MINIMUM ACCEPTANCE SAMPLING REQUIREMENTS** - most of this section was moved into New SECTION 410 HCC TESTING. The moisture of aggregates at a ready-mix concrete plant is performed by the producer and was deleted from this section. The HCC plant inspection process covers this requirement.
- **New Sec. 410.05 Testing Frequencies** – The MOI, Chapter II will be modified to reflect changes to Chapter IV.

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## NOTES

- Approved List 85 for Cement Manufacturers and Manual of Instructions Chapter II for Concrete Testing Frequencies will both also be updated to reflect these changes.
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## REFERENCES

- VDOT Road and Bridge Specifications, VDOT HCC Plant and Field Certification Study Guide
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