NCHRP 20-07/TASK 386

UPDATE OF THE 2008 AASHTO GUIDE SPECIFICATIONS FOR HIGHWAY CONSTRUCTION

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AASHTO Committee on Construction
Annual Meeting, August 15, 2018
AGENDA

1. Credits
2. Summary of 20-07/Task 386 Research Project
3. Specification Upgrades/Revisions
4. Consistency review/updates to national standards
5. Final thoughts
• Specification Research Team
  ➢ Sid Scott, HKA (formerly Hill) - PI
  ➢ Dr. Leslie McCarthy, Villanova University
  ➢ Cecil Jones, Diversified Engineering Services, Inc.
  ➢ Eric Kerness Esq., Kerness Consulting Inc.

• NCHRP
  ➢ Dr. Amir Hanna, Senior Program Officer

• NCHRP Panel (AASHTO/FHWA)
  ➢ David Hoyne, GPI (formerly VTrans)
  ➢ Marc Mastronardi, GDOT
  ➢ Norm Marzano, RIDOT
  ➢ Dr. Isaac Howard, Mississippi State U.
  ➢ Julie Kliwer, AZDOT
  ➢ Jason Gutting, MDOT
NCHRP 20-07/Task 386 Summary

1. Review 2008 Guide Specifications and identify potential revisions/upgrades
2. Workplan for updating Guide Specifications
3. Prepare and submit updated Divisions/Sections for NCHRP review
4. Address comments and submit Divisions/Sections for final review
5. Submit final versions of specifications by Division
Workplan for Updating Guide Specifications

- **Rationale for Updates**
  - Reflect most current highway construction practices or standards
  - State-of-the practice application not in guide spec
  - New or emerging equipment, materials, or methods
  - Technology or practice has been adopted by a significant % of state highway agencies

- Prioritized topics and scope of work based on available resources/budget & input from panel

- Final workplan included the recommended upgrades/revisions and potential future upgrades

- Upgrades were made to eight Divisions with several new stand alone appendices.
REVISIONS/UPGRADES
Division 100 – General Provisions

- 101 – Preface and Definitions
- 102 – Bidding (e-bidding requirements)
- 104 – Scope of Work (Updated Notice requirements)
- 105 – Controlling Work
  ✓ Electronic contractor submittals
  ✓ Stakeless construction (GPS & surface modeling)
  ✓ Stepped ADR process with DRB processes and procedures
- 106 – Controlling Material
  ✓ Updated Buy America provisions
  ✓ Added Qualified Products List requirements
- 107 – Legal Relations & Responsibility
  ✓ Updated federal requirements (NHPA, ESA)
  ✓ Updated environmental requirements (SWPPP, BMP controls)

Division 100 (Cont’d)

- 107 – Cont’d
  ✓ Updated indemnification & insurance requirements
- 108 – Prosecution and Progress
  ✓ Added early completion language
  ✓ Added language re use of float
  ✓ Added TIA method for determining time extensions for excusable delays
  ✓ Added concurrent delay language
- 109 – Measurement and Payment
  ✓ Alternative methods for measuring quantities (Plan Quantities) and volumes (i.e. Surface to Surface from DTM)
  ✓ Expanded methods of compensation for COs
  ✓ Clarify reimbursement for eliminated items
  ✓ Clarify compensation for project delay and disruption
  ✓ Updated list of unrecoverable costs
DIVISION 200 - EARTHWORK

- **201.3 Clearing and Grubbing**
  - Added general language regarding proper disposal, treatment, or recycling
- **202.3 Removal of Structures and Obstructions**
  - Added general statement in 202.3 C referencing AASHTO R 65 to recycling or reuse of materials. Added recycling pay item in 202.5C
- **203.1 Excavation and Embankment**
  - Added to general statement in 203.1 including recycle or reuse
  - 203.3 Construction. Updated disposal requirements and embankment construction
- **204.3 Subgrade Preparation**
  - Added AASHTO references for intelligent compaction for embankment and asphalt pavement applications
- **207 Erosion and Sediment Control**
  - Updated listing of E&S control devices currently being used and qualifications for E&S
DIVISION 300 – BASE COURSES

• 303 Full Depth Reclamation (FDR) Asphalt Pavements (New)
  ✓ Added for Use as Base Layers

• 304 Aggregate Base Course
  ✓ AASHTO T99 additional reference for maximum density
  ✓ Referenced current methods including use of recycled concrete aggregate as unbound base

• 307, 308 Lime-treated & Cement-treated Base Course
  ✓ Addressed undercut soil for subgrade

• 308 Cement-Treated Base Course
  ✓ Updated reference (ground granulated blast furnace slag to slag cement)

• 315 Cold Recycled Bituminous Base Course, Cold In-Place Recycling (New)
DIVISION 400 – FLEXIBLE PAVEMENTS

• 401 Hot Mix Asphalt (HMA) Pavements
  ✓ 401.2 Updated additives for RAP, RAS, or RAM
  ✓ 401.3 Part G & 401.05 - Added testing of RAP and RAS stockpile recycled/reclaimed materials
  ✓ 401.3 Added non-tracking tack
  ✓ 401.3 Added AASHTO PP 81-14 for Intelligent Compaction
  ✓ 401.3 Added notch wedge, and longitudinal density specification

• 404 Tack Coat
  ✓ Updated tack coat to include non-tracking tack

• 407 Warm Mix Asphalt (New)

• 408 Microsurfacing (updated description, materials, construction, and pavement preservation practices)

• 409 Coldmilling and Micromilling (updated description, construction and testing requirements)

• 410 Paver Placed Surface Treatment (New)

• 412 Surface Recycling (updated to include hot-in-place recycling)
DIVISION 500 – RIGID PAVEMENTS, 550 – REHABILITATION OF PORTLAND CEMENT CONCRETE PAVEMENT

- 501 Portland Cement Concrete Pavement
  - Updated reference materials for recycling and re-use of existing concrete pavements (RCA)
- 563 Portland Cement Concrete Unbonded Overlays
  - Added fiber-reinforced concrete (glass, polymer, etc.)
- 564 Portland Cement Concrete Direct Partially Bonded Overlays
  - Added fiber-reinforced concrete (glass, polymer, etc.)
- 565 Recycling Portland Cement Concrete Pavement
  - Updated reference materials for recycling and re-use of existing concrete pavements (RCA)
Specification Upgrades/Revisions

DIVISION 600 MISCELLANEOUS CONSTRUCTION

• 602 Rumble Strips (New)

• 603 Culverts and Storm Drains
  ✓ Updated materials to include 5 new pipe types to match AASHTO M and T standards (e.g., polypropylene)
  ✓ Added information regarding post-installation inspections of pipe

• 605 Underdrains
  ✓ Updated to include 3 new pipe types

• 613 Portable Traffic Barriers (New)
  ✓ Added specification to address temporary traffic barrier systems and AASHTO MASH requirements

• 619 Erosion Control (Updated listing of erosion and sediment (E&S) controls currently being used)
DIVISION 700 MATERIAL REQUIREMENTS

• 702 Asphalt
  ✓ Added WMA specification & 702.01 tables with warm mix asphalt temperatures;
  ✓ Added Reclaimed Asphalt Pavement (RAP) requirements w/ increased RAP percentage
  ✓ Added recycled asphalt shingles (RAS) requirements
  ✓ Updated tack coat to current materials (i.e. trackless tack)

• 703 Aggregates
  ✓ Use of recycled materials (RCA, RPCC, RAP, RAS) for base course and pavements
  ✓ Use of RPCC aggregate for Rip Rap

• 708 Concrete and Plastic Pipe
  ✓ Updated for 5 new pipe types (i.e. polyethylene, PVC, polypropylene)
DIVISION 700 MATERIAL REQUIREMENTS (CONT’D)

• 710 Structural Steel (Updated ASTM high strength fastener standards)
• 711 Reinforcing Steel and Wire Rope (Updated ASTM standards)
• 713 Concrete
  ✓ Modified mix properties to include Surface Resistivity.
  ✓ Updated minimum cement content, and maximum fly ash replacement
  ✓ Revised limitations on pozzolan inclusion up to 25% (states routinely exceed the previously-established 15% limit of cement replacement)
  ✓ Revised limit total of fly ash or other pozzolans and silica fume to 35 percent by mass of the total cementitious material
  ✓ Added Self-Consolidating Concrete (SCC) specification
DIVISION 700 MATERIAL REQUIREMENTS (CONT’D)

• 715 Roadside Improvement Materials (New subsections)
  ✓ 715.4 Fiber Rolls and Socks
  ✓ 715.5 Floating Turbidity Curtains
  ✓ 715.6 Gravel Bags
  ✓ 715.7 Prefabricated Filter Inserts
  ✓ 715.9 Sediment Filter Bags
  ✓ 715.10 Tackifiers (1) General Purpose (2) Polymer Stabilized Fiber Matrix
  ✓ 715.11 Temporary Rolled Erosion Control Products
  ✓ 715.12 Turf Reinforcement Mats
DIVISION 800 STRUCTURES

• Added references to the AASHTO LRFD Bridge Design Specifications
• 803 Temporary Works
  ✓ 803.03 Updated per current ACI and AASHTO Handbook for Temp Works
• 804 Driven Foundation Piles
  ✓ Updated Description, Equipment, and Construction Test requirements
• 805 Drilled Piles and Shafts
  ✓ Updated drilled shaft installation plan, slurry testing, cage installation, and concrete placement requirements/tests
• 806 Ground Anchors
  ✓ Updated quality assurance and load testing requirements
• 807 Earth Retaining Structures
  ✓ Updated for mechanically stabilized earth (MSE) walls
• 808 Concrete Structures
  ✓ Clarify curing time with pozzolans (Table 808.03.3) based on current ACI recommendations
  ✓ Updated for hot and cold weather and temperature requirements
DIVISION 800 STRUCTURES (CONT’D)

- **811 Steel Structures**
  - Updated to LRFD requirements (e.g. bent plates, bolt holes)

- **816 Timber Structures**
  - 816.3 Updated responsibility for damage to timber surfaces

- **818 Bearing Devices**
  - Added ASTM and LRFD standards
  - Additional anchor bolt hole LRFD standards (e.g. Polytetrafluoroethylene (PTFE) Surfaces for Bearings)

- **819 Bridge Deck Joint Seals**
  - 819.02 updated for bolts not designed as high strength

- **821 Waterproof or Dampproof Concrete**
  - Clarified selection and approval of waterproofing systems

- **828 Latex-modified Concrete Surface**
  - Added language to address submittal requirements for existing decks (e.g. scarifying surface and collection and disposal of water) and installation and placement requirements
Specification Upgrades/Revisions

APPENDICES

• App A: Updated Generic Warranty specification (from 2008 book)
• App B: Added Statistical Evaluation for Acceptance
• App C: Updated Pavement Ride Quality (from 2008 book)
• App D: Added Dispute Review Board (Three Party Agreement)
• App E: Added Post Installation Inspection for Pipe Culverts
Final Thoughts – Potential Future Upgrades

- **100**
  - ✔ Contractor QC plans
  - ✔ ACM General Provisions
- **200**
  - ✔ Foundation ground improvement
  - ✔ IC
- **400**
  - ✔ Performance-based NDT methods
  - ✔ Updated pavement preservation
- **500**
  - ✔ Precast modular, two-lift, & composite pavements
  - ✔ Roller compacted concrete
  - ✔ NDT for thickness, real-time smoothness
- **600**
  - ✔ ITS (CCTV, VMS, Cameras, V2V, ARE, E-tolls)
  - ✔ Electrical
  - ✔ Traffic Signals
  - ✔ Roadway and Structure Lighting
  - ✔ Signing
  - ✔ Markings
- **700**
  - ✔ Composite materials
  - ✔ UHPC
- **800**
  - ✔ Composite bridges
- **Appendices**
  - ✔ Emerging technology (IC, smart pavement, bridge health monitoring systems, robotics, etc.)
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